A Preliminary Examination of Audience-Related Communications Issues for the Hanford Environmental Dose Reconstruction Project

C. W. Holmes

April 1991

Prepared for the Technical Steering Panel

DISCLAIMER

This report was prepared under the direction of the HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT Technical Steering Panel by Battelle Memorial Institute's Pacific Northwest Laboratories operating the Pacific Northwest Laboratory for the U.S. Department of Energy (DOE). While funding for the work was provided by DOE, the work is not under DOE direction or control. The views and opinions of the authors expressed in this document do not necessarily reflect those of the United States Government or any agency thereof. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer or otherwise does not necessarily constitute or imply its endorsement, recommendation or favoring by the U.S. Government or any agency thereof, nor by Battelle Memorial Institute.

Printed in the United States of America

Available to DOE and DOE contractors from the
Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831;
prices available from (615) 576-8401. FTS 626-8401.

Available to the public from the National Technical Information Service,
U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

A PRELIMINARY EXAMINATION OF AUDIENCE-RELATED
COMMUNICATIONS ISSUES FOR THE HANFORD ENVIRONMENTAL
DOSE RECONSTRUCTION PROJECT

C. W. Holmes

April 1991

Prepared for
the Technical Steering Panel

Pacific Northwest Laboratory
Richland, Washington 99352

**A PRELIMINARY EXAMINATION OF AUDIENCE-
RELATED COMMUNICATIONS ISSUES FOR THE
HANFORD ENVIRONMENTAL DOSE
RECONSTRUCTION PROJECT**

April 1991

This document has been reviewed
and approved by the Technical Steering Panel.

John E. Till, Chairman
Technical Steering Panel
Hanford Environmental
Dose Reconstruction Project

April 8, 1991
Date

FOREWORD

Responding to TSP Directive 89-7

In May 1989, the Technical Steering Panel issued Directive 89-7, "Presentation of Technical Material to the Public." That directive required HEDR staff at PNL to examine methods to communicate the causes and effects of uncertainties in the dose estimates. Specifically, it asked staff to

- investigate methods for presenting to the lay public information about uncertainties in dose estimates
- review past examples of communication of technical information to lay audiences
- seek out and consider innovative methods for such communication.

These activities were to be documented, including descriptions of communication methods and an evaluation of each method's cost and effectiveness.

HEDR staff undertook a broad interpretation of this directive to include all project communication, not just the communication of dose uncertainties. Several key materials documented HEDR staff work in fulfilling this directive:

- "Summary of Literature Review on Risk Communication - Hanford Environmental Dose Reconstruction Project," by S. J. Byram, PNL-7226 HEDR. This report summarizes risk communication principles as presented in existing literature.
- "A Preliminary Examination of Audience-Related Communications Issues for the Hanford Environmental Dose Reconstruction Project," by C.W. Holmes, PNL-7231 HEDR. This report summarizes the results of focus group discussions held throughout Washington State, briefly analyzes media content of TSP meetings, summarizes results of Hanford-related surveys done by others, and presents issues and recommendations for TSP consideration in future communications efforts.
- "Communications Directive" by R. E. Rhoads, PNL-SA-17903 S HEDR. This packet of viewgraphs shown at the February 1990 TSP meeting highlights key points in the oral presentation given by R. E. Rhoads. The presentation included a review of HEDR work to date in carrying out the TSP directive, a summary of the audience analysis results, suggested communication mechanisms, and recommended communications objectives.

General cost estimates for various communication activities were provided in informal meeting notes and other verbal discussions with members of the TSP Communications Subcommittee. Costs for communication methods the TSP has used to date can be found in TSP reports on public communication and involvement activities and in other materials produced by the TSP. Cost estimates for proposed activities are developed by PNL as input to the TSP Communications Subcommittee planning and budgeting activities by fiscal year.

Putting Recent TSP Communication Developments in Context

This report was provided in draft form to the TSP in April 1990. The report contains suggestions associated with the TSP's public communication activities. Since the time this report was first made available, the TSP has expanded and modified its public communication program, including applying many of the suggestions presented herein.

SUMMARY

The Hanford Environmental Dose Reconstruction (HEDR) Project will estimate radiation doses people may have received from exposure to radioactive materials released during past operations at the U.S. Department of Energy's (DOE) Hanford Site near Richland, Washington. The project is being conducted by Pacific Northwest Laboratory (PNL) under the direction of an independent Technical Steering Panel (TSP). The Centers for Disease Control (CDC) will use HEDR dose estimates in studies to investigate a potential link between thyroid disease and historical Hanford emissions.

The HEDR Project was initiated in response to public concerns about possible health impacts from past releases of radioactive materials from Hanford. The TSP recognized early in the project that special mechanisms would be required to effectively communicate to the many different concerned audiences. Accordingly, the TSP directed PNL (by Directive 89-7) to examine methods for communicating causes and effects of uncertainties in the dose estimates.

After considering the directive and discussing it with the Communications Subcommittee of the TSP, PNL undertook a broad investigation of communications methods to consider for inclusion in the TSP's current communications program. As part of this investigation, a literature review was conducted regarding risk communications. A key finding was that, in order to successfully communicate risk-related information, a thorough understanding of the knowledge level, concerns and information needs of the intended recipients (i.e., the audience) is necessary. Hence, a preliminary audience analysis was conducted as part of the present research. This report summarizes the results of this analysis.

The primary methods used in the analysis were 1) focus groups, and 2) individual and small group interviews with various public groups and representatives of organizations identified as potential users of the Phase I results. These results were supplemented by information obtained from a preliminary media analysis on newspaper coverage of three TSP meetings and from a review of previously conducted public opinion surveys.

The primary objectives of the audience analysis were to 1) actively seek out members of the lay public and representatives of specific organizations in order to discuss what they consider to be key issues related to the process of accurately communicating results of the HEDR Project to lay persons, and 2) summarize and present these issues to TSP for consideration in preparing for releasing Phase I results. These objectives were driven by the TSP Directive 89-7 (Appendix A), which states in part "The TSP is responsible for selecting the methods that will be used to present information about HEDR results, including uncertainties, to the lay public...the TSP, therefore, needs to examine all possible methods for communication that might be used during and after the HEDR project, in order to select methods that will be most effective."

Participants in the audience analysis identified a number of key communications issues for HEDR. These issues were reinforced by additional information obtained in examinations of results from previous public opinion surveys and media coverage of HEDR. To address the issues and meet the information needs of the people who will use the results of the HEDR study, the TSP will need to consider:

- how information concerning health effects can be presented in the absence of results from a complete epidemiological study
- how contextual information regarding the results can be presented within the current limits of the study
- the level of detail at which historical information should be presented and how to clearly distinguish historical events from current events at the Hanford Site
- the level of detail at which information regarding the process of the study should be presented to various audiences
- the level of detail at which dose information should be presented to various audiences
- increased interactions with media representatives to facilitate the accurate communication of results through such channels
- moving toward more informal, two-way communications mechanisms and strategies

- how ongoing communications should be maintained after the results are released
- who should be available to answer questions when the results are released and how they should be prepared
- how the release of the results might be coordinated with state agencies and community leaders
- whether additional communications-related research should be conducted.

The TSP has indicated that it will consider and act on these issues through its Communications Subcommittee. PNL staff will support the subcommittee in using the results of this research to enhance the TSP's intact communications program.

ACKNOWLEDGMENTS

The author would like to acknowledge the contributions of Stan Nealey and Beth Terrill of the Human Affairs Research Center, Seattle, Washington, for conducting the media analyses. Special thanks also to Dr. Robert Riley of Washington State University, Pullman, Washington, for reviewing the public opinion surveys, and Dr. Detlof von Winterfeldt of the University of Southern California, Los Angeles, California, for developing the objectives trees and laying the groundwork for future decision analytic work.

CONTENTS

FOREWORD	iii
SUMMARY	v
ACKNOWLEDGMENTS	ix
1.0 INTRODUCTION	1.1
2.0 AUDIENCE ANALYSIS	2.1
2.1 FOCUS GROUPS - METHODOLOGY	2.3
2.2 FOCUS GROUPS - RESULTS	2.4
2.2.1 General Knowledge Level Regarding HEDR	2.5
2.2.2 Concerns Regarding HEDR	2.6
2.2.3 Communications Issues of HEDR	2.10
2.3 INDIVIDUAL AND SMALL GROUP INTERVIEWS - METHODOLOGY	2.16
2.4 INDIVIDUAL AND SMALL GROUP INTERVIEWS - RESULTS	2.17
3.0 MEDIA CONTENT ANALYSIS OF TSP MEETINGS	3.1
3.1 MEDIA CONTENT ANALYSIS - METHODOLOGY	3.1
3.2 MEDIA CONTENT ANALYSIS - RESULTS	3.3
4.0 SURVEY ANALYSIS	4.1
4.1 SURVEY ANALYSIS - SUMMARY DESCRIPTIONS OF SURVEYS	4.1
4.1.1 Advisory Council Survey	4.1
4.1.2 Spokesman-Review Surveys	4.2
4.1.3 Seattle Times Surveys	4.2
4.1.4 Tacoma News Tribune Surveys	4.3
4.1.5 Hanford Health Concerns Survey	4.3
4.2 SURVEY ANALYSIS - GENERAL RESULTS	4.4
5.0 ISSUES FOR CONSIDERATION IN FUTURE COMMUNICATIONS	5.1

5.1	CONTENT-RELATED COMMUNICATIONS ISSUES	5.1
5.1.1	Health Effects Information	5.2
5.1.2	Contextual Information	5.2
5.1.3	Historical Information	5.2
5.1.4	Information Regarding the Study Itself	5.3
5.1.5	Level of Detail of Dose Information	5.3
5.2	PROCESS-RELATED HEDR COMMUNICATIONS ISSUES	5.3
5.2.1	Criticality of Maintaining Openness and Honesty . . .	5.4
5.2.2	Increased Interactions with Media Representatives . .	5.4
5.2.3	Emphasis on Informal, Two-Way Communications and Networking	5.5
5.2.4	Emphasis on Maintaining Ongoing Communications	5.5
5.2.5	Emphasis on Using Teams of Researchers to Present Results	5.5
5.2.6	Emphasis on Coordination with State Agencies and Community Leaders	5.6
5.2.7	Emphasis on Continued Research Regarding Audiences and Communications Needs	5.6
6.0	REFERENCE	6.1
APPENDIX A	TSP DIRECTIVE 89-7 - PRESENTATION OF TECHNICAL MATERIAL TO THE PUBLIC	A.1
APPENDIX B	FOCUS GROUP MODERATOR'S GUIDE AND BRIEFING MATERIALS . . .	B.1
APPENDIX C	SUMMARY WRITE-UPS OF FOCUS GROUP RESULTS AND OBJECTIVES TREES	C.1
APPENDIX D	OBJECTIVES TREES DERIVED FROM SMALL GROUP AND INDIVIDUAL INTERVIEWS	D.1
APPENDIX E	SUMMARY WRITE-UPS OF INTERVIEW RESULTS	E.1
APPENDIX F	MEDIA NEWS ANALYSIS LISTING OF NEWSPRINT COLUMNAR INCHES DEVOTED TO EACH CATEGORY BY DATE	F.1

APPENDIX G - SUMMARY OF RESULTS FROM THE WASHINGTON STATE ADVISORY COUNCIL SURVEY	G.1
APPENDIX H - SUMMARY OF RESULTS FROM THE SPOKANE SPOKESMAN- REVIEW SURVEYS	H.1
APPENDIX I - SUMMARY OF RESULTS FROM THE SEATTLE TIMES SURVEY	I.1
APPENDIX J - SUMMARY OF RESULTS FROM THE TACOMA NEWS TRIBUNE POLLS	J.1
APPENDIX K - SUMMARY RESULT FROM THE HANFORD HEALTH CONCERNS SURVEY	K.1

TABLES

2.1	Focus Groups	2.1
2.2	Individual and Small Group Interviews	2.2
2.3	Matrix of Concerns and Issues of Groups	2.7
2.4	Matrix of General Communications Issues	2.11
2.5	Matrix of Specific Communications Mechanisms	2.13
3.1	Newspapers Reviewed in Content Analysis	3.2
3.2	Quantitative Analysis of Media Comments - July 1988	3.4
3.3	Quantitative Analysis of Media Comments - November 1988	3.5
3.4	Quantitative Analysis of Media Comments - March 1989	3.6

1.0 INTRODUCTION

The Hanford Environmental Dose Reconstruction (HEDR) Project is designed to provide estimates of radiation doses to the environment from past operations at the U.S. Department of Energy's (DOE) Hanford Site near Richland, Washington. The project was initiated in response to public concerns about potential health effects from Hanford operations. These concerns arose because of known releases of radioactive materials from the Hanford Site beginning in 1944.

The HEDR Project is being conducted by staff at the Pacific Northwest Laboratory (PNL) under the direction of an independent Technical Steering Panel (TSP). The TSP makes major project decisions and reviews, evaluates, and approves all project reports. The DOE funds the work but provides no technical direction or oversight.

From the outset of the project, the TSP has recognized that communicating the ongoing steps and results to the public is a major challenge. A broad range of people are interested in the project and the results it will produce. The spectrum of interested parties ranges from people who lived near Hanford during the time of the releases to state and federal agencies to public interest groups. Because of this audience and the technical complexity of the research, the TSP and project staff recognized the need for special mechanisms to effectively communicate across interested groups. To initiate the process of developing the information necessary to accomplish this end, the TSP issued Directive 89-7 on May 20, 1989 (Appendix A). The directive instructs HEDR staff to investigate methods for presenting information to the public about the causes and magnitudes of uncertainties in dose estimates.

After reviewing and discussing the directive with the TSP Communications Subcommittee, project staff undertook a broad investigation of communications mechanisms. As work has progressed it has become clear that, although uncertainty is an important aspect of the communications challenge, there are many

other challenges that must be addressed. Accordingly, several activities have been pursued to address these challenges and meet the directive of the TSP.

These include the following:

- working with the Communications Subcommittee to define communications objectives for the project
- reviewing the literature on communicating health and safety risk information to the public
- analyzing the concerns and information needs of the various groups or "audiences" who may use the results of HEDR
- analyzing media information regarding HEDR
- analyzing previous survey data potentially relevant to HEDR
- identifying mechanisms that can be used to effectively communicate project results through the media as well as other avenues
- evaluating communications mechanisms and developing recommendations to the TSP to provide support for the TSP's existing communications programs.

A previous report (Byram 1989) contains the results of the literature review. This report contains 1) the results to date of a preliminary audience analysis designed to clarify various identified public, government, and public interest groups' concerns, objectives, and information needs regarding HEDR; 2) a content analysis of media coverage related to three TSP meetings held in July 1988, November 1988, and March 1989; 3) a review of previously conducted public opinion surveys potentially relevant to HEDR; and 4) a set of summary issues for consideration regarding communications strategies derived from the preceding analyses.

2.0 AUDIENCE ANALYSIS

The results of a previous literature review on health risk communications (Byram 1989) clearly indicate that a critical component of any public communication program is a thorough understanding of the knowledge level, objectives, concerns, and needs of the individuals intended as the recipients of information (i.e., the audience). Accordingly, a preliminary audience analysis was undertaken as part of the present communications effort.

Given the preliminary nature of the current study, the method used in the audience analysis was a combination of focus groups, small group interviews, and interviews with individuals representing various groups and organizations identified as most likely to be interested in, or affected by, the results of the project. A total of 9 focus groups and 12 interviews were conducted. Focus group sessions were conducted with representatives from the general public or community groups (see Table 2.1), and interviews were conducted with representatives of specific organizations (see Table 2.2) interested in HEDR.

TABLE 2.1. Focus Groups

<u>Focus Group Representing</u>	<u>Conducted By</u>	<u>Accompanied By</u>	<u>Interview Date (Location)</u>
Tri-Cities	Holmes	Montgomery	10/30/89 (Kennewick)
Tri-Cities	Holmes	Thurman	11/2/89 (Kennewick)
Hanford Employees	Montgomery	Byram	11/3/89 (Richland)
Yakima Valley Farmers	Holmes	Byram	12/11/89 (Sunnyside)
Pendleton	Montgomery	Marsh	12/12/89 (Pendleton)
Franklin County Farmers	Holmes	Byram	12/12/89 (Pasco)
Spokane	Holmes	Marsh	1/11/90 (Spokane)
Walla Walla	Holmes	Byram	1/26/90 (Walla Walla)
Indian Tribes	Holmes	Bruneau	2/16/90 (Richland)

TABLE 2.2. Individual and Small Group Interviews

<u>Organization</u>	<u>Conducted By</u>	<u>Accompanied By</u>	<u>Interview Date (Location)</u>
PNL Management	von Winterfeldt	Byram	12/13/89 (Richland)
Technical Steering Panel	von Winterfeldt	Byram	12/13/89 (Richland)
Technical Steering Panel	von Winterfeldt	Byram	12/12/89 (Richland)
Technical Steering Panel	von Winterfeldt	Byram	12/13/89 (Richland)
DOE-RL	von Winterfeldt	Stillwell	12/21/89 (Richland)
Washington State Department of Health	von Winterfeldt	Rhoads	1/30/90 (Olympia)
Hanford Education Action League	von Winterfeldt	Rhoads	1/30/90 (Spokane)
Washington State Department of Ecology	von Winterfeldt	Rhoads	1/30/90 (Olympia)
Physicians for Social Responsibility	Holmes	Marsh	1/11/90 (Spokane)
Physicians for Social Responsibility	von Winterfeldt	Rhoads	1/29/90 (Seattle)
Hanford Downwinders Coalition	von Winterfeldt	Rhoads	1/29/90 (Seattle)
Heart of America	von Winterfeldt	Rhoads	1/29/90 (Seattle)

Given the expected qualitative differences between the levels of knowledge, objectives, and information needs of members of the general public or community groups and representatives of specific organizations, slightly

different strategies and methods were used to gather and summarize information in the focus groups and interviews. These different methods are described in the following sections.

2.1 FOCUS GROUPS - METHODOLOGY

The information-gathering objectives for the focus groups were three-fold: 1) to assess the level of knowledge the group members had of HEDR prior to their attending the focus group; 2) to develop a thorough understanding of the group members' concerns, objectives and information needs concerning HEDR; and 3) to elicit ideas from the group members on how the TSP and project staff can most effectively communicate the results of HEDR to individuals like themselves.

To accomplish these objectives, a moderator's guide and a set of briefing materials on HEDR (see Appendix B) were developed. A fairly structured process, consisting of the following five steps, was employed in each session: 1) an assessment of the group's extant level of knowledge and concerns regarding HEDR; 2) a short briefing phase in which written materials containing an overview of HEDR were distributed to the group members; 3) a post-briefing assessment of the group's concerns regarding HEDR; 4) an elicitation of suggested communications mechanisms and strategies that would be most effective in conveying information concerning HEDR; and 5) a questions and answers phase.

This process and the briefing materials were pre-tested by two senior PNL researchers with a group of Tri-Cities residents, and both were deemed satisfactory. Accordingly, the results from two Tri-Cities resident groups (i.e., the pre-test group and a study group) are presented in this report.

Initially, participants for the focus groups were contacted via random selection from community telephone books. However, after using this method for three focus groups, a shift was made to using intact community networks (e.g., agricultural extension offices, Chambers of Commerce) to make contacts. This is because of the large ratio of contacts to actual commitments and participation encountered using the random selection method. In one focus group, for example, 93 individuals were contacted, 14 expressed a

commitment to attend, and 6 were actually able to attend. The number of participants in each group ranged from 5 to 13, and in all of the groups PNL staff members worked in teams of 2; one staff member serving as the moderator and one serving as a recorder. In six of the focus groups, various independent observers, including TSP members, sat in on the sessions that lasted from 1.5 to 2 hours. Finally, it is important to note that in all of the sessions the participants were guaranteed that their anonymity would be maintained to facilitate an honest exchange of information.

Information obtained during the focus groups was summarized in qualitative written reports developed by the recorder from notes taken during each meeting. These are included in Appendix C. The intent of these summaries is to provide a succinct written record of the critical and most salient results of each session. The summaries consist of three sections: 1) a summary of the groups' extant knowledge regarding HEDR; 2) a summary of the groups' concerns regarding HEDR; and 3) a summary of the communications issues raised by the group.

Further, objectives trees were developed for two of the groups by an independent consultant. The trees are based on information the consultant obtained while observing the sessions and they are essentially structured, schematic representations of the concerns and needs of each group expressed as operationally measurable constructs. The use of the trees is designed to further systematize the results from the focus groups, and the schematic representation of each group's objectives allows for comparisons with similar trees based on information obtained in the interviews. Further, the trees may be used in future decision analytic work if deemed desirable. The objectives trees for the two groups are presented in Appendix C.

2.2 FOCUS GROUPS - RESULTS

In the following sections, brief summaries of the results for all of the focus groups are presented on 1) the general level of knowledge the participants expressed regarding HEDR; 2) the concerns expressed by the participants regarding HEDR; and 3) communications issues and ideas related by the participants in the various groups.

2.2.1 General Knowledge Level Regarding HEDR

The general level of knowledge of HEDR varied moderately within the groups. However, the overall level of specific knowledge across groups was relatively similar and fairly low except for the tribal representatives who were exceedingly knowledgeable regarding HEDR; hence, little emphasis was placed on knowledge assessment concerning HEDR in the focus group.

Generally, the participants in the remaining groups were all aware of past releases of radioactive materials from Hanford. Interestingly, only a few participants expressed an accurate understanding of specific timeframes of when releases occurred. None of the participants expressed a knowledge of specific numerical quantities, although several references were made regarding the notion that "the amount of radioactive materials released was considerably larger than that released in the Three Mile Island incident."

A few members expressed specific knowledge of the "green run"^(a) and the majority of the participants believed that some of the releases were intentional. To a lesser extent, the notions were expressed that the releases occurred because of lack of knowledge of the danger of radioactive materials or lack of technical capabilities for handling radioactive materials.

Perhaps the most salient result of assessing the general knowledge level of HEDR was the finding that very little was known about the specifics of the study itself. This finding is especially interesting given that it is easy to hypothesize that the non-random selection procedure used for most of the groups should have led to a self-selection bias in favor of individuals knowing more about HEDR.

Only a few individuals had a relatively detailed understanding of HEDR and this was because of special circumstances (i.e., one individual was initially involved in the selection process of the TSP; a few individuals were more aware because they worked on the Hanford Site or had friends who did; a few had previous contacts with PNL project staff; and one had been in

(a) The "green run" was a planned release of I-131 resulting from a classified experiment in one of the reprocessing plants at Hanford. The experiment was conducted in December 1949. The exact amount of I-131 released is not known, but ranges from 4000 to 7000 Ci of I-131.

contact with members of the TSP). The remaining majority of the participants expressed a basic awareness that "some study was being conducted," and roughly half of the groups were aware that the Centers for Disease Control (CDC) and the TSP were involved in some way. The expressed knowledge of PNL's involvement was generally greater. However, this may have been inflated because of the demand characteristics of the focus groups (i.e., PNL personnel had prior contact with the participants).

Interestingly, regardless of which organizations were identified as involved in the study (e.g., PNL, CDC, TSP), there was generally a lack of clear understanding of the roles of the organizations. Further, in more than one of the groups, no distinction was made between PNL and DOE prior to the briefing phase (issues related to the roles of DOE and PNL will be discussed further in another section). Finally, the belief that HEDR is a "health effects study" was often expressed prior to the briefing phase, and in most of the groups some allusion to health implications was made during the knowledge assessment phase.

2.2.2 Concerns Regarding HEDR

To provide a succinct summary of the focus group results on key issues and concerns, a modified content analysis was employed and the key issues and concerns raised in each focus group were distilled by one researcher in the form of short statements. Following this, a second researcher completed the same procedure and then both sets of results were compared and differences were reconciled by re-reviewing the original reports. Once a complete list of distinct issues and concerns was compiled for all the groups, categories were developed by combining similar statements. Finally, these categories were used to develop a matrix comprising categories of issues and concerns raised by groups. This matrix is presented in Table 2.3.

Examination of the matrix clearly indicates several concerns and issues common to all the groups. The notion of "getting the truth out" was an overriding view of all of the groups. This was strongly related to the feeling that DOE has very little credibility, given the history of events at the Hanford Site. However, several groups expressed the sentiment that HEDR

TABLE 2.3. Matrix of Concerns and Issues of Groups

Categories	Focus Groups							
	TC	H	YF	FF	PD	SK	WW	TR
1. Concern that all the information be released; get the truth out, what happened, why did it happen, resolve issues, admit mistakes.	X	X	X	X	X	X	X	X
2. Concern regarding health effects including cancers, genetic effects, infertility, neurological; perception that HEDR is health effects study.	X	X	X	X	X	X	X	X
3. DOE not credible, lacking in trustworthiness, given to excessive secrecy.	X	X	X	X	X	X	X	X
4. Concern regarding economic impacts; farm produce, land values, reputation of area, attracting new people/students, and ongoing operations at Hanford.	X	X	X	X	X		X	X
5. Concerned about current issues surrounding Hanford; what about ongoing releases, storage contamination, etc.	X	X	X	X	X		X	X
6. PNL credibility questioned; bound by funding from DOE.		X		X	X	X	X	X
7. Concern regarding the accuracy of data due to archival nature; complexity of data; need for comprehensive data collection.	X	X		X		X	X	X
8. General environmental concerns: wildlife, land, other resources.		X	X	X	X			X

TC - Tri-City Residents
H - Hanford Site Employees
YF - Yakima Valley Farmers
FF - Franklin County Farmers

PD - Pendleton Residents
SK - Spokane Residents
WW - Walla Walla Residents
TR - Tribal Representatives

TABLE 2.3. (contd)

Categories	Focus Groups							
	TC	H	YF	FF	PD	SK	WW	TR
9. Concern over lack of group member/public involvement in process.	X				X	X		X
10. Concern regarding the amount of money being spent, timeliness of study.			X			X	X	X
11. Concern that not all of the data will be provided: DOE withholding relevant information, scope of study too narrow because of lack of data.	X	X			X	X		
12. Concern that people may be unnecessarily alarmed by results.	X			X			X	
13. TSP credibility questioned; bound by funding from DOE.			X			X		X
14. Concern that TSP not playing big enough role in research.						X	X	X
15. Feeling of being studied with no feedback on results.			X	X				X
16. Concern regarding researchers' ability to track and find those affected by releases.				X				X
17. CDC credibility may be questioned by the public and viewed as just another government agency.							X	

TC - Tri-City Residents
H - Hanford Site Employees
YF - Yakima Valley Farmers
FF - Franklin County Farmers

PD - Pendleton Residents
SK - Spokane Residents
WW - Walla Walla Residents
TR - Tribal Representatives

provides an opportunity for DOE to "clean the slate" and start fresh if total honesty is ensured. Virtually all of the groups expressing this sentiment agreed that this could provide a start, but that it is only through extended open communication that DOE can rebuild its credibility.

Concern regarding health effects was also endemic to all of the groups; the belief that HEDR is a health effects study was exceedingly common. Interestingly, a very broad range of health effects concerns were often expressed including concerns about several types of cancer, genetic defects, infertility, and neurological disorders.

Concerns regarding the future economic effects the study might have on the area were very common. These concerns ranged from general uneasiness about the reputation of the area to outright fear of the effects the study could have on agricultural values. In fact, the sentiment was expressed that "regardless of the findings of the study, consumers will perceive a problem and overreact just like the recent Alar scare."

As can be seen from Table 2.3, additional concerns included several issues surrounding the feasibility of obtaining accurate results from the study, current operations at Hanford, the cost of the study, and the lack of public involvement in the study. Interestingly, few of the groups expressed concern regarding the potential for undue alarm. However, those who did felt strongly about the need to minimize such alarm and its potential economic effects.

The credibility and the independence of PNL, given its relationship with DOE, was also a fairly common concern. Whereas some of the individuals in the groups expressed the belief that there is an outright conflict of interest regarding PNL's involvement in the study, others expressed that they personally felt that PNL was highly credible and independent but they doubted the general public would feel the same way. Somewhat surprising findings were that some of the groups questioned the TSP's credibility or independence considering DOE funding, and although the CDC was clearly viewed as highly credible by most of the groups, the notion of the CDC being perceived as "just another government entity" was brought up in one of the groups.

Finally, it should be noted that, although most of the concerns of the tribal representatives were similar to those of the other groups, there were four distinct additional issues raised by the representatives. These were 1) the need for contracts regarding tribal participation in HEDR to be signed; 2) the need for tribal heritage and culture to be protected throughout the study; 3) the need for editorial rights regarding any information relevant to tribal cultures in HEDR reports; and 4) the need for certain tribes to be treated as sovereign nations and for HEDR representatives to deal with them as they would with any government organization.

2.2.3 Communications Issues of HEDR

An essentially identical procedure to the issues and concerns procedure described above was used to distill key communications issues and ideas raised in the groups. This procedure was slightly modified in that once the final categories of communications issues had been derived, they were divided into two matrices: 1) general communications issues identified, and 2) specific communications mechanisms. These matrices are shown in Tables 2.4 and 2.5.

The results presented in Table 2.4 are clearly related to the concerns and issues outlined in the preceding section. All of the groups felt that releasing results through the media alone was not sufficient if the intent is to get the information out as accurately as possible. In fact, this belief most likely led to the variety of suggested alternative mechanisms outlined in Table 2.5.

Interestingly, all of the groups expressed the belief that providing dose estimates alone was not enough, and to a large extent would make the study appear meaningless. Reasons expressed supporting this notion generally related to health effects; there was a strong sentiment that the only thing most people will be interested in are potential health effects. However, several individuals felt that even if health effects were not addressed, some kind of contextual information or "benchmarks" must be provided so people will have some basis on which to build their own understanding of the results. A few individuals also noted that if numbers alone are released, there will be a plethora of "experts ready to step in" to provide alternative

TABLE 2.4. Matrix of General Communications Issues

Categories	Focus Groups							
	TC	H	YF	FF	PD	SK	WW	TR
1. Belief that the media is not entirely accurate; hence additional mechanisms should be employed.	X	X	X	X	X	X	X	X
2. Belief that dose estimates alone will not be meaningful; must go beyond to interpretation; provide context; address health effects.	X	X	X	X	X	X	X	X
3. Ongoing, two-way, informal communications mechanisms should be employed and continued beyond release of initial results.	X	X	X	X	X			X
4. Results should be expressed in a meaningful, clear, nontechnical "non-jargon-filled" manner; adapt to each group's level.	X	X			X	X	X	X
5. Presentation of results should explain process of study and address limitations of data/method.	X	X	X			X	X	X
6. Public interest groups should be involved in the communications process regarding the results.		X	X	X	X		X	
7. Presentation of results should include background; the history of releases.		X		X	X		X	
<div> <div> TC - Tri-City Residents H - Hanford Site Employees YF - Yakima Valley Farmers FF - Franklin County Farmers </div> <div> PD - Pendleton Residents SK - Spokane Residents WW - Walla Walla Residents TR - Tribal Representatives </div> </div>								

TABLE 2.4. (contd)

Categories	Focus Groups							
	TC	H	YF	FF	PD	SK	WW	TR
8. Presentation of results including all points of view or "sides" so the public can decide what to believe.		X	X	X	X			
9. Information should be distributed in advance to key people (e.g., farm officials, health care professionals) to allow time to prepare for questions.				X			X	X
10. Presentation of results should clearly differentiate between historical events and current ongoing operations at the Hanford Site.			X			X		X
11. Interested groups and/or the public should be allowed access to all information, computer programs, results, etc. for independent review.	X						X	X
12. Results of peer review process should be communicated.			X				X	X

TC - Tri-City Residents
H - Hanford Site Employees
YF - Yakima Valley Farmers
FF - Franklin County Farmers

PD - Pendleton Residents
SK - Spokane Residents
WW - Walla Walla Residents
TR - Tribal Representatives

TABLE 2.5. Matrix of Specific Communications Mechanisms

Categories	Focus Groups							
	TC	H	YF	FF	PD	SK	WW	TR
1. Use of intact networks to aid in distribution of information.		X	X	X	X		X	X
2. Direct mailings/flyers presenting varying viewpoints.	X	X	X		X		X	
3. Focus groups/small group informal meetings.	X		X	X			X	X
4. Articles in specific group newsletters/ mailing lists (e.g., colleges, medical association, Chambers of Commerce, American Association of Retired Persons [AARP], farmers groups).		X	X		X		X	
5. Presentations at schools and colleges.	X	X			X		X	
6. Postings at medical facilities and public health facilities.		X			X		X	
7. Presentations by teams of researchers from different organizations involved in study (TSP, PNL, and CDC).	X		X		X			
8. Panel presentations with all sides present; use a debate format.	X		X		X			
9. Public libraries as informational repositories.	X				X			
10. Presentations to specific groups (e.g., church groups, civic groups, business groups).					X	X		
11. Multi-media approach (newspaper, radio, and television).		X			X			

TC - Tri-City Residents
H - Hanford Site Employees
YF - Yakima Valley Farmers
FF - Franklin County Farmers

PD - Pendleton Residents
SK - Spokane Residents
WW - Walla Walla Residents
TR - Tribal Representatives

TABLE 2.5. (contd)

Categories	Focus Groups							
	TC	H	YF	FF	PD	SK	WW	TR
12. Handouts for calculating individual doses.	X							
13. Video tapes for schools, libraries, etc.							X	
14. Provide tours of the Hanford Site and facilities to help reduce secrecy and build trust.			X					

TC - Tri-City Residents
H - Hanford Site Employees
YF - Yakima Valley Farmers
FF - Franklin County Farmers

PD - Pendleton Residents
SK - Spokane Residents
WW - Walla Walla Residents
TR - Tribal Representatives

interpretations. When this idea was raised in a session, it was generally agreed that such a situation is to some extent unavoidable regardless of how the results are presented. However, it was also generally agreed that contextual information should be provided from the start to avoid a possible demand for reactive interpretations on the part of the researchers and to reduce possible unnecessary confusion.

There was also considerable emphasis on the need for ongoing two-way, and for the most part, informal communications throughout the study. To some extent, this may have been due to the nature of the group sessions themselves (i.e., people generally reacted favorably to the focus groups and therefore may have emphasized this type of communication). However, the overriding strength of this sentiment in all of the groups leads to the conclusion that this was not the case. People generally expressed the idea that such communications would build credibility and allow for more public involvement. Further, they felt that less formal communications mechanisms would facilitate expressing the results more meaningfully to various groups. "Expressing the results in a manner most meaningful to each group" was often

emphasized, as was the need to minimize the technical nature of the results and eliminate unnecessary jargon whenever possible.

Interestingly, a majority of the groups expressed the idea that the process of the study and the limitations of the data and methods used should also be presented with the results. Reasons supporting the need for this information varied. Some individuals felt it would build credibility, others felt it would help people better understand the results, and still others expressed a genuine curiosity concerning how the study was being conducted.

Related to this expressed desire for information on the process of the study was a need for historical information on the Hanford Site; also, the desire that a clear distinction be made between historical events and current operations when the results are released. These needs were essentially driven by the same considerations (e.g., build credibility, build trust, build understanding). However, the desire to separate past events from current events was also driven by concerns over the potential economic impacts the results might have on the area.

There was also a considerable emphasis placed on the need for information of the peer review process and on the need to involve public interest groups in the information review and release process. A related, although somewhat less expressed need, was for public access to the process and results.

Also, it should be noted that in three of the groups, the need to provide advance information to key community leaders (e.g., health care professionals, farm community leaders, tribal leaders) was expressed. The reasons given centered on the notion that such individuals will often be the first ones people turn to for further information. Accordingly, there was a strong feeling that such individuals should be given advance information to allow them to prepare educated reasonable responses *based on their own careful and independent review of the results*. This finding was especially interesting given that the same sentiment was expressed by a health agency representative in one of the individual interviews.

Finally, it is important to recognize that the results from these focus groups should not be interpreted as being representative of the entire range

of the audience population; rather, they should be viewed as indicative of the type of information obtainable in a more controlled research effort, such as a public opinion survey, in which random sampling techniques could be used. In fact, it may be desirable to conduct such a followup survey using the information obtained in the focus groups as the basis for the development of a structured questionnaire.

2.3 INDIVIDUAL AND SMALL GROUP INTERVIEWS - METHODOLOGY

In the individual and small group interviews, emphasis was placed on examining the general objectives of the interviewees regarding HEDR to allow for developing structured objectives trees. The rationale for this approach was threefold: 1) an assessment of the interviewees' level of knowledge regarding HEDR was of marginal interest given that most were very familiar with the study, if not actually involved in some way; 2) the development of structured objectives trees laid the groundwork for potential future decision analytic work; and 3) the elicitation of communications strategies was peripheral given that the individuals interviewed were serving as representatives of intact organizations as opposed to members of the lay public. However, when communications issues arose in the interviews they were noted and, when appropriate, incorporated into the objectives trees.

The general method used in the interviews was less formally structured than that of the focus groups. The model followed was that of asking general questions regarding HEDR in the beginning of the interviews and then shifting toward more specific followup questioning to clarify points raised as the interviews progressed. An example of a general question often used is: "What would constitute complete success for the HEDR Project from your organization's perspective?" Another example: "What would constitute complete failure for the HEDR Project from your organization's perspective?" The nature of followup questions was largely dependent on each interviewee's responses to more general questions; however, in all cases an attempt was made to clearly elucidate each point to ensure that a full understanding had been reached.

In all of the interviews, teams of two interviewers were used with one interviewer serving as a lead and the second serving as a recorder and/or observer. Each interview lasted approximately 1 hour.

2.4 INDIVIDUAL AND SMALL GROUP INTERVIEWS - RESULTS

The objectives trees derived from each interview and a complete objectives tree are presented in Appendix E. Summary write-ups of the interviews, similar to those used in the focus groups, are presented in Appendix F. These objectives trees indicate that there is some overlap in many of the objectives of the various individuals interviewed, and that the majority of these objectives are clearly related to the concerns expressed by the participants of the focus groups.

All the groups felt that ensuring that HEDR is completed in a scientifically sound and credible manner is paramount. However, opinions regarding the likelihood that this will occur varied widely. In fact, representatives for one of the special interest groups felt the project should be completed by an independent contractor, not PNL, to ensure that the results are credible. Further, all of the groups emphasized that the study should not become an end unto itself; rather, it should provide useful information to a variety of individuals and organizations. Useful information was variably defined in terms such as 1) advancing science; 2) examining potential health effects; 3) educating people about radiation and the risks associated with radiation; 4) educating people about perceived negative or positive aspects of Hanford; 5) examining any potential legal implications; 6) explaining historical events; and 7) examining issues regarding credibility and trust.

There was also a heavy emphasis on ensuring complete openness and honesty. This was often expressed in terms of "laying everything on the table" and eliminating secrecy. Perhaps even more emphatic was a clear expression of the importance of providing only information, not persuasion, and ensuring that all of the issues are addressed regardless of how controversial they may be. This notion that the public should "decide" was also raised in the focus

groups. Further, as in the focus groups, a desire to have early information and preparation time was expressed by a representative of one of the health agencies.

Finally, it is important to recognize that although several of the objectives were the same across groups, the relative importance of the objectives to each group was not systematically assessed. Such a systematic measuring of the importance of the objectives to each group may be highly desirable as an aid in future decision-making regarding HEDR.

3.0 MEDIA CONTENT ANALYSIS OF TSP MEETINGS

A content analysis of regional newspaper coverage regarding three TSP meetings was conducted to 1) examine whether there are additional issues and concerns that may need to be addressed in the ongoing refinement of the current HEDR public communications program; and 2) provide a preliminary indication of the level and type (i.e., what the media perceived as key issues) of media coverage the HEDR project received in the latter part of 1988 and early part of 1989.

The coverage analyzed pertained to the second, fourth, and sixth TSP meetings (July 1988, November 1988, and March 1989) and the articles used in the analysis reflected the contents of the HEDR project clippings file. This file, compiled by an independent service organization, is considered to be reasonably complete. A list of the newspapers in which articles appeared and the dates on which the articles were published is shown in Table 3.1.

3.1 MEDIA CONTENT ANALYSIS - METHODOLOGY

A standard content analysis approach consisting of multiple independent steps was used in the media analysis. First, two researchers abstracted comments from the transcripts of the TSP meetings to provide a background of familiarity as a basis for the analysis of newspaper coverage. Following this, the researchers read through the relevant clippings for the calendar months in which the TSP meetings took place to become familiar with the depth of coverage that derived directly from each of the TSP meetings, or was attributed to TSP members.

Once a sufficient level of familiarity was achieved by both researchers, one researcher constructed a set of content categories for the clippings from July 1988. Next, this researcher went back and classified the articles, adding several new categories and refining the original category descriptions.

After the first researcher had completed this initial content categorization, a second researcher used the categories and classification of the

TABLE 3.1. Newspapers Reviewed in Content Analysis

<u>Newspaper</u>	<u>Date Articles Appeared</u>
Spokane Chronicle	July 26 and 28, 1988
Spokesman-Review (Spokane)	July 25 (cartoon), 1988 July 26 (2 articles), 28, and 29, 1988
Tri-City Herald (Tri-Cities)	July 24, 26, 28, and 29, 1988
Tacoma News Tribune	July 26, 1988
Vancouver Columbian (Vancouver, Washington)	July 24, 1988
Yakima Herald-Republican	July 25 and 29, 1988
Longview Daily News	November 14, 1988
The Herald (Everett)	November 12 and 14, 1988
The Oregonian (Portland)	November 4, 5, 9, 12, 13, and 14, 1988
The Herald (Dublin, California)	November 14, 1988
Spokesman-Review (Spokane)	November 6, 12, and 13, 1988
Idahonian Daily News (Moscow, Idaho)	November 12 and 13, 1988
The Olympian (Olympia)	November 12 (2 articles) and 14, 1988
Seattle Times	November 10, 12, and 13, 1988
Tacoma News Tribune	November 11, 1988
Tri-City Herald (Tri-Cities)	November 3, 4, 6, 10, 12, 14, 29, 1988
East Oregonian (Pendleton)	March 18, 1989
The Olympian (Olympia)	March 19, 1989
Seattle Post-Intelligencer	March 18, 1989
Spokesman-Review (Spokane)	March 18, 1989
Tri-City Herald (Tri-Cities)	March 18 and 19, 1989

July 1988 articles to classify the March 1989 articles. After this, the researchers met to discuss problems and reconcile differences. This led to combining three categories and establishing three additional categories for a total of 14 categories. Finally, the November 1988 articles were classified.

Once the final set of categories and classifications had been developed, the amount of coverage devoted to each topic was measured using two separate indices: 1) a total of the number of columnar inches devoted to each topic across all of the newspapers by month; and 2) a frequency count of the number of times each topic was touched upon across all of the newspapers by month. This allowed for the rank ordering of these indices to cross-check the accuracy of the results and facilitate interpretation.

3.2 MEDIA CONTENT ANALYSIS - RESULTS

The content analysis produced 14 distinct categories of topics. These topics, the corresponding number of newspaper columnar inches devoted to each, and the resulting rank each topic received based on the number of inches devoted to it are presented in Tables 3.2, 3.3, and 3.4 for the months of July 1988, November 1988, and March 1989, respectively. In addition, the frequency of comments made regarding each category and the corresponding rank based on this index are also presented. Finally, the actual number of inches devoted to each topic in each individual article is presented in Appendix F.

Tables 3.2, 3.3, and 3.4 indicate that there was a fairly strong agreement between the rank orderings based on the two indices employed. Accordingly, given that the inches per topic index is a standard index, the remaining discussion of the media content analysis will be based on the results derived using this index. However, it is important to note that this index is one of many which could be used and no attempt was made to evaluate the coverage in a qualitative sense (e.g., prominence of article location within each paper; level of detail).

An examination of the categories indicates that the issues raised in coverage of these TSP meetings are very similar to those raised in the focus

TABLE 3.2. Quantitative Analysis of Media Comments - July 1988

<u>Category</u>	<u>Total Newspaper Columnar Inches</u>	<u>Rank Based on Columnar Inches</u>	<u>Frequency of Comments</u>	<u>Rank Based on Frequency</u>
1. Health effects allegations from downwinders; public concerns; government blame and mistrust	18	5	12	5.5
2. Controversy over the organization of the TSP (state member, Native American membership, etc.)	50-7/8	1	13	4
3. Credibility of DOE/Battelle and TSP role in ensuring independence; criticism of HEDR; secrecy issue	19-1/2	3	16	2
4. Communication role of TSP and the State of Washington	2-1/4	12	2	11.5
5. Uncertainty about releases and effects	0		0	13.5
6. Project descriptions and plans of HEDR	39-1/4	2	25	1
7. Releases of radiation	11-3/4	6	14	3
8. Project descriptions of CDC health effects study and CDC-related issues	18-1/8	4	12	5.5
9. Native Americans and special status because of lifestyle	10-7/8	7	7	8
10. Definitions of radiation, e.g., curies, comparisons with Three Mile Island (TMI), role of iodine and its possible link with cancer	9-3/8	8	10	7
11. Biographical data on TSP members	6-1/2	9	4	9
12. Advice from public on HEDR business	4-1/8	11	3	10
13. Lawsuits, potential liabilities	5-1/2	10	2	11.5
14. Broader radiation, nuclear issues	<u>0</u>	0	<u>0</u>	13.5
TOTAL	196-1/8		120	

TABLE 3.3. Quantitative Analysis of Media Comments - November 1988

<u>Category</u>	<u>Total Newspaper Columnar Inches</u>	<u>Rank Based on Columnar Inches</u>	<u>Frequency of Comments</u>	<u>Rank Based on Frequency</u>
1. Health effects allegations from down-winders; public concerns; government blame and mistrust	61-1/8	2	34	3
2. Controversy over the organization of the TSP (state member, Native American membership, etc.)	0	0	0	13.5
3. Credibility of DOE/Battelle and TSP role in ensuring independence; criticism of HEDR; secrecy issue	60-5/8	3	49	2
4. Communication role of TSP and the State of Washington	32-7/8	4	18	6
5. Uncertainty about releases and effects	16-5/8	8	13	8
6. Project descriptions and plans of HEDR	80-1/8	1	59	1
7. Releases of radiation	23-3/8	5	20	4.5
8. Project descriptions of CDC health effects study and CDC-related issues	22-7/8	6	20	4.5
9. Native Americans and special status because of lifestyle	1-1/4	12	2	12
10. Definitions of radiation, e.g., curies, comparisons with Three Mile Island (TMI), role of iodine and its possible link with cancer	5-1/4	11	7	11
11. Biographical data on TSP members	6	10	9	10
12. Advice from public on HEDR business	10-7/8	9	12	9
13. Lawsuits, potential liabilities	0	0	0	13.5
14. Broader radiation, nuclear issues	<u>17-3/4</u>	7	<u>16</u>	7
TOTAL	338-3/4		259	

TABLE 3.4. Quantitative Analysis of Media Comments - March 1989

<u>Category</u>	<u>Total Newspaper Column Inches</u>	<u>Rank Based on Column Inches</u>	<u>Frequency of Comments</u>	<u>Rank Based on Frequency</u>
1. Health effects allegations from downwinders; public concerns; government blame and mistrust	1-1/4	11	1	10.5
2. Controversy over the organization of the TSP (state member, Native American membership, etc.)	0	0	0	13
3. Credibility of DOE/Battelle and TSP role in ensuring independence; criticism of HEDR; secrecy issue	8-7/8	3	6	3
4. Communication role of TSP and the State of Washington	5	4.5	5	4
5. Uncertainty about releases and effects	4-7/8	6	3	6.5
6. Project descriptions and plans of HEDR	34-3/4	1	18	1
7. Releases of radiation	5	4.5	1	10.5
8. Project descriptions of CDC health effects study and CDC-related issues	9-1/8	2	9	2
9. Native Americans and special status because of lifestyle	4-1/4	8	4	5
10. Definitions of radiation, e.g., curies, comparisons with Three Mile Island (TMI), role of iodine and its possible link with cancer	0	0	0	13
11. Biographical data on TSP members	0	0	0	13
12. Advice from public on HEDR business	3-1/4	9	3	6.5
13. Lawsuits, potential liabilities	1-3/4	10	2	8.5
14. Broader radiation, nuclear issues	<u>4-3/8</u>	7	<u>2</u>	8.5
TOTAL	82-1/2		58	

groups and interviews. Also, the relative emphasis placed on certain categories here (e.g., health effects, credibility) is very similar to that of the focus groups and interviews.

However, perhaps the most salient finding regarding these results is the relatively sparse coverage for each of the TSP meetings. This is especially the case for the July 1988 and March 1989 meetings. Further, an examination of the results presented in Appendix F supports the notion that relatively little in-depth coverage was provided for any given category in any given article. In fact, the maximum amount of coverage given to any topic in a single article was 13-5/8 columnar inches and the longest single article devoted to coverage of the TSP meetings was 26-3/4 columnar inches. Apparently, either the press did not feel that these TSP meetings were particularly newsworthy, or the press was not provided with a great deal of newsworthy information. Regardless of the explanation for this finding, it is interesting to note that if it is common to alternative media sources and additional TSP meetings, then it is not surprising that only a few individuals in the focus groups expressed a great deal of awareness on the specifics of HEDR. Still, it should be noted that within the actual coverage provided for the three TSP meetings, descriptions of HEDR and project plans (Category 6) received the greatest attention.

Other interesting findings were that issues surrounding credibility (Topic 3) were consistently salient, receiving a rank of 3 throughout the coverage of the meetings, and concerns regarding health effects (Category 1) were clearly prevalent in the coverage regarding two of the three meetings. Also, there appeared to be the beginnings of a trend toward communications-related topics (Categories 4 and 5) receiving greater attention as time progressed.

Finally, it is important to recognize that media coverage may well increase when results become available. Hence, additional followup work may be necessary to examine the causes for the relatively sparse coverage afforded these TSP meetings examined and caution should be taken in extrapolating these results to future coverage.

4.0 SURVEY ANALYSIS

An examination of published, public opinion surveys was conducted in order to 1) examine whether information relevant to general HEDR communications issues could be gleaned from the surveys; 2) provide information on how HEDR may relate to broader issues surrounding the Hanford Site and the nuclear industry in general; and 3) determine if information gathered by using the more systematic survey approach would provide support for findings from the focus groups and interviews. The scope of this examination was limited to published surveys which were conducted within the last 7 years in the Pacific Northwest region.

The examination identified five surveys deemed to contain potentially relevant information. In the following sections, a brief description of each of these surveys is presented, as well as a summary discussion of the results of all of the surveys.

4.1 SURVEY ANALYSIS - SUMMARY DESCRIPTIONS OF SURVEYS

The surveys conducted by the several Washington State agencies and three Northwest newspapers are explained in the following subsections.

4.1.1 Advisory Council Survey

In 1983, the Washington State Advisory Council on High-Level Radioactive Waste Management sponsored a statewide survey as part of its public information program. The telephone interview poll, conducted by Communication Design, Inc. of Seattle, interviewed a sample of 601 state residents, drawn via random digit dialing, between September 28 and October 7, 1983.

The questionnaire was developed jointly by a subcommittee of the Advisory Council and Communication Design, Inc., and focused on a wide range of issues concerning nuclear power and nuclear waste. The results of the survey were published in a report, "Nuclear Waste in Washington: Citizens' Awareness and Information Needs," prepared by Communication Design in November 1983 and distributed by the Washington State Office of High-Level Nuclear Waste Management. Complete summary results of this survey are presented in Appendix G.

4.1.2 Spokesman-Review Surveys

The *Spokesman-Review* sponsored two public opinion polls in early 1985 concerning the possible location of the nation's first permanent nuclear waste repository at Hanford. The statewide poll, conducted by GMA Research Corporation of Bellevue, Washington, involved telephone interviews with a sample of 400 Washington residents on February 11th. A similar poll of residents of the Tri-Cities area was conducted by the Bureau of Business Research (BBR), Eastern Washington State University, Cheney, Washington. Telephone interviews were conducted with 385 residents of the Tri-Cities area during the week of January 21st. The results of the two surveys were published in the *Spokesman-Review* as part of a detailed series on the possible location of a nuclear waste repository at Hanford. In addition, the paper provided the researchers with more detailed reports of results prepared for it by GMA and the BBR. Complete summary results of this survey are presented in Appendix H.

4.1.3 Seattle Times Surveys

The *Seattle Times* sponsored three 1986 public opinion surveys focusing on the possible location of the nation's first permanent nuclear waste repository at Hanford, including two statewide polls and one poll of the Tri-Cities area. The first statewide survey was conducted by Communication Design, Inc. between February 1st and 6th via telephone interviews. The 506 residents interviewed were selected as follows: households were selected for inclusion in the sample by random digit dialing. The number of interviews in each county was in proportion to its population. Interviews were conducted only with persons who said they were "registered to vote."

The second statewide survey and the survey of Tri-Cities residents were conducted by Elway Research, Inc. between July 27th and 29th. The statewide sample of 409 registered voters were selected the same way as was the February sample. The sample of 250 registered voters in the Tri-Cities area were selected via random digit dialing in proportion to the "relative population in Richland, Kennewick, and Pasco."

The results of the first survey were published in a *Seattle Times* series on the nuclear repository siting process. The results of the second statewide survey and the Tri-Cities survey were published on July 31, 1986. In addition, the paper provided the researchers with more detailed reports prepared for it by Communication Design and Elway Research. Complete summary results of this survey are presented in Appendix I.

4.1.4 Tacoma News Tribune Surveys

The *Tacoma News Tribune* conducted three public opinion surveys concerning the Hanford Site in late 1986. First, it conducted "a scientific, random survey of 1,000 registered voters of all age groups from across the state between September 22nd and 28th." Second, at approximately the same time, it conducted a survey of 200 registered voters in the Tri-Cities area. Third, between October 26th and 28th, it conducted another statewide survey, this time of 600 registered voters.

The results of the surveys were published in the *Tacoma News Tribune* on October 7, 1986 and November 2, 1986. The results of the September surveys were also published in the *Tri-City Herald* on October 8, 1986. Because they are reported in more detail in the latter, figures from the *Tri-City Herald* were used in the summary of results presented in Appendix J.

4.1.5 Hanford Health Concerns Survey

In 1986 the Washington State Nuclear Waste Board and Nuclear Waste Advisory Council sponsored a survey to determine the degree to which "nuclear operations" at Hanford were viewed as a health threat by residents of Eastern Washington. The survey, which was conducted by Market Trends Research, Bellevue, Washington, and Hall & Associates of Seattle, was used to obtain background information for the health effects panel discussions held in Richland during September 1986.

Telephone interviews were conducted between August 27 and September 4 with 600 residents of five Eastern Washington counties: 125 in Benton County, 75 in Franklin County, 202 in Spokane County, 80 in Walla Walla

County and 118 in Akimbo County. Respondents were heads of households selected at random using the random digit dialing method and prefix quotas by county.

The number of interviews within the five counties was *not* proportional to actual county populations, which would have resulted in well over half of the interviews being conducted with residents of Spokane County. Consequently, the results for the total, five-county population were *weighted*, so that they accurately represent this population. The *unweighted* results for each of the five counties were also reported. However, it should be emphasized that because of the small samples used for each county, the margins of error are quite large when generalizing to the total populations of the five individual counties. Thus, caution should be used when comparing responses across the five counties.

A unique aspect of this survey is that the introduction to the interview did not make any reference to Hanford or nuclear issues. In addition, the first three open-ended questions asked respondents to *volunteer* information on health risks without making any mention of Hanford or nuclear issues. While subsequent questions referred to "nuclear operations" in general rather than "nuclear waste" per se, responses to the several open-ended questions demonstrate the significance of nuclear waste in the public's perception of Hanford.

Highlights of the survey results were reported in "Hanford Health Concerns Survey: Executive Survey" and complete results were reported in "Hanford Health Concerns Survey: Final Report," both prepared for the Washington State Nuclear Waste Board and Nuclear Waste Advisory Council by Market Trends Research and Hall & Associates in September 1986. Complete summary results of this survey are presented in Appendix K.

4.2 SURVEY ANALYSIS - GENERAL RESULTS

An examination of the results from these surveys indicates that the majority of the information elicited pertains to issues surrounding the siting of a high-level nuclear waste repository on the Hanford Site. Interestingly, the level of knowledge regarding this issue tends to support one of

the findings from the focus groups: many people appear to be more concerned about current issues surrounding the Hanford Site than previous issues. For example, in a February 1986 statewide survey, 88% of those polled indicated that they were "aware that Hanford was one of three sites being considered for the nation's first permanent nuclear waste site" (see Appendix H, question 1). Similarly, in a July 1986 statewide survey 81 percent of those polled indicated that the "question of whether to establish a nuclear waste repository at Hanford" was either "very" or "somewhat" important to them personally (see Appendix I, question 3). These are high levels of visibility for a public issue. Whether actual surveys regarding public awareness of HEDR would produce similar results is an open point. However, information derived from the current analyses indicates that HEDR is of relatively low visibility.

Perhaps more impressive, relevant to HEDR, is a September 1986 survey of residents of five Eastern Washington counties regarding their "health concerns," where 20% volunteered some aspect of nuclear operations at Hanford as posing "the greatest risk to the health and well-being of your family" without having any clues that the survey was focused on Hanford (see Appendix K). Clearly this result lends credence to the notion that most people are primarily concerned about potential health effects associated with operations at the Hanford Site.

Also of interest is the finding from one survey that 59% of those polled would be interested in more information about the selection process used "if the Hanford Reservation were selected as a test site" for placing a "high-level nuclear radioactive waste repository" (see Appendix G, question 13). This finding appears related to the desire for information about the process of the HEDR project expressed in some of the focus groups.

Further, given that several of the members of the TSP are university professors, it is of interest that "university scientists" were definitely viewed as the most credible sources of information "when it comes to providing information about high-level radioactive waste and waste disposal" (see Appendix G, question 17). Finally, perhaps the most interesting finding, in terms of opinions surrounding the siting of a high level nuclear

waste repository as they relate to HEDR, was that the majority of individuals polled regarding "who should have the final say..." indicated that it should be the "residents/citizens" of the area (see Appendix I, question 10).

5.0 ISSUES FOR CONSIDERATION IN FUTURE COMMUNICATIONS

The TSP Directive 89-7 resulted in PNL collecting a considerable amount of information, which may be useful to the TSP in conducting its ongoing communications program. Several issues for consideration in enhancing the program were identified in the current study. Many of these issues will be important as the TSP finalizes plans for the release of Phase I results. This is especially the case given that these issues come directly from information conveyed by members of the lay public and representatives of intact organizations interested in HEDR. Although risk communications experts are not in agreement regarding how several of these issues should be resolved (e.g., whether health effects should be discussed at all in the absence of epidemiological studies, whether dose estimates should be provided with or without contextual information), it is clear from the current study that members of the lay public have strong feelings about the appropriate resolutions of these issues. Accordingly, given that the lay public represents the majority of the audience for the HEDR study, it is apparent that careful consideration should be given to the views of these individuals in order to ensure that their information needs are met.

The following sections provide a brief summary of each of these salient issues. The issues are divided into two broad categories: content-related issues, and process-related issues. Although these two categories can be viewed as somewhat overlapping, content-related communications issues are essentially those that focus on *the actual information* to be communicated, and process-related issues focus on *how* the information is communicated.

5.1 CONTENT-RELATED COMMUNICATIONS ISSUES

Interestingly, content-related communications issues received somewhat less attention from the audience than process-related issues in the current study. However, it is still critical that these issues be addressed and it is very likely that content-related issues will become more prevalent as the study progresses and results become available. The following subsections outline the key content issues identified at this time.

5.1.1 Health Effects Information

The heavy emphasis placed on health effects in all of the information sources examined clearly indicates that careful consideration should be given to decisions regarding how to deal with this issue. These issues include 1) whether baseline health effects information derived from relevant literature sources should be provided as an interim measure prior to the completion of the CDC study; 2) whether individuals who present information should be prepared in advance to field questions regarding health effects; 3) whether clear distinctions can or should be made between those health effects that could be caused by radiation releases and those that could not; 4) whether clear distinctions can or should be made between those categories of individuals who may be at risk and those who are not; and 5) whether descriptions of the CDC health effects study should be presented concurrent with Phase I results.

5.1.2 Contextual Information

The need for contextual information regarding the results was also apparent, regardless of whether health effects are dealt with in the Phase I release. In addition, issues regarding two basic types of non-health effects contextual information should be examined. These are 1) whether and/or how to present relative comparisons of doses within the study area; and 2) whether and/or how to present comparisons of the doses to alternative referent points or benchmarks such as background radiation.

5.1.3 Historical Information

Clearly, issues regarding the degree to which historical information is included in the results must be addressed. These issues include 1) whether historical information should be included; 2) the level of detail at which historical information should be presented; 3) whether information surrounding why the releases occurred can be, or should be, included; and 4) whether and/or how a clear distinction should be made between issues regarding current operations at the Hanford Site versus historical events.

5.1.4 Information Regarding the Study Itself

Several issues regarding the need for general information about the study were raised. Accordingly, these issues should also be discussed in the context of the release of Phase I results. Specific issues regarding the study itself are 1) the degree to which the scope of the study is outlined; 2) how the limitations of the study can be most accurately discussed; 3) the level of detail at which information regarding how data for the study was collected is presented; 4) the level of detail at which information regarding the computer modeling process is presented; and 5) the degree to which future plans regarding the study should be presented.

5.1.5 Level of Detail of Dose Information

Several issues surrounding the level of detail at which the dose estimates should be presented become apparent upon an examination of the results of this study. These include 1) at what level should the dose estimate distributions be aggregated to provide the most meaningful results; 2) which variables should be used to drive the aggregations; 3) whether multiple sets of materials with varying levels of information should be developed for conveying the results to groups with varying interest levels; 4) how many sets of information should be prepared; and 5) what types of display formats are most conducive to accurately conveying the results to different groups.

5.2 PROCESS-RELATED HEDR COMMUNICATIONS ISSUES

Process-related communications issues received a considerable amount of attention in the current study. Most of the issues raised were not entirely surprising; however, a few of the issues raised were unexpected and highly insightful. Further, a great deal of information was collected that may be useful in further refining the current TSP communications program. The following sections present a brief outline of each of the pertinent process-related communications issues.

5.2.1 Criticality of Maintaining Openness and Honesty

Although the need for complete honesty and openness regarding HEDR has been known from the start, this notion is reiterated here because of the strength of sentiments expressed in the focus groups and interviews. Clearly, there was an exceedingly strong desire for all of the information to be "put on the table" so that the public can examine it and come to its own conclusions. Accordingly, careful consideration should be given to how this can be accomplished without consistently overwhelming the public with a plethora of obtuse information. Consideration should be given to 1) identifying locations where all of the information can be maintained in a public repository for independent review; 2) increasing communications with, and participation of, public interest groups; 3) determining ways to further incorporate the peer review process in the communications process; and 4) determining ways to increase general public involvement. Whereas the aforementioned ideas are fairly general and strongly related to previously mentioned content-related issues, the following sections include discussion of more specific mechanisms suggested by participants in the audience analysis. However, it is clear that in order to build and maintain credibility, every attempt must be made to ensure that accurate and complete information is consistently conveyed throughout the communications process.

5.2.2 Increased Interactions with Media Representatives

Given the findings from the audience and media analyses, there is clearly a need to increase communications with media representatives. The considerations driving this need are twofold: 1) it appears there may be a significant portion of the public wary of the accuracy of media coverage of studies such as HEDR; and 2) it appears that either media representatives have not been provided with meaningful information in the past, or media representatives have not felt that the project has been very newsworthy to this point. Regardless of the reasons, it is apparent that every effort must be made to ensure that the media receives accurate, clear, and useful information in the future. Further, it is important that no attempt is made to persuade media

representatives; rather all efforts should be directed at ensuring that accurate information is conveyed to the public.

5.2.3 Emphasis on Informal, Two-Way Communications and Networking

The potential need to shift the emphasis of communications sessions toward more informal dialogue, as opposed to formal "across the table" presentations, is also highly apparent, as is the need to place an increased emphasis on communicating through multiple channels. A shift of this type would be beneficial in several ways, including 1) helping build credibility and trust; 2) supplementing attempts to communicate through the media; 3) enabling project staff and the TSP to better understand the public's concerns; 4) enabling a better understanding of the results by the public; 5) likely providing for more sources of data for later phases of the study; and 6) continuing to open channels for greater public involvement as the study progresses.

Specific examples of the types of groups and individuals that might be interested in informal communications sessions include intact community groups, farm commodity groups, student groups, community leaders, health care professionals, and a variety of "network leaders." Informal meetings could be supplemented with requests to provide information for various groups' newsletters or newspapers (e.g., Chambers of Commerce, farm commodity groups, student organizations).

5.2.4 Emphasis on Maintaining Ongoing Communications

Once informal networks have been established and the Phase I results are released, it is clear that consideration should be given to continuing indepth communications throughout the project. Several individuals alluded to the notion that often in studies such as this, the results are presented on a one-time basis and the researchers go back to their work and nothing is heard from them for years. If this should occur with HEDR, then any credibility and trust developed during these initial efforts will most likely erode with time.

5.2.5 Emphasis on Using Teams of Researchers to Present Results

Consideration should be given to using teams of researchers, comprised of PNL project staff members, TSP members, and CDC project staff members, for

presenting results and answering questions. Further, it may be desirable to provide communications training for these teams. There are several advantages for using a team approach, including 1) increasing communications among the various researchers themselves; 2) ensuring that individuals who actually conducted various aspects of the research are available to answer questions; and 3) providing a cross-section of expertise to maximize the ability of teams to respond to diverse questions.

5.2.6 Emphasis on Coordination with State Agencies and Community Leaders

There is an apparent need to consider providing advance information to various state agencies and local government representatives or community leaders. This need exists because these individuals are most likely to be questioned concerning the results once they are released. This would lay the groundwork for allowing them to carefully consider the study results and develop their own opinions. Thus, these individuals will be able to respond to questions in a proactive rather than reactive manner, and such responses will most likely facilitate the dispersement of more accurate information.

5.2.7 Emphasis on Continued Research Regarding Audiences and Communications Needs

Given the preliminary nature of the current study, consideration should be given to conducting additional communications related to research. Potential future research regarding HEDR includes 1) continuing focus groups research in additional locations; 2) conducting a large-scale public opinion survey based on results obtained in the current research; 3) continuing decision analytic work based on the groundwork laid in the current study; and 4) conducting more in-depth examinations of media coverage as the study progresses.

6.0 REFERENCE

Byram, S. J. 1989. Summary of Literature Review of Risk Communication - Hanford Environmental Dose Reconstruction Project. PNL-7226 HEDR, Pacific Northwest Laboratory, Richland, Washington.

APPENDIX A

TSP DIRECTIVE 89-7 - PRESENTATION OF TECHNICAL MATERIAL TO THE PUBLIC

TECHNICAL STEERING PANEL RESEARCH DIRECTIVE

Directive Number: 89-7
Date: May 20, 1989
Subject: PRESENTATION OF TECHNICAL MATERIAL TO
THE PUBLIC

DISCUSSION:

The Technical Steering Panel (TSP) recognizes that the characterization of uncertainty in dose estimates will be an essential result of the HEDR Project. A thorough and accurate accounting of uncertainties must be available to all interested persons. Such an accounting must be understood in order to be truly available. While scientific and technical audiences will be able to deal with information presented in a technical format, interested lay persons will require clear, nontechnical explanations of the causes and magnitudes of uncertainties. An understanding of the causes of uncertainties is required for dose estimates and their uncertainties to be credible and to enhance the meaning and limitations of dose estimates.

The TSP is responsible for selecting the methods that will be used to present information about HEDR results, including uncertainties, to the lay public. However, the TSP recognizes that Battelle Pacific Northwest Laboratories (PNL) and the United States Department of Energy (DOE) may continue to be a source of this information after completion of the HEDR project. The TSP, therefore, needs to examine all possible methods for communication that might be used during and after the HEDR Project, in order to select methods that will be most effective.

ACTION TO BE TAKEN:

The TSP hereby directs the Battelle staff to investigate methods for presenting to the lay public information about both the causes and the magnitudes of uncertainties in dose estimates. Past examples of communication of technical information to lay audiences, both by PNL and by other organizations, should be critically reviewed. In addition, PNL should seek out and consider innovative methods for such communication. Methods of communicating both to mass audiences and to individuals should be considered; the latter should include persons for whom dose estimates are calculated.

Battelle is further directed to prepare a report of the investigation for delivery to the TSP no later than February, 1990. This report should include descriptions of the methods of communication that are considered, along with critical evaluations of each method's cost and effectiveness.

John E. Till, Ph.D.
Chairman, Technical Steering Panel

APPENDIX B

FOCUS GROUP MODERATOR'S GUIDE AND BRIEFING MATERIALS

APPENDIX B

FOCUS GROUP MODERATOR'S GUIDE AND BRIEFING MATERIALS

GROUP COMPOSITION:

I. Introduction

A. Facilitators

1. Names
2. Occupations

B. Ground Rules

1. Role of moderator
2. Role of assistant
3. Role of observers
4. Confidentiality
5. What will be done with information

C. Participants

1. Names
2. Occupations
3. Residence
4. Length of time in area

D. Meeting Purpose

We are part of a larger research team that has been investigating the possible effects of releases of radioactive materials over the last several decades from the Hanford Site. Preliminary results from this study will be available in a few months. The reason we have asked you to come to this meeting is to discuss the study with you, as representatives of _____ in order to get an understanding of what concerns you may have about the study, and how we can better communicate the results of the study to you and individuals like yourselves.

II. Assessment of Knowledge/Options Regarding HEDR

A. Ask what they know and/or how they feel about:

1. Past releases of radioactive materials from Hanford.
2. Current study, (HEDR, but still don't give name) of exposure levels resulting from such releases.

Options:

1. General group discussion for larger groups.
 2. Nominal group technique for smaller groups.
- B. Regardless of options, have assistant record comments of flip chart or board.
1. Knowledge-based comments.
 2. Affective (feelings)-based comments.
- C. Attempt to get a sense of the importance of the topic to the group. Techniques may vary from direct questioning to simple observations based on the group. Also ask them to individually rank their top 3 concerns on paper (if using nominal group technique).

III. Briefing

- A. Distribute materials and allow to read.
- B. Clarify verbally any questions about content of material only. Do not attempt to be an expert.

IV. Post-Briefing Assessment

- A. What are your concerns/fears, given the briefing data?
- B. What do you think are key issues for members of your group, given the briefing data?
- C. What are areas you would like to know more about given the briefing data?
- D. Has the importance of the issues changed, in your minds, as a result of the briefing? How important are the following issues:
 1. Releases.
 2. Estimating the exposure rates.
 3. Health effects of exposure.
 4. Communicating results with the public.
- E. Now that we've discussed the study and the roles of the TSP, PNL and CDC, do you have any concerns about their roles in the study?
- F. What, if anything, can we do to address these concerns?

V. Planning for Future Communications to the Public

- A. Where do you usually get information about topics like this?

B. Are there other "channels" that should be used: Would you use, come to, or like to see any of the following regarding the results of the study?

1. Mail-outs.
2. Displays.
3. Presentations to community groups.
4. Presentations to community churches.
5. Public forums.

C. How much detail should be provided? What would make the results most meaningful?

D. Who would be the best people to present the results?

E. Who most needs to know the results?

VI. Conclusion/Wrap-Up

A. Would they like further involvement? Would you like to be part of another group to help us examine the effectiveness of different ways of communicating the results?

B. Further questions?

C. Information number.

D. Mailing list.

E. Schedule of next TSP meeting.

F. Thank them for participating.

THE HANFORD ENVIRONMENTAL DOSE RECONSTRUCTION PROJECT: BACKGROUND INFORMATION

The Hanford Environmental Dose Reconstruction (HEDR) Project was established to estimate radiation doses that people could have received from nuclear operations at the U.S. Department of Energy's Hanford Site since 1944. Because regional residents will use the dose estimates to evaluate impacts to themselves, public involvement and understanding of the project are critical to its success.

The Project's Beginnings

In recent years, many people have raised concerns about possible health effects to the public from more than 40 years of nuclear operations at the Hanford Site. In 1986, the Hanford Health Effects Review Panel--convened by the Centers for Disease Control (CDC) at the request of the Washington State Nuclear Waste Board and the Indian Health Service--recommended that potential doses from radioactive releases at Hanford be reconstructed. An independent Technical Steering Panel (TSP) was formed to direct this dose reconstruction effort.

Independent Technical Direction

The HEDR Project is managed and conducted by Battelle staff at the Pacific Northwest Laboratory under the direction of the TSP. The TSP consists of national technical experts selected by regional university representatives as well as individuals who represent Oregon and Washington States, Pacific Northwest Indian tribes, and the general public. Rather than simply providing oversight, the TSP reviews, evaluates, and approves all major technical decisions and reports associated with the project. The Department of Energy funds the work but provides no technical direction or oversight.

Reconstructing Doses

Developing estimates of radiation doses from past exposure is somewhat like constructing a huge jigsaw puzzle whose pieces are scattered around the neighborhood. HEDR researchers must search for and extract pertinent information from historical records, such as types and amounts of airborne and liquid emissions from Hanford facilities, ways radionuclides were transported through the environment, and measurements of radionuclides in the environment. In addition, researchers must reconstruct historical information that may have affected people's radiation exposure, such as population distributions, food consumption, and lifestyles. All information is fed into a complex computer program designed specifically to estimate radiation doses people could have received many years ago.

Radiation Doses Separate from Health Effects

It is important to understand that the HEDR Project is limited to estimating radiation exposure, not determining whether people's health was affected by that exposure. However, the CDC will use some of the dose estimates to determine whether a higher-than-normal incidence of thyroid disease exists in the region and whether such disease can be correlated to radiation from Hanford operations. The CDC study focuses on thyroid disease because airborne radioactive iodine--the Hanford radionuclide that contributes most to radiation dose--tends to concentrate in the thyroid gland.

Public Involvement Critical

The TSP conducts public meetings about every 2 months, provides public access to the data used in reconstructing doses, and sends current information to people who have asked to be put on a mailing list. Many residents have commented on various aspects of the dose reconstruction effort. The public's suggestions help the TSP and HEDR staff to better conduct the study and communicate project results.

In its first phase, the dose reconstruction study focuses on people who lived in the 10 counties closest to the Hanford Site.

Technical Cases Separate from Health Issues

In a recent article published in the *Health Affairs* journal, a group of researchers from the University of California, Berkeley, and the University of Washington, Seattle, reported on a study of health care delivery in the United States. The study found that health care delivery is often fragmented and inefficient, with many patients receiving care from multiple providers who do not communicate with each other. The researchers argue that this fragmentation leads to poor patient outcomes and increased costs. They propose a number of reforms to improve the system, including the creation of a national health care system, the implementation of a single-payer system, and the creation of a national health care workforce.

Public Involvement Critical

In a recent article published in the *Health Affairs* journal, a group of researchers from the University of California, Berkeley, and the University of Washington, Seattle, reported on a study of health care delivery in the United States. The study found that health care delivery is often fragmented and inefficient, with many patients receiving care from multiple providers who do not communicate with each other. The researchers argue that this fragmentation leads to poor patient outcomes and increased costs. They propose a number of reforms to improve the system, including the creation of a national health care system, the implementation of a single-payer system, and the creation of a national health care workforce.

The map shows the United States with state boundaries and major cities labeled. The map is oriented with the United States flag in the background. The map is a simple line drawing with state boundaries and major cities labeled. The map is oriented with the United States flag in the background.

APPENDIX C

SUMMARY WRITE-UPS OF FOCUS GROUP RESULTS AND OBJECTIVES TREES

APPENDIX C

SUMMARY WRITE-UPS OF FOCUS GROUP RESULTS AND OBJECTIVES TREES

FOCUS GROUP CONTACT SHEET

Target Group: Tri-Cities Residents

Selection Method: Randomly selected from the Tri-Cities phone book

Date/Time: October 30, 1989, 7:00-9:00 p.m.

Location/Address: Lord of Life Lutheran Church
640 N. Columbia Center Blvd.
Kennewick, WA 99336

PNL Moderator/Recorder: Joe Montgomery/Chris Holmes

Observers: None

Attendees/# Favorably Committed/# Contacted: 6/14/93

I. Knowledge Assessment

All of the individuals in the group were aware of the previous releases of radiation from the Hanford Site. However, level of knowledge varied from a general awareness that "some releases occurred sometime in the past" to fairly specific knowledge of the timeframes for various types of releases (i.e., accidental versus intentional) and the magnitude of the releases. A majority of the group believed that the releases only occurred in the 1940s and 1950s, and there was a general consensus that the releases were kept secret due to "matters of national security." Interestingly, only one participant exhibited any real sense of anger regarding such a policy. The rest of the group expressed opinions ranging from neutrality to what is best characterized as active support and understanding of the policy. There was also an underlying current of fatalism among the group members regarding the notion that the Government will do what it wants to do regardless of any concern for the public.

Only 2 of the 6 participants were aware that "some type of study was being conducted regarding the releases," although none of the participants were aware of the exact nature of the HEDR study (i.e., that it is strictly intended as a dose reconstruction study). Finally, those who were aware of the study thought that it was largely directed toward examining potential health effects of the releases, and the other participants adopted the same belief almost immediately.

II. Concerns

Research Concerns

Concern was expressed that "although the researchers will most likely do the best job they can, their results will only be as good as the data they are given and the government may still be trying to withhold information."

Concern was expressed that the accuracy of the data could be questionable given the heavy reliance on archival information, and the notion of "estimating" doses made many people uncomfortable. They felt that if there is uncertainty, then the results could potentially cause unnecessary harm in the form of unwarranted new concerns being generated in individuals who previously were not concerned.

Concern was also expressed that it may be inappropriate to release Phase I information if the results are just preliminary. General consensus was that no matter how much you emphasize the preliminary nature of the data, people will "read too much into the results" and begin reacting while the rest of the study is being completed.

As noted above, some individuals felt that the Phase I dose estimates should not be released at all. However, all agreed that the public should be kept as informed as possible throughout the study. These conflicting notions lead to a general consensus of uncertainty about whether Phase I dose estimates should be released. All agreed that this issue should receive considerable attention from the researchers.

All of the individuals were surprised that HEDR was not a health effects study, and it was clear that all of the participants were more interested in the CDC study. One individual was positive that cancer rates in the region were higher than would normally be expected and felt strongly that a study should be conducted regarding this issue.

Future Concerns

Concern was expressed regarding what effect the study would have on continued operations at the Hanford Site, property values in the area, the general reputation of the area, and produce values for the area.

Concern was expressed regarding whether ongoing releases are occurring presently, which the public has not been informed of and which "nobody will know about until another forty years."

Concern was expressed regarding whether the results of the study will only be released if they are favorable to the government or whether only favorable portions of the study results will be released.

Concern was expressed regarding the single-shell storage tanks at the Hanford Site and how they were going to be dealt with and whether the issue had any bearing on the HEDR study.

III. Communication Issues

Channels

There was a strong consensus regarding the questionable veracity of the media. Many participants related incidental stories regarding situations where, "I was there and the next day the newspaper had it all wrong." All agreed that, although the media should not be circumvented, additional communication channels should be used if the results are to be accurately conveyed to the public. Recommended additional channels for communicating the results were as follows:

- focus groups
- public forums
- public displays (e.g., at libraries, malls, etc.)
- direct mailings
- presentations at schools
- presentations to various intact groups (e.g., PTA, Lions Club, etc.).

Special emphasis was placed on communicating with children because 1) they are often more concerned about these issues than their parents, 2) they are the ones who have to live with the future "we" created, and 3) they may be able to get their parents interested and involved in the issues regarding the study.

Communication Medium and Credible Sources

All the participants agreed that the dose estimates have to be communicated in a relative context with some type of absolute anchor point. Recommended methods for doing this included using a color-coded national map depicting background radiation levels in a variety of cities compared to the dose estimates for the affected areas, and comparing the dose estimates to the amount of radiation people receive in a certain amount of sunbathing, the amount of radiation a tanning bed produces, and the amount of radiation received during various types of medical procedures (e.g., dental x-rays, chest x-rays, etc.).

A suggestion was also made that pamphlets should be developed that contain a worksheet for individuals to work out their own dose estimates by plugging in personal values for variables. There was a strong consensus that this would be very helpful.

There was a consensus that the researchers should not be the ones to present the results, primarily because they do not "speak most people's language."

All of the participants agreed that the TSP would be a credible source, and some recommended the use of public relations professionals or media personalities.

FOCUS GROUP CONTACT SHEET

Target Group: Tri-Cities Residents

Selection Method: Randomly selected from the Tri-Cities phone book

Date/Time: Thursday, November 2, 1989, 7-9:00 p.m.

Location/Address: Lord of Life Lutheran Church
640 N. Columbia Center Blvd.
Kennewick, WA 99336

PNL Moderator/Recorder: Chris Holmes (moderator), Alison Thurman (recorder)

Observers: none

Attendees/# Favorably Committed/# Contacted: 5/5/90

I. Knowledge Assessment

All the participants had at least heard rumors that radiation has been released.

Two people who had worked at Hanford had relatively good knowledge about the HEDR Project. Both knew that knowledge of some releases was kept from the public.

II. Concerns

Radiation

Most people agreed that the radiation issue is a "scary thing" because there are so many uncertainties and unknowns. They cannot help but think about the issue of radiation.

One person who has lived here for 27 years said she never worried about the issue because people with families work at Hanford. She feels they would not want to injure themselves or their families nor, therefore, the public.

The group also agreed with the statement that some people in the Tri-Cities just do not want to know about the risk of living in this area regardless of whether they are "forced" to live here by circumstances or not.

Children are also concerned about the issue. One couple mentioned that their children talk about the radiation issue and are exposed to related ideas at school.

Media

The news media was a main point of contention. The news media is the biggest source of information regarding Hanford. Everyone agreed it exploits the problem of radiation for sensationalism. The press is usually biased and does not present a balanced picture. One person felt the biased view of the press could be a reason things at Hanford are kept hidden.

Another point about the press that was made and agreed to by almost everyone was that the press does not present information about other hazards. The relative risk of different hazards is not presented by the media. The public has no way of evaluating risk in terms it can understand. The media places the issues involving risk out of context.

Government

Another large concern was the issue of secrecy. Because the government had kept information from the public in the past, one person in particular felt it could very easily happen again. He kept stressing his desire to have the public informed about all the issues. He is nervous about how judgments are made regarding what the public should and should not know about Hanford activities.

HEDR Study

Another issue concerned the feasibility of the study. The two people with the most knowledge about the project expressed their doubts about the effort to reconstruct the dose. The poor records and measurement techniques used 40 years ago make them wary of any certain conclusions.

III. Communications Issues

They agreed the results of the study must be presented in a way that can be useful and meaningful today. If the study is only used to document what happened, then it will be a wasted effort. They are not interested in hearing information that dwells on the past. Rather, they would like to know how this information affects them today, such as health effects, and how this knowledge will be used to prevent the problem in the future.

The newspaper and TV are the most widely used media; however, both play to sensationalism.

The following channels for communicating the results were discussed:

- focus groups
- mailings with easy-to-read information presenting all sides of the issue (similar to a voter's guide)
- schools

- presentations by researchers

- panel presenting all sides of the issues - let the public make their own conclusions.

The group stressed the importance of presenting all sides of the issue and letting the public make its own conclusions.

FOCUS GROUP CONTACT SHEET

Target Group: Hanford Employees

Selection Method: Random selection from the Hanford Plant Directory

Date/Time: November 3, 1989, 11:00 a.m. to 1:00 p.m.

Location/Address: Battelle Auditorium Lobby
Battelle Boulevard
Richland, WA 99352

PNL Moderator/Recorder: Joe Montgomery/Stephanie Byram

Observers: Andrea McMakin (PNL) and Anne Schur (PNL)

Attendees/# Favorably Committed/# Contacted: 6/10/34

I. Knowledge Assessment

There was wide belief that radiation releases occurred mostly in the 1940s and 1950s. It was also believed that these releases were intentionally kept secret. One person felt the public was informed of these releases because of aggressive investigative reporting from the *Seattle PI*. The group would like a proactive approach from the government to feel confident all the information is available. There are suspicions the government is still withholding data.

The perceptions of the historical radiation releases from the Hanford Site ranged widely. Some people perceived the releases as a mismanagement issue--the government had a mission to produce plutonium as quickly as possible with little regard for health or safety. On the other hand, some felt radioactive emissions were part of a state-of-the-art process. Both groups agreed that scientists at the time did not understand the effects of the releases. Although attempts at measuring were made, methods were felt to be crude by today's standards.

Some of the group remember an entire community living and working on what is now the Hanford Site. When the community was relocated, gates and fences were built around prior working areas. There is fearful symbolism with "what is behind those closed doors."

Most of the group agreed that little or nothing was known about HEDR.

II. Concerns

Research Concerns

One concern was to make clear the expectations of the research. People are expecting the research to answer questions about health effects. If people are disappointed, they might discredit the research.

Concern was also expressed with the research complexity--why couldn't the government just test everyone's thyroid? Health concerns, generally, were not an issue--the group felt the quality of life in the Hanford area was higher. One opinion was that harm from radiation was not as catastrophic as harm from smog or earthquakes.

An issue of potential future damage was brought forth--how would Hanford hold up in a natural disaster such as a hurricane, flood, or earthquake? What would be the consequences of starting up plutonium defense production in wartime (i.e., will comparable radiation releases be emitted)?

Current Issue Concerns

One concern is the leaking single-shell waste tanks--is the waste getting into life chains through the groundwater or the Columbia River?

Another concern is whether the HEDR research is thorough enough--has DOE supplied all the information? (There was confidence that the information exists--the issue is a matter of access.)

Concern was expressed about pushing the pro-Hanford position too much. People may not trust the information.

Mention of safety records at other DOE sites was common, especially references to Rocky Flats. The priority of safety at DOE sites was questioned. It was noted that Admiral Watkins recently said "safety is number one," as if it had not been in the past.

III. Communications Issues

Information Needs

The group agreed there is a huge need for getting information to Hanford employees for several reasons:

1. They may need to defend themselves against friends and relatives, especially those in the I-5 corridor, who may feel hostile about Hanford. One person recalled a friend who was embarrassed to introduce her as being from the Tri-Cities area.
2. They need to gain a balanced perspective on media reports. There was general consensus, based on past experiences, that the local press could not be trusted to report accurately.

3. They need to receive information that is not filtered by management.
4. The group felt employees gained credibility when they could talk about what's happening at Hanford.

Information Wants

Interest was expressed in many types of information:

There was general agreement on the need for history, motivations, and different perspectives for the radiation releases (i.e., views from the military, scientists, the public, employees, etc.).

A need was expressed for knowing what prompted the research. (Is this an indication of a suspicion that something is very wrong?)

In addition, it was felt that the limitations and uncertainties of data sources and the research process should be made clear. Technical complexity should also be discussed. The amount of desired detail varied widely: some people wanted to know, "What does it mean to me and my family?"; others, "How valid is the study?"; and still others, "What is the probability of exposure?"

There was also a desire for an anchor point to provide insight for comparison. Generally, people wanted a summary and interpretation of results but emphasized the importance of having a full report available. People did not want to see technical jargon.

People have not noticed any discussion of Hanford in the literature handed to tourists, visitors, and new residents to the Tri-Cities. However, everyone knows about Hanford, so the lack of information appears to be in trying to hide something.

Timing of Information Release

The group wanted to see information as it became available. For instance, if the research is being performed on an ongoing basis, they would like to see information on an ongoing basis. A distinction was made by the group that this study reconstructed historical radiation dosages. Most were not aware that there are reports to estimate dosages every year. The group observed that HEDR was filling in an information gap--trying to construct dosages for years in which dosages had not previously been calculated.

Credible Sources

Credible sources of information included the state health departments (of Oregon and Washington), the Technical Steering Panel, scientific experts, and certain television personalities (Walter Cronkite). However, Westinghouse

Hanford Company, PNL, and DOE are too vested to be disinterested. The papers and politicians are not regarded as credible (based on the group's experiences).

Channels

Appropriate channels of information were also discussed. The newspapers were perceived as a biased (sensationalist) source of information. People preferred to see information distributed via written communication (direct mail); blips on TV (Columbia Cable's "Open Channel"); radio; booths; fairs; and flyers in Columbia Center mall, grocery stores, and medical facilities. The group favored teaching young people about Hanford through the school systems but agreed that it should be done with outside speakers, not teachers--they are overburdened. Public meetings were not a favored channel.

Summary

People generally found it reassuring that DOE was not involved in providing technical direction or oversight of HEDR. People felt comfortable with the roles of the TSP (and Native American involvement) and felt the TSP added credibility. PNL was seen as a highly credible, quality research scientific group. There was a sentiment that if the TSP really wanted public involvement, they would advertise much more aggressively than posting a couple of meeting announcements in the newspapers. (Some people do not remember even seeing meeting announcements.) One person said, "The amount of desired response is proportional to the amount of effort spent publicizing." However, some people who were aware of the meetings did not feel as if their input was really desired by the TSP.

FOCUS GROUP CONTACT SHEET

Target Group: Yakima Valley farmers

Selection Method: Names recommended by the Yakima County Agriculture Extension Office (Don Chaplin)

Date/Time: Monday, December 11, 1989, 11:00 a.m. to 1:00 p.m.

Location/Address: Tillicum Restaurant, 410 Highway 12, Sunnyside, WA

PNL Moderator/Recorder: Chris Holmes/Stephanie Byram

Observers: none

Attendees/# Favorably Committed/# Contacted: 8/8/13

I. Knowledge Assessment

The current knowledge of Hanford was fairly accurate, because many in the group know friends and relatives who work or have worked at the Site. However, few knew about the dose reconstruction effort. Generally, the group feels comfortable with Hanford and consider themselves a "friendly" group.

Some were familiar with the dose reconstruction effort conducted in Nevada. However, there was confusion whether the study originated in Nevada or Utah. The recollection was that it showed an "exorbitant rate of cancer in a couple of radionuclides."

II. Concerns

There are concerns about the agricultural image, i.e., glowing grapes, as a result of this study. Economic side effects are a worry.

There are also serious concerns about long-term effects of Hanford, such as contaminated ground water. Such contamination would ruin the farming community for a very long time. By then, it would be too late for remedial action.

Weather patterns and associated impacts were concerns. The group was reassured the study was examining "upwind" areas, such as the Yakima Valley, as well as "downwind" areas.

Health effects, especially cancer, were a tremendous concern. Many in the group felt personally affected. One individual mentioned his wife had her thyroid removed and wondered if the cause was Hanford-related. He also mentioned other members of the family that have thyroid trouble, and seemed confident there was some relationship with Hanford radiation releases. One

member mentioned a health effects study should be easy. A following comment suggested interpretation was critical--otherwise the study has no meaning.

There is concern with current radioactive and hazardous waste. How is it being handled now?

Most people in the group expressed anger, concern, and frustration at the Department of Energy for the level of secrecy, perceived to be unnecessary. In addition, the group felt there was a lot of "smokescreening." Politics were perceived to be a main consideration in most, if not all, DOE decisions. An example is the siting of the high-level nuclear waste repository: the group felt decisions were based on where the friendliest community was, rather than on solid scientific examination.

The intentional iodine release experiment made one individual "feel like a rat." He wanted information surrounding this event to be unclassified in order to get the truth out. In fact, getting the truth was a common theme throughout the group discussion. One member said, "Why doesn't someone just admit the mistake and apologize instead of trying to cover it up? Let's just say 'here are the facts.'"

The group was interested in understanding what radiation sources were involved. Specifically, they perceived PUREX as one of the biggest polluters. In addition, they wondered how will other man-made radiation sources besides Hanford be considered? What about natural radiation?

The credibility of the TSP was perceived to be damaged by the fraud investigation of one of the panel members. The panel is not "squeaky clean."

Another concern was for migratory farmworkers. Will they be tracked (for the purposes of checking health effects)?

III. Communications Issues

One member of group perceived this study as a "massive public relations process." He saw no apparent damage from Hanford. Thus, he is more concerned about the present and the future than the past.

Process emerged as an issue of great concern. The group wanted to know if a rational, scientific method was implemented to perform the study (versus actions of activists who are inflammatory without having much hard evidence). In addition, they wanted to know the results of the peer review: good news and bad.

Generally, the federal government was not perceived as trustworthy. The group was more inclined to believe consumer advocate groups. Even though such advocates may be extreme at times, the group felt they know the truth, good or bad.

Many perceived media information as "dramatic and out of proportion," particularly the science reporting ("horrendous"). Therefore, they would

like to see information distributed in alternative ways; i.e., through commodity group newsletters, speakers (accompanied by someone who can answer very specific technical questions), other face-to-face contacts, plant tours (let people see, hear, feel, and touch), through environmentalists (this will, they feel, really legitimize the study), through DOE, and especially through the TSP.

The group was interested in maintained contact, not a one-time press release.

FOCUS GROUP SUMMARY

Target Group: Pendleton/Eastern Oregon Residents

Selection Method: Networked phone calls. (Started with Chamber of Commerce, asked for names of people who they thought would be interested.)

Date/Time: December 12, 1989 7:00-9:00 p.m.

Location: Pendleton Red Lion, 304 SE Nye Avenue, Pendleton, Oregon.

PNL Moderator/Recorder: Joseph Montgomery/Sarah Marsh

Observers: Mary Lou Blazek, TSP
Warren Bishop, TSP
Detloff von Winterfeldt, consultant

Attendees/# Favorably Committed/# Contacted: 13/14/27

I. Knowledge Assessment

The group was aware of the past radioactive releases into the environment, although the perceived reasons varied: deliberate releases for the purpose of studying long-term effects on humans to simple ignorance about the potential hazards of such releases. There was disagreement on who knew and how much anybody knew at the time of the releases. They were also aware of the releases to the environment resulting from burial of material and entrance into the food chain through various wildlife. However, they were unaware of the TSP's oversight of the project and saw no distinction between the roles of DOE, Battelle, and Westinghouse on the Hanford Site. They knew of the existence of some sort of project to investigate the releases, although they did not know the difference between the release of dose information and CDC's study of health effects. It was generally assumed that the HEDR Project would study potential health effects.

II. Concerns

Health Effects

Generally, they thought the dose information was meaningless without an understanding of the resulting health effects. They wanted information on all health effects. They thought that CDC's study of thyroid cancer was too limited, and they wanted information on a full range of potential health effects including neurological disorders, birth defects, and effects on children. They consistently emphasized the need for information on long-term effects.

Environmental Effects

The group expressed interest in environmental effects, per se, as well as the secondary environmental effects on the food chain, water supply, and genetic

effects. Again, highest priority for environmental understanding was placed on those aspects of the environment where there were long-term effects and where current actions could ameliorate or change these effects.

Economic Effects of the Study Results

The group expressed concern about the economic effects of information about the past releases on the current economy of the Tri-Cities, Eastern Washington, and Eastern Oregon. Concern was strong about the study results' effect on customer demand for the region's agricultural products, and a frequent analogy was made to the recent Alar scare which had serious economic consequences for agriculture. They also expressed concern about the region's image of liveability in terms of attracting new industry to the region.

Credibility and Objectivity of the Study

The TSP's role was considered a strong measure in terms of adding credibility to Battelle's work on the study. CDC had the highest level of credibility, however. A general mistrust of reports and studies was expressed, especially if the results show very positive or very negative effects. They also questioned the relatively narrow scope of the study (i.e., limited number of years investigated and confined primarily to thyroid cancer study) and the reasons behind decisions to limit the scope.

Balancing the Access of Data and Results to the Public versus Creating Unnecessary Alarm in the Community

The group communicated a strong need for all the information to be accessible to the public and all potential effects to be discussed openly and forthrightly. This concern was framed in the context of the historical lack of access and truth about government actions. Access and truthfulness get higher priority than minimizing the alarm to the community.

III. Communication Issues

What to Communicate

The group felt that communicating doses to the public without the context of health effects was not worthwhile and invited interpretation of the results by unqualified parties who may have interests that do not coincide with the general public's interest.

They expressed a strong need for a lot of background information to answer questions about the motivation and reasons behind performing the study, and why the releases after 1960 are not included in the scope of the study. General information about what causes cancer, what is a dose, etc., would be important background information as well, that could be presented to the public before the actual results are released. They also thought that placing the potential health effects in the context of common comparisons (i.e., background radiation, x-ray doses) would be very valuable. They also

suggested that comparing the results of this study to other similar studies would be useful. They need concrete information about how the results affect their current lives.

How to Communicate

They distrusted the media and thought they were not an objective source of information. Direct mail was considered an effective tool if a network was formed to advise people of its impending arrival. (Otherwise, it would often be perceived as junk mail and thrown out.) They suggested using environmental and civic groups to help generate lists of recipients of direct mail. Some of the groups suggested include the Washington State Native Plant Society, the National Audubon Society, and the Blue Mountain Oncology Program. The ideas of openness had prime importance, and public meetings should be convened for discussion. The feeling was that people will need somewhere to vent their feelings about the results. They will want to know more about possible channels for pursuing legal action to deal with adverse health effects. Videotapes could be produced and distributed to local church groups, schools, and public television stations, etc. The complete report should be readily available to the public in locations such as libraries, colleges, and public health offices. The group suggested that the public may be interested in study "updates" which could clarify issues or address additional topics raised by the public after the first report is released. They suggested that timing for releasing results could be important. It was seen as prudent to avoid the holidays and elections as release times.

Access to all the information and a willingness to discuss the results openly and honestly, whether they are positive or negative, are the key factors in designing a multi-media communication strategy that will be effective.

The objectives hierarchy for Pendleton residents is presented in Figure C.1.

FIGURE C.1. Objectives Tree for Pendleton Residents

FOCUS GROUP CONTACT SHEET

Target Group: Franklin County farmers

Selection Method: Names recommended by the Franklin County Agriculture Extension Office (Carolyn Beck and Bill Ford).

Date/Time: Tuesday, December 12, 1989, 1:00 p.m. to 3:00 p.m.

Location/Address: Edwin Markham Elementary, Taylor Flats Road, Pasco, WA

PNL Moderator/Recorder: Chris Holmes/Stephanie Byram

Observers: Detlof von Winterfeldt, Jerry Gilliland

Attendees/# Favorably Committed/# Contacted: 7/8/13

I. Knowledge Assessment

The group was generally aware of radiation releases occurring in the 1940s through media reports. Many learned more about Hanford through the repository siting process.

One member has known about the study before it was under way through conversations with John Till and Mary Lou Blazek. He recalled the CDC study. He remembered the study addressing health effects of thyroid cancer from past Hanford radiation releases.

Recollections of the green run agitated members in the group. They felt they were unknowingly tested in an experiment. Some found weather balloon casings in their fields at the time. Now they believe the casings were really for sampling radiation fallout, not weather conditions. Others had radiation monitor instruments checked weekly on their farm, and felt it was done in a conscientious manner. However, the monitoring procedure brought up a question of data collection. Why is it so complicated?

Many in the group had contact with other Battelle researchers through groundwater and agricultural product monitoring.

II. Concerns

One individual was horrified at what the government has done in the past. He was surprised and shocked at the extent of operations and of the releases. He felt the history of Hanford releases needs to be explained.

The group perceived the real purpose of the study was to regain credibility and public confidence in the federal government and Hanford. People blindly trusted DOE for a long time, but trust has been destroyed through repeated

evidences of lying (release of declassified documents). Now, there is "zero trust." The group wants to see the black and white facts with records to back them up.

Most in the group agreed Battelle has credibility problems with the public because of their close association with DOE. From individual experiences, however, members in the group felt good about Battelle.

One concern was the perception something could be wrong with the area of agriculture products. In fact, people in the group often received phone calls and surveys from large customers asking if products are safe or, for example, "if their chickens are happy."

The group was uncomfortable with the possible number of interpretations people could make from the same data. An observation was made that it all depends upon the agenda driving the interpretation.

The group felt as if they were already under a lot of pressure (accused in California) of being chemical terrorists. The HEDR study may only intensify that pressure.

Credibility is the group's largest concern although many members wanted to believe in the integrity of government operations.

III. Communications Issues

Some members felt frustrated with the length of the process. One person mentioned, "With all this technical capability, why does it take so long to get results?"

The group agreed that information release is critical. An example is the careful orchestration of the Alar ban by environmental activists. Method and technique, not necessarily balanced content, won the battle.

Some members expressed confusion about whom to believe (DOE or the environmentalists). The group agreed a balanced interpretation is the only credible path.

Maintained communications were important. Who will answer questions after the TSP is disbanded? What if we don't believe Battelle or DOE?

One person observed a lot more ongoing, negative reporting about the DOE sites in the Spokane newspapers (not in the Tri-Cities papers) due to the motivation to sell newspapers. However, he expressed the opinion that all different slants are necessary for knowledgeable, balanced reporting.

A suggestion was made to release information to small group meetings within a community, to optimize one-to-one interaction. Followup meetings combined with media reporting should give a balanced approach. The group seemed to like the focus group approach.

Another suggestion was made to talk with the Washington Agriculture Council. They were formed to deal with emergency responses with a network of scientific experts to talk about whatever comes up. The Washington Friends of the Forest would also be helpful.

The objectives hierarchy for Franklin County farmers is presented in Figure C.2.

FIGURE C.2. Objectives Tree for Franklin County Farmers

FOCUS GROUP SUMMARY

Target Group: Spokane Residents

Selection Method: Networked phone calls. (Started with the Spokane Chamber of Commerce; asked for names of people who they thought would be interested.)

Date/Time: January 11, 1990, 7:00-9:00 p.m.

Location: Spokane-Sheraton Hotel

PNL Moderator/Recorder: Chris Holmes/Sarah Marsh

Observer: Dave Price, TSP

Attendees/# Favorably Committed/# Contacted: 6/6/27

I. Knowledge Assessment

The group had a general knowledge that there were "excessive" releases into the environment by Hanford production that "exceeded TMI." There was also general knowledge about the HEDR study although the distinction between dose results and health effects was not made. There was some question about whether the true purpose of the study was to examine the health impacts, or simply to make public more information about the releases. They recalled reading about families that had a myriad of health problems related to the releases. Most of their information about the study and Hanford Site comes from the local public radio station, the *Spokesman-Review*, and Hanford Education Action League (HEAL). They remember getting information from Tom Bailey of the Downwinders. Their concern about Hanford and the release has increased over the years to a level of real concern. "The news about Hanford seems to get worse and worse."

II. Concerns

The major concern with the study is that DOE "comes clean" and releases all the information honestly and forthrightly regardless of the consequences for DOE or the Hanford Site. They understand that knowledge of the dose releases and potential health effects will probably have no impact on their health or their lives, but their concern about honesty outweighs all other concerns, including national security.

They said that the study will lack credibility as long as it is funded by DOE. The TSP's independence is suspect because they are paid by DOE. There was some concern expressed about the advisory role of the TSP in that the TSP should be performing more of the research as opposed to overseeing it. CDC, on the other hand, has a "sterling" reputation and is very highly respected and trusted. The credibility of the research by Battelle was generally considered to be the most overwhelming problem of the study. They suggested an

independent evaluation of the methodology would be important as well as public access to all of the information including the computer programs used to reconstruct the doses.

After reading the handout, the group generally agreed that the research looked like more of an "inside job" than they had thought previously. They were not concerned about economic effects of the study results. They did express interest in the genetic effects that can be passed on to other generations, or other health effects that could influence an individual's personal health decisions in the future.

III. Communication Issues

What to Communicate

The group stated emphatically that dose release information is not meaningful to the public. Health effects are the only thing that counts. The public needs to receive information about the method for doing the study and information about the reliability of the method.

How to Communicate

The press is the least reliable medium of communication to the public. Many different vehicles should be explored in presenting this information, including townhall meetings. The nature of the audience should determine who presents the information and at what level of technical detail.

FOCUS GROUP CONTACT SHEET

Target Group: Walla Walla

Selection Method: V.I.P. Listing from the Chamber of Commerce

Date/Time: January 26, 1990 from 11:00 a.m. to 1:00 p.m.

Location/Address: The Whitman Inn, Walla Walla, WA

PNL Moderator/Recorder: Chris Holmes/Stephanie Byram

Observers: David Price

Attendees/# Favorably Committed/# Contacted: 10/11/17

I. Knowledge Assessment

Most of the group had a general knowledge of the project through media reports (mostly newspaper). They were aware of environmental controversy surrounding Hanford, but were not sure how it related to the HEDR Project. One member knew about HEDR because Battelle researchers had been granted access to historical Walla Walla school records. Another member was receiving contacts from people living outside the Walla Walla area with questions about increased incidents of cancer. His response was that, according to the Blue Mountain Oncology Program records, there is no increase in cancer rates. Another member recalled reading a magazine story telling of a Whitman College student of the 1940s losing all her hair, presumably due to Hanford radiation exposure.

The group was more aware of emphasis on waste issues and current DOE operations (i.e., Rocky Flats) than on HEDR.

II. Concerns

The group mentioned several concerns. One was the latency period of thyroid cancer--how long after exposure will it show up?

The timing for deciding the results of the study was an issue. The group agreed it needed health effects information at the same time the preliminary doses were released. Otherwise, others (the media, "experts," environmental groups, etc.) will make that translation. The translation will vary according to the group agenda. The Walla Walla group felt as if the different spectrums of interpretation may cause confusion, unnecessary anxiety and concern. Therefore, the group insisted health interpretations be disclosed when preliminary results are released. However, they did not necessarily want interpretation supplied by Battelle, but from an independent, legitimate source.

The group was mostly interested in seeing the issue (about Hanford radiation releases) put to rest. They simply want information on health effects one way or another. The group felt health effects should address more than thyroid cancer, i.e., birth defects and sterility. They wanted to know whom they could believe and trust to get the whole story.

The group felt comfortable with the CDC epidemiology study, but were highly concerned about the impact of discussing health effects several months after preliminary results were released (for reasons mentioned above).

One member mentioned the CDC findings may not be the hoped-for end of the controversy. The example given was with Agent Orange epidemiology studies. Some people never accepted the results because they perceived the CDC to be just another branch of the government.

Another concern is what happens after the study? Should people be getting physical exams? How do the locals respond? What is the personal impact? Can Hanford radiation releases happen again? What is the half-life of the radiation released? What does it mean to me today?

Data limitations and constraints were a concern. Is the data sufficient for a reliable, valid study?

Credibility was mentioned. DOE has no credibility with this group because of historical secrecy. Battelle was seen as closely associated with DOE, as "the fox guarding the chicken coop." Credibility would be better with interpretation made by an independent, non-government organization.

Concern was expressed if TSP directions were really followed by Battelle. The group would like TSP roles (especially independent oversight) to be emphasized.

One member asked if it really made sense to do a study. Why spend all that time and money studying something that apparently has had little impact (e.g., a reference was again made to the Blue Mountain Oncology records showing no increased rates of cancer). Another member suggested that the fact the study is being performed acknowledges the existence of a real problem.

One member had the viewpoint that the courts will ultimately decide if the study was valid. This person conjectured that the study would probably be repeatedly tested in the courts to see if it could appease individual concerns.

III. Communications Issues

A suggestion was made that the historical versus the current operations of Hanford should be very clearly delineated. Hanford operations in the 1940s were very different than operations today. The reasons for these differences should be explained in detail. After all, this history may affect the future

of the area (reduced attendance at area colleges and less economic development). Will people still come to the area if they perceive it as being contaminated?

The group wanted historical context and perspective. In other words, what did the government know? What didn't the government know? What was the motivation for the releases?

Benchmarks for comparison were suggested. Such benchmarks might include comparisons with Chernobyl, Three Mile Island, visits to the dentist, and watching TV.

Although holding little meaning for the community at large, the group said it is necessary to release dose numbers. The reports describing and discussing these reports should be written at a third grade level, with little technical language.

The group strongly encouraged simultaneous briefings to the media, community opinion leaders, area colleges independent experts, senior citizens, city managers, police and fire departments (prevention? monitoring?), county commissioners, medical communities, college alumni, and activist groups. The briefings should take place before the reports are officially released. It will give these groups a chance to respond knowledgeably.

The group also suggested multi-channel alternatives to the media. A suggestion was made for a direct mailing, using mailing lists from local utilities, phone companies, cable companies, and such. The group wanted to see the whole story, not what was filtered through the media.

The group felt it is necessary to explain all sides of the story, so that confrontation with activist groups could be avoided.

During the data gathering, forethought should be given to other possible uses of the data, so that repeated collection efforts can be avoided. Specific suggestions were gathering individual information by zip code, for all cancers (not just thyroid), and looking at other possible correlations, i.e., incidence of breast cancer by geographic location. Such correlations could indicate a problem other than radiation releases, such as pesticide exposure.

FOCUS GROUP CONTACT SHEET

Target Group: Indian Tribes

Selection Method: Personal Contact with Carol Bruneau

Date/Time: Friday, February 16, 1990

Location/Address: Hanford House, Richland, WA

PNL Moderator/Recorder: Chris Holmes/Carol Bruneau

Observers: Mary Kelly, Washington Department of Ecology
Patti Waller, Fred Hutchinson Cancer Research Center

Attendees/# Favorably Committed/# Contacted: 9/9/9

I. Knowledge Assessment

The knowledge of the HEDR Project is extensive. Eight Indian tribes in Eastern Washington, Northeastern Oregon and Central Idaho are, or will be, involved with data collection for the HEDR Project.

II. Concerns

The group strongly emphasized the need for ongoing dialogue and two-way information. They felt that just gathering information for Battelle is not enough. The group wants to know what is next, after the focus group. They want to know how information is gathered and how it will be used. The group said it is important for the tribes to know how the results of the study will affect treaty rights and tribal resources. A criticism was expressed that what has been done so far is just "show and tell."

The group said there is a need for things to be settled soon. Openness and honesty are the fundamental principles involved.

Accuracy of information was a major concern. Each tribe wants the opportunity to review and edit the reports that Battelle produces concerning the Native Americans and that information given to Battelle should not be used against the tribes. The group said historical information should be reviewed by the tribes or it may be presented incorrectly; they are worried about a one-sided or biased report.

The tribes need control over cultural information. There is some information that the tribes do not want to be made public, especially information on roots and other native foods. Medicines and herbs are particularly sensitive areas. The tribes want to make sure that they are protected from exploitation. An example mentioned is the Watusi: it was a very religious dance of the Africans that was commercialized by Americans. The tribes do not want

this happening to them. There are serious concerns about defending the tribe's homeland. The group said the Indian people want to preserve their culture and traditions because this is their homeland.

The group expressed anger and concern over the research process involving the tribes. One member said PNL should have contracted with the tribes earlier. He felt the tribes have been treated with paternalistic attitudes.

The group was also very concerned about being included in the process. When one member looked at studies done in the 1940s on vegetation, he realized that the Native Americans have been left out. He observed that a lot of people have intertribal marriages. There is much traveling from reservation to reservation and some Native Americans are not enrolled members. He asked, "What will be their involvement?" He is concerned they will be ignored and not informed about the study and its results. He emphasized the need to reach out to these people, especially those who live on the Columbia River.

There is frustration with the bureaucracy: the group felt the red tape should be cut and concerns addressed immediately. The major problem is that the TSP and PNL will not negotiate with the tribes.

There are serious questions about credibility. The group felt Battelle may be too close to DOE to do a credible job. What is the overall issue between PNL, DOE, and the tribes? Are decisions based on the economy of the community? Some felt that tribes have been held to minimal participation. This will be deciphered that there are minimal effects on indigenous people. Others in the group said there is a lack of credibility with both the TSP and Battelle.

The group questioned DOE's openness, honesty, and willingness to communicate with the tribes. One member said a lot of credibility was lost with the autocratic role of DOE for national security. "Consultation and cooperation" are words that have been used by the U.S. President.

Another member said the Confederated Tribes of the Umatilla Indian Reservation entered the Basalt Waste Isolation Project with four concerns: 1) cultural, 2) environmental, 3) fisheries, and 4) transportation. These are still concerns.

The group expressed strong support for a clean, safe environment. One person said Hanford is one of the four finalists for the Superconducting Magnetic Energy Storage (SMES). If the Yakima people did not want SMES on Hanford because it was not environmentally sound, it could be put elsewhere. However, the Yakimas support SMES because they feel it is environmentally clean and safe. In addition, he said there is a need to deal with the indigenous people who have dominion in this area. Also, the Yakimas would like a cancer register. They want to know what happened to their people. There is also a need to communicate to protect Yakima rights. The Treaty of 1855 protects resources, culture, and the environment.

One member said the Yakimas are concerned with all peoples, not just indigenous peoples. They are pro-safety for all people, not pro-nuclear or anti-nuclear. Anything less would be an abomination. The Yakimas want to work with PNL and Westinghouse to help clean the land and remove the stigmas. They retain the right of the ceded land because they feel that someday the 1.3 million acres of the reservation will be too small. The Yakimas are already outnumbered on the reservation by 10 to 1. The feeling was let's start the communication process now!

The group is also concerned about accountability, and how much money PNL is spending on the project. They said that Native Americans do pay taxes--45% of the taxes go to the administration of the federal government. The group felt it is a valid concern to want to know how much money is being spent by PNL. PNL should be up front with the TSP and the public.

The group felt the TSP has not played a powerful enough role. At the same time, they said the TSP needs to get out of tokenism treatment of tribes. One member said DOE tries to hold tribes hostage by throwing money at them, but the tribes need to be directly involved with the HEDR Project.

In addition, the group felt PNL is too involved with DOE. There was strong concern that PNL wants to be able to say that they worked with the tribes, but worry about how much work will really be done with the tribes.

The group felt the tribes have been studied to death and can't help but be suspicious when given money to do research. The group said the tribes are tired of being poked and prodded. At the beginning of Phase I, it was important to get contracts with the tribes; now the contracts with the tribes are not significant for Phase I. Why has this project been inconsistent? The Phase I results will be released in April without the Native American information. The Nez Perce feel that they were shorted in the Indefinite Quantity (IQ) contract process. The \$20K ceiling needs to be expanded by at least \$10K because of the time and effort needed to find older people on and off the reservation. The consensus was that maybe \$30K is not enough either.

III. Communications Issues

Communication objectives should be developed. The group felt Battelle and the TSP should deal with each audience on its own terms. One member speaking for the Yakima Nation said this means being treated as a sovereign nation with treaty rights and resources, not just part of the "concerned public."

The group emphasized the importance of funding for communications. One member said the Colville population, for example, is spread out beyond the reservation boundaries and does not necessarily stay in the same place all year. Thus, it is difficult to communicate to the entire tribe. The tribe should have financial resources for communication. This is not included with the research contracts. Participation of tribal members is needed. Fiscal

resources should be provided to tribes to get all of the eight project tribes into the process (whether or not they have a contract with Battelle.)

Some in the group felt Battelle is patronizing the tribes and not treating them as governments, but as just another interest group. They said tribes should be dealt with on a government-to-government basis. One member said Battelle has been placating the tribes. Communication with the tribes cannot fully take place until all the IQ contracts are signed. The State of Washington and the U.S. Government (Nuclear Waste Policy Act) treat the tribes as governments, and this project should do the same.

Some of the group were upset that Native Americans had not been contacted for a focus group before this. One member added that Phase I contracts do not include developing media and communication strategies and he feels that Battelle is insensitive on how business is conducted on the reservation. He observed that tribal communication is more sensitive to people when dealing with cultural issues. Some reservations have a tribal newspaper, but that is not necessarily the best way to communicate. The group reiterated the desire for two-way communication with tribes, instead of just being an information source.

The group reiterated the need for dialogue and meaningful participation. One member feels there needs to be two-way communication to answer the tribe's concerns. She wondered if most of the communication to the tribes had been done in person or by letter and added that person-to-person contact is more fruitful. She observed it has taken almost a year to get contracts with tribes. If issues are important enough, things will move quicker.

Some of the group perceived a lack of communication within the TSP. One person said that the tribal representative on the TSP doesn't hear about the concerns of the tribes until they are presented in public. It seems that he is the last to know about the concerns.

The group agreed it would like a copy of this report and recommendations. In addition, it recommended that in order for the TSP and PNL to maintain credibility, a directive should be written that recognizes the sovereignty of the tribes and establishes "meaningful tribal participation." This would be a large step toward establishing credibility. It is felt that communication and meaningful participation of tribes is important to the project.

APPENDIX D

OBJECTIVES TREES DERIVED FROM SMALL GROUP AND INDIVIDUAL INTERVIEWS

FIGURE D.1. Objectives Tree for PNL Management

FIGURE D.1. (contd)

FIGURE D.2. Objectives Tree for Technical Steering Panel's Representatives

FIGURE D.3. Objectives Tree for the DOE Representative

FIGURE D.4. Objectives Tree for the Department of Health's Representative

FIGURE D.5. Objectives Tree for Hanford Environmental Action League's Representatives

FIGURE D.6. Objectives Tree for Washington State Department of Ecology's Representative

FIGURE D.7. Objectives Tree for Physicians for Social Responsibility's Representatives

FIGURE D.8. Objectives Tree for Hanford Downwinders Coalition's Representative

FIGURE D.9. Objectives Tree for Heart of America's Representative

FIGURE D.10. Combined Objectives Tree for All Groups

FIGURE D.10. (contd)

FIGURE D.10. (contd)

FIGURE D.10. (contd)

FIGURE D.10. (contd)

FIGURE D.10. (contd)

APPENDIX E

SUMMARY WRITE-UPS OF INTERVIEW RESULTS

APPENDIX E

SUMMARY WRITE-UPS OF INTERVIEW RESULTS

INTERVIEW CONTACT SHEET

Target Group: Technical Steering Panel, selected members

Selection Method: By appointment

Date/Time: December 12-13, 1989

Location/Address: Hanford House, Richland, WA

PNL Moderator/Recorder: Detlof von Winterfeldt/Stephanie Byram

Observers: None

Attendees/# Favorably Committed/# Contacted: 6/6/6

I. Knowledge Assessment

The TSP is intimately involved with the project. Knowledge is very high.

II. Concerns

Key decision points included: What to do after Phase I? What else needs to be considered for Phase I; i.e., dose only, limited time period, interpretation of health effects (to us, to others, to no one)? What external groups should be provided funding? Under what criteria? What is an appropriate dose cut-off (considering risk, justification to public, CDC needs)? What should be provided to CDC (population vs. individual doses)?

Openness is a very big concern. Support in declassifying documents requires a process to select appropriate documents. An ideal document trail would lead from the study to the source document.

Other concerns include communication and risk implications.

Another concern is determining when the study stops. Considerations include funding, scope definition, exposure pathways, geography, motivations (funding vs. science), time (a 5-year limit?).

A successful project will include

- Good science. The results of this study will last forever, with scientists' names attached.

- Public credibility
- High degree of usefulness to the CDC (i.e., the CDC will definitively answer epidemiological questions)
- Establishing a precedent, standards and guidelines for similar following projects

However, there is a great deal of controversy surrounding the study.

The relationship with Battelle was also mentioned. An observation was made that there appears to be a lot of tension. The working relationship, day-to-day, is not relaxed.

The needs of the Native Americans were also a concern. Efforts to resolve concerns and problems have seemed difficult.

III. Communications Issues

The need for open, public interaction is paramount. Opening the process is a source of great challenge, and sometimes, enjoyment.

An element of education will be involved to meet the technical capabilities of the audience.

INTERVIEW CONTACT SHEET

Target Group: PNL Management

Selection Method: Called for appointment.

Date/Time: December 13, 1989

Location/Address: Battelle, PNL, Battelle Blvd., Richland, WA

PNL Moderator/Recorder: Detlof von Winterfeldt/Stephanie Byram

Observers: None

Attendees/# Favorably Committed/# Contacted: 3/3/3

I. Knowledge Assessment

Upper management was familiar with the HEDR Project. Upcoming key decisions were identified regarding source terms, doses, and exposures. Primarily, how much should minor exposure routes be pursued? How much uncertainty should be reduced? Is decreasing uncertainty in major exposure routes more valuable than pursuing minor exposure routes with less certainty? Generally, PNL management favored placing attention on major exposure routes to reduce the most uncertainty.

Another important decision regards the TSP role. Concern was expressed that the TSP role may be changing from that of independent oversight to that of a participant. The creation of a TSP peer review panel was a prudent approach in addressing this dilemma.

II. Concerns

One of the foremost concerns of this group was for thorough, credible, quality science. Specifically mentioned was that the project make a long-lasting contribution to science, through increased knowledge, scientific soundness and setting new precedents. The methodology, models, data, logic, openness, and high-level peer review should all contribute substantially to the scientific realm. To achieve good science, rigorous internal peer review was seen as necessary at every scientific decision point. Even inadvertent mistakes could be perceived by the public as intentional, and, by some groups, as cheating the American people.

PNL management said that good science must be useful for study followup, such as the CDC study or any other epidemiological study. Concern was expressed about the use of results, i.e., if some stakeholders had a particular agenda to fulfill, would the results be used improperly? Or would PNL's work be intentionally devalued to fulfill such an agenda? Results will only be

useful if they are timely, address people's concerns, and are meaningful for decision making (e.g., regarding health decisions).

Concern was expressed that the project be performed using the best people available, with productive use of the HEDR team resources. PNL management was concerned that an environment conducive to scientific creativity and innovation be fostered.

It was important to PNL management that PNL's strategic objectives be considered. For example, international competitiveness; the rapid transfer of scientific knowledge to the public and private sectors; the improved integration of science, technology, and engineering; professional excellence; and being a regional and national science center are all strategic objectives that HEDR should help to fulfill.

PNL management said that a successful project will

- Gain peer acceptance in the technical community, including prototype models, consistent with the highest standards.
- Enhance the credibility of PNL by all parties (i.e., DOE and activists). This partly depends on the qualifications, reputations, and skills of project scientists performing the work. PNL management wants to ensure those people are available and that their reputations are enhanced by the innovation and quality of the science in the HEDR Project.
- Meet the scope and intent of the project mission, with the help of effective project management and project support systems.
- Gain acceptance from the states of Washington and Oregon.

PNL managers are concerned about getting tied up in legal hassles, state and Congressional hearings, wiping out the reputation of the Lab; and the potential for an out-of-control media.

III. Communications Issues

The group expressed agreement that helping people understand the nature of uncertainty in science was crucial.

An idea for representing geographical clusters of cancers was expressed. The National Cancer Institute developed a representation of cancer maps, or hot spots.

Communications must be delivered objectively, with no apparent PNL bias.

Communications must also reflect the interdependency of science and society. In other words, the science must be interpretable by society.

INTERVIEW CONTACT SHEET

Target Group: U.S. Department of Energy (DOE)

Selection Method: By Appointment

Date/Time: December 22, 1989

Location/Address: Federal Building, Richland, WA

PNL Moderator/Recorder: Detlof von Winterfeldt/William Stillwell (Stephanie Byram completed this summary).

Observers: None

Attendees/# Favorably Committed/# Contacted: 1/1/1

I. Knowledge Assessment

The DOE representative's knowledge of the HEDR Project is excellent, although DOE is not directly involved (besides being the funding source).

II. Concerns

The representative mentioned many concerns on behalf of DOE. Particularly, he was concerned with the scientific quality of the work. Above all, he felt the work must be very high quality, professional, and technically competent. The science and the processes (e.g., establishing the TSP) developed in the course of performing the HEDR Project may set precedents for other, similar efforts. He reinforced the opinion that accurate dose estimates will provide conclusive results, the final word, on the subject of dose reconstruction. He said it is the responsibility of the TSP to ensure these requirements are met.

Another concern was the usefulness of the results. Primarily, the dose estimates must address the concerns of the general public and of public interest groups. The estimates must also be useful for forthcoming epidemiological studies (e.g., the CDC study). In addition, the results must add some value in potential litigation and compensation claims.

Credibility was another concern mentioned by the DOE representative. Of foremost importance is the credibility of the TSP members in directing the study. Their ability to retain their qualities of independent oversight is paramount. The structure of the TSP, as representatives of universities, states, Native Americans and the public, goes a long way to establish independence, involve the public, and diffuse concern regarding openness, full disclosure, public access, and the objectivity of the scientific process and results.

The DOE representative added that the credibility of Battelle-PNL and Battelle Headquarters, as well as that of DOE-RL and DOE-Headquarters is partly a function of how the public views these organizations. Many see Battelle-PNL and DOE-RL as separate organizations from their respective Headquarters. Thus, the problem of ensuring credibility may be different.

The DOE representative said that the general Hanford objectives are of concern: particularly in meeting scientific and engineering excellence, environmental responsibility of the Hanford Site, and ensuring reliability and safety in all Hanford activities. In addition, the perception of Hanford as a national asset will impact credibility and thus the ultimate usefulness of the HEDR Project. At the same time, the success of HEDR will influence perceptions of Hanford.

III. Communications Issues

Several communications issues were mentioned. The DOE representative suggested identifying the different interested audiences to ensure the usefulness of HEDR. Unidentified segments of the audience cannot communicate with the HEDR Project, neither learning from, nor commenting on, the project. Misidentification of the audience may result in the HEDR Project failing to account for, or placing an inappropriate amount of emphases on, the needs of some part of the audience. Accordingly, it is important that the TSP ensure the audience is correctly identified and its needs met.

Generally, the DOE representative mentioned three audiences that must be addressed. The scientific/professional audience for reports generated by the project will help provide timely and competent critiques of the information. Quick affirmation of the study's scientific soundness will provide credibility and usefulness to the study's findings. Preparing special interest groups, and the public at large, will allow these groups to easily understand the information provided by the study, again adding to the credibility and usefulness of the HEDR Project.

In addition, the DOE representative strongly emphasized the need for very high-quality communication. One reason for this is to gain recognition and acceptance of the process regardless of the results. In addition, the study should be recognized and accepted as a sincere, honest effort in trying to resolve a very difficult question.

The DOE representative was concerned that HEDR communications also improve people's overall understanding of the potential risks of radiation, the nature of risk (no such thing as zero-risk), the nature of the scientific process, and the risk analysis process. These help people with the perspective of potential risks from Hanford operations. Radiation originating from Hanford should be put in perspective with background, diagnostic, and therapeutic radiation so it can be readily understood.

Finally, the DOE representative mentioned a concern that regardless of the scientific results, the HEDR team should be careful not to create undue anxiety. Rather, communications should alert people to the risk, if any, and

convey appropriate actions people can take to respond to the risk. For example, there is a need to identify the difference between the assumptions used to set radiation protection standards for radiation workers and the public, and assumptions used to identify whether or not a certain radiation dose could cause a health effect. Accordingly, it is the responsibility of the TSP to ensure that these differences are adequately addressed.

INTERVIEW CONTACT SHEET

Target Group: Washington State Department of Health (DOH)

Selection Method: By Appointment

Date/Time: January 30, 1990

Location/Address: Olympia, WA

PNL Moderator/Recorder: Detlof von Winterfeldt, Russ Rhoads

Observers: None

Attendees/# Favorably Committed/# Contacted: 1/1/1

I. Knowledge Assessment

The DOH representative is well-informed about the HEDR Project. She has been following the project and has received briefings about the work as part of her efforts on Secretary Watkins' committee reviewing how DOE conducts health-related studies.

II. Concerns

DOE should use the "lessons learned" from this process for improving its future practices. They should make sure they collect and retain the records that would be needed if in the future they need to examine possible impacts of current operations. They should improve declassification rules to get all relevant information out into the open.

Credibility is key to the success of the project; openness is one key component of credibility. Scientific soundness is also essential. The study must be complete and technically accurate. Independent review will help to assure scientific soundness. Work necessary to estimate possible health effects from the radiation doses should be done by an outside group to assure credibility. The credibility of the study would have been enhanced if the TSP were brought into the process at the very beginning and been involved in choosing the contractor for the technical work.

It is important for the study to produce results in a timely fashion. Major schedule slippage should be avoided.

III. Communications Issues

One of the main points emphasized is that the HEDR team provide an advance briefing to key agencies (i.e., the DOH) before releasing results. The OOH representative felt that DOH would receive many requests for information about the health aspects of the doses. It is essential that the DOH have

sufficient time to prepare the information it will need to respond quickly and intelligently to public concerns and requests for information, and to work with local health agencies on their roles.

INTERVIEW CONTACT SHEET

Target Group: Physicians for Social Responsibility (PSR), Spokane and Seattle

Selection Method: Spokane, By Appointment
Seattle, By Appointment

Date/Time: Spokane, January 11, 1990
Seattle, January 29, 1990

Location/Address: Spokane, WA
Seattle, WA

PNL Moderator/Recorder: Spokane, Chris Holmes, Sarah Marsh
Seattle, Detlof von Winterfeldt, Russ Rhoads

Observers: None
None

Attendees/# Favorably Committed/# Contacted: Spokane, 1/2/2
Seattle, 1/1/1

I. Knowledge Assessment

Knowledge of the HEDR Project varied. The Spokane branch of PSR was involved in setting up a conference in 1985 with the Hanford Education Action League (HEAL) regarding issues surrounding operations at Hanford. The Spokane representative was familiar with the history of the releases and was aware of HEDR. However, he considered HEDR to be primarily a health effects study. The Seattle branch of PSR is primarily concerned with nuclear weapons issues and views HEDR as integral to the public's understanding of the costs vs. benefits of nuclear weapons production.

II. Concerns

The Spokane representative was very concerned about the general lack of knowledge about the potential health effects of Hanford releases and low-level radiation exposure in general. He expressed the belief that no amount of radiation exposure is safe. Accordingly, he emphasized the importance of conducting an in-depth examination of potential health effects associated with the Hanford releases. He also expressed the hope that the health effects study will focus on all potential health effects, not just those that might be attributable to I-131. He felt that the study could both propel science forward and provide a forum for the government to be totally honest about Hanford, as well as disseminate information without attempting to justify past actions.

Many of the Seattle branch representative's concerns were not specific to HEDR, but dealt with Hanford as part of the nuclear weapons production complex. He questions whether the benefits obtained from nuclear weapons (deterrence, etc.) really outweigh the social costs of producing the weapons and delivery systems.

Credibility is a key aspect of the study for both branches. Both representatives expressed that full disclosure and an open process will enhance credibility. Further, the Seattle representative noted that if some material must remain classified, the material should be reviewed by publicly trusted individuals such as the TSP, if TSP maintains public trust. However, the Spokane representative was concerned about the TSP's ability to provide truly independent oversight of the study given that DOE is funding it. Also, he was very skeptical about PNL's ability to complete the study without being influenced or possibly "manipulated" by DOE. Still, both representatives expressed that scientific soundness is required for credibility and that this should be confirmed by independent review from a variety of sources including public interest groups.

III. Communications Issues

Public involvement was identified as the key component of the communications process. The Nuclear Waste Advisory Council was identified as an important sounding board for materials that may be used to communicate the results to the public. Further, an emphasis was placed on allowing a "free exchange of information" in the communications process, and it was recommended that public interest groups be involved throughout the process.

INTERVIEW CONTACT SHEET

Target Group: Hanford Education Action League (HEAL)

Selection Method: Appointment

Date/Time: January 30, 1990

Location/Address: Spokane, WA

PNL Moderator/Recorder: Detlof von Winterfeldt, Russ Rhoads

Observers: none

Attendees/# Favorably Committed/# Contacted: 2/2/2

I. Knowledge Assessment

HEAL's knowledge of the HEDR Project is extensive. One of the representatives is the assigned staff member covering HEDR. He attends TSP meetings and has reviewed most HEDR documents as well as many of the background documents in the DOE Public Reading Room. HEAL supported the establishment of Hanford Health Effects Panel (HHEP), Dr. Allen Benson, and nominated a representative to serve on the panel. HEAL also monitored the progress of the Hanford Historical Documents Review Committee (HHDRC) and has opposed how HEDR was set up since the beginning of the project. HEAL met with Rep. Tom Foley, Rep. Mike Lowry, and staff for Sen. Brock Adams to help initiate the Thyroid Disease Study through CDC.

II. Concerns

Credibility is a major concern of HEAL. If the results are not credible, the effort will have been wasted. HEAL's position is that any involvement by DOE, PNL, or any other DOE contractor is a major obstacle to the credibility of the study. They believe the work should be turned over to an independent contractor, even if this results in delays in completing the work. In addition to suspecting PNL of having a destructive bias, HEAL has concluded that PNL has not done a competent job on work completed to date and has shown too little work for the large sums of money expended. They believe PNL is making assumptions, selecting approaches, etc., in ways that will bias the results toward lower doses. The results will not be believable if they are lower than the preliminary estimate produced by the state of Washington.

Don't avoid controversy. Controversial issues should be dealt with in open and frank discussions with full public participation. All sides of the issue should be presented.

The management process for the project needs to be improved significantly. The TSP needs to exercise much closer control over the technical work. The

TSP should have staff on site in Richland directing the day-to-day activities at PNL. TSP staff, rather than PNL staff, should make reports at the TSP meetings. Project management changes should be made at PNL to develop a more cooperative relationship with the TSP and the public.

III. Communications Issues

Several points regarding communications should be emphasized. First, communications with the public should

- avoid the use of bureaucratic language
- avoid political posturing (use non-loaded language)
- be honest
- show concern and respect for people
- place emphasis on the notion that public comment periods are an opportunity for DOE, PNL, and TSP to learn from the public
- be two-way.

Second, scientific communication should not

- assume too low a level of understanding (especially at the TSP meetings)
- be so homogenized.

Third, openness and public involvement are paramount. All the facts should be laid on the table, with completely open access for everyone to see and use. In addition, even the most preliminary results should be provided--it is information that is very relevant and impacts people's lives. Independent oversight and access should be allowed to all the information, including data, results, models, etc., no questions asked. HEAL emphasized that better, more proactive communication is necessary. More learning opportunities for people to understand the study and the research should be provided.

INTERVIEW CONTACT SHEET

Target Group: Washington State Department of Ecology (WSDOE)

Selection Method: By Appointment

Date/Time: January 30, 1990

Location/Address: Olympia, WA

PNL Moderator/Recorder: Detlof von Winterfeldt, Russ Rhoads

Observers: none

Attendees/# Favorably Committed/# Contacted: 1/1/1

I. Knowledge Assessment

The WSDOE representative's knowledge of the project history is very good. He was directly involved in the Hanford Historical Documents Review Committee and the Hanford Health Effects Panel, which originally recommended that the study be performed. He was also involved in the negotiations between the State and the Department of Energy about how to set up the TSP and initiate the work. He is not following the project closely at this time, but keeps informed about general progress and major developments.

II. Concerns

Credibility of the results is essential to success. All of the information used in the study should be readily available to anyone who wants to see it. The study needs to be thorough and deal with all pathways, radionuclides, etc. that could have resulted in offsite exposure. The accuracy of the work also needs to be ensured. The CDC should review the work and accept it as meeting the needs of the Thyroid Study. Other peer review should also be performed. Scientific soundness is necessary for credibility.

The study needs to lead to a resolution of the issue of possible health effects from Hanford releases. The WSDOE representative saw no need to try to fix blame for releases that occurred so long ago, but the consequences of these releases need to be determined and communicated to people so we can move on to other important issues such as cleanup of the Hanford Site.

There needs to be close coordination among the involved parties. State agencies such as WSDOE and DSHS have an important role in the process.

III. Communications Issues

There was strong emphasis on a good communication process, as defined in four main points: clarity was one. Communication will be effective only if it is clear. Understandability was another, focusing on what processes and research were completed, how it was done, results, and why one should believe it. Education was a third aspect, with the realization that not all people know or understand about radiation. An educational element is necessary to bring people up to speed to discuss the HEDR study and its results.

INTERVIEW CONTACT SHEET

Target Group: Hanford Downwinders Coalition

Selection Method: By Appointment

Date/Time: January 29, 1990

Location/Address: Seattle, WA

PNL Moderator/Recorder: Detlof von Winterfeldt, Russ Rhoads

Observers: None

Attendees/# Favorably Committed/# Contacted: 1/1/1

I. Knowledge Assessment

The Downwinders representative has followed the HEDR Project closely. She is quite knowledgeable about the project objectives, the roles of the TSP and PNL, and the relationship to the Thyroid Disease Study. She has attended TSP meetings in Portland and Olympia.

II. Concerns

Most of the Downwinders representative's concerns are related to health impacts from Hanford releases. She is convinced that she, members of her family and other downwinders have experienced health problems from exposure to releases of radioactive materials from Hanford. She believes these exposures are continuing today. She is concerned about thyroid disease, other cancers and possible secondary effects resulting from reduced thyroid function.

The morality issues associated with the radiation releases from Hanford are also a major concern. She believes that it was wrong to not make people aware of the releases and possible consequences so they could make their own decisions about whether or not to take preventive action. She believes that the relationship between thyroid disease and I-131 exposures was known at the time of the major releases and this information was deliberately withheld from people.

Credibility of the results is very important. The work must be scientifically sound so that there is no question about the validity of the results. Thorough review, total openness and access to models and data, repeatable results and financial accountability are all important aspects of credibility. She is concerned about the close relationship between PNL and DOE.

III. Communications Issues

The primary consideration for the Hanford Downwinders Coalition is for high-quality information and communication. Much of this includes involving the group in the communications aspect. In addition, the Downwinders representative recognized the criticality of communicating at various levels of technical knowledge.

Openness was also a primary concern. Full disclosure was a very important issue, along with the desire to get out all the facts. Acknowledgment of past mistakes and an apology is necessary, she felt.

Useful information will address individual health decisions, compensation issues, and personal coping strategies.

She expressed a desire for easier access to the process by people who were in the exposed population. Many former Hanford area residents now live on the west side of the state. More meetings on the west side are needed or the TSP should provide funding for a downwinder representative to attend all TSP meetings.

INTERVIEW CONTACT SHEET

Target Group: Heart of America

Selection Method: By appointment

Date/Time: January 29, 1990

Location/Address: Seattle, WA

PNL Moderator/Recorder: Detlof von Winterfeldt, Russ Rhoads

Observers: none

Attendees/# Favorably Committed/# Contacted: 1/1/1

I. Knowledge Assessment

The Heart of America representative's knowledge of the HEDR Project is substantial. Although Heart of America is especially interested in nuclear waste issues, HEDR, in a secondary way, is relevant to these interests. As such, she is keeping track of HEDR progress and general aspects of the study.

II. Concerns

The Heart of America representative sees the project as an opportunity for the government to learn from its past mistakes and improve the way it makes decisions and interacts with the public in the future. This requires the government to admit its past mistakes and correct them when possible. Mechanisms to compensate exposed people need to be considered.

Law suits may result when people understand what happened. Should this occur, the project needs to be able to produce results for specific individuals that can be used in legal proceedings.

The study must be scientifically sound to be credible, as well as thorough in content. All time periods, pathways and potential health effects must be considered.

PNL's close association with DOE presents credibility problems. She has reviewed dose estimates made by PNL in annual reports and questions some of the analysis. PNL may have an incentive to come up with results that agree with the estimates in these annual reports.

III. Communications Issues

Effective communication needs to take place to provide useful information a) to individuals, and b) for the legal system. Individuals must have adequate information to make health decisions (have I been affected by Hanford?) and to help make compensation decisions (can Hanford be linked as causing harm to individuals? If so, which individuals? Can a fair compensation be determined?).

In general, government policy needs to be improved in many areas. The government needs to have the courage and power to be accountable for its actions, including historical actions as in the case of the HEDR project. If this means apologizing for past actions, so be it. The government must respect the individual's right to know, especially when it takes action (or has taken action) that impacts an individual, either directly or indirectly. Above all, the government must be open with the public. Public involvement, accessibility, full disclosure, and openness are all policies that government must improve for the public benefit.

APPENDIX F

MEDIA NEWS ANALYSIS

LISTING OF NEWSPRINT COLUMNAR INCHES DEVOTED TO EACH CATEGORY BY DATE

APPENDIX F

MEDIA NEWS ANALYSIS LISTING OF NEWSPRINT
COLUMNAR INCHES DEVOTED TO EACH CATEGORY BY DATE

Quantitative Analysis of Media Comments
by Source & Date

July, 1988

Chronicle (Spokane, Washington) - 26th

- 2. 5 1/8
- 3. 1/2
- 6. 2
- 10. 1 1/8
- 12. 1 3/8

Chronicle (Spokane, Washington) - 28th

- 1. 1 1/4
- 2. 10 3/4
- 4. 3/4
- 6. 2 5/8
- 7. 7/8
- 12. 1
- 13. 1 5/8

Spokesman Review (Spokane, Washington) - 26th

- 2. 5 1/2
- 3. 1/2
- 6. 3
- 12. 1 1/8

Spokesman Review (Spokane, Washington) - 28th

- 1. 1/4
- 2. 10 3/4
- 4. 3/4
- 6. 2 5/8
- 7. 7/8
- 12. 1
- 13. 1 5/8

Spokesman Review (Spokane, Washington) - 26th

- 2. 5 1/4
- 3. 1 7/8
- 6. 3
- 10. 1 1/8
- 11. 1
- 12. 1 1/2

Spokesman Review (Spokane, Washington) - 29th

- 7. 3 1/2
- 8. 1 3/4
- 11. 2 5/8

Tri-City Herald (Tri-Cities, Washington) - 24th

- 1. 2 3/8
- 6. 9
- 7. 7/8
- 8. 1 1/8
- 11. 1 5/8
- 16. 3 1/4

Tri-City Herald (Tri-Cities, Washington) - 26th

- 1. 3 1/2
- 2. 9
- 3. 5 1/8
- 6. 1
- 7. 1/2
- 8. 7/8
- 10. 5 7/8
- 13. 7/8

Tri-City Herald (Tri-Cities, Washington) - 28th

- 2. 4 1/2
- 3. 3 7/8
- 4. 3/4
- 6. 2 5/8
- 7. 1
- 8. 3/4
- 10. 7/8

Tri-City Herald (Tri-Cities, Washington) - 29th

- 6. 5/8
- 7. 5/8
- 8. 6 1/8

Tacoma New Tribune (Tacoma, Washington) - 26th

1. 2 3/4
3. 2 1/2
6. 2 3/8
7. 5/8
8. 1 1/2
10. 3/4
11. 1 1/2
16. 2 1/4

Vancouver Columbian (Vancouver, Washington) - 24th

1. 4 1/8
3. 1 1/2
6. 3 3/4
7. 3/4
8. 5/8
10. 1

Yakima Herald Republic (Yakima, Washington) - 25th

1. 2 3/4
3. 2 3/4
6. 5 7/8
7. 5/8
8. 1 5/8
11. 2 1/4
12. 1/2

Yakima Herald Republic (Yakima, Washington) - 29th

3. 7/8
6. 3/4
7. 1 1/2
8. 3 3/8
11. 3/8

November, 1988

Daily News (Pullman, Washington) - 14th

1. 4 3/4
3. 3 3/4
6. 3 5/8

The Herald (Everett, Washington) - 12th

3. 1 7/8
4. 6 3/4
5. 1/2
6. 2 1/2
7. 1
8. 5/8

The Herald (Dublin, California) - 14th

1. 3 3/8
3. 3 1/2
7. 1 1/8
13. 3/4

The Herald (Everett, Washington) - 14th

1. 3 1/4
3. 1 3/8
6. 1 3/8

Idahonian/Daily News (Moscow, Idaho) - 12 and 13th

4. 4 1/8
6. 1 7/8
7. 1 1/4
8. 1/2

The Oregonian (Portland, Oregon) - 4th

1. 3/4
3. 3/8
5. 1
6. 3/4

The Oregonian (Portland, Oregon) - 5th

1. 3/4
3. 2
5. 6 3/4
6. 1
7. 2 3/4
8. 2 1/8
11. 1 1/4
17. 8

The Oregonian (Portland, Oregon) - 9th

- 1. 4 1/8
- 5. 2
- 6. 5
- 8. 1/4
- 13. 5/8

The Oregonian (Portland, Oregon) - 12th

- 3. 7/8
- 6. 2 3/8
- 8. 5/8
- 12. 1

The Oregonian (Portland, Oregon) - 13th & 14th

- 1. 4
- 3. 4 3/4
- 4. 3 7/8
- 10. 5/8
- 13. 2

The Olympian (Olympia, Washington) - 12th

- 4. 2
- 6. 3 1/8
- 7. 1 3/4
- 8. 3/4

The Olympian (Olympia, Washington) - 12th

- 4. 2
- 6. 1 7/8
- 7. 1 1/8
- 8. 7/8

The Olympian (Olympia, Washington) - 14th

- 1. 4 1/8
- 3. 2 3/4
- 6. 4 3/8
- 7. 3/8

Seattle Times (Seattle, Washington) - 10th

- 1. 2 1/4
- 3. 2
- 6. 5 3/8
- 8. 1 3/4
- 12. 2
- 13. 1

Seattle Times (Seattle, Washington) - 12th

- 3. 5 1/4
- 4. 5/8
- 6. 4 3/4
- 13. 1 1/8

Seattle Times (Seattle, Washington) - 13th

- 1. 1 3/8
- 3. 10 3/4
- 6. 6
- 8. 1 1/2
- 11. 3/4
- 13. 1 1/4

Spokesman Review (Spokane, Washington) - 6th

- 1. 1 1/8

Spokesman Review (Spokane, Washington) - 12th

- 3. 5 3/8
- 4. 3/4
- 5. 1/2
- 6. 2 3/8
- 8. 1 5/8
- 12. 1 1/4
- 13. 7/8

Spokesman Review (Spokane, Washington) - 13th

- 5. 3/4
- 6. 2 3/8
- 7. 1 1/8
- 8. 9 5/8
- 11. 1/2
- 12. 1 1/2
- 17. 5/8

Tacoma News Tribune (Tacoma, Washington) - 11th

- 1. 19 3/4
- 5. 1 1/4
- 6. 3 1/8
- 7. 3 3/4
- 8. 1/2
- 11. 3/4

Tri-City Herald (Tri-Cities, Washington) - 3rd

- 1. 3/4
- 5. 2 3/8
- 6. 1
- 7. 2 1/4
- 8. 1
- 11. 1 1/4
- 17. 6

Tri-City Herald (Tri-Cities, Washington) - 4th

- 1. $1 \frac{1}{2}$
- 3. $2 \frac{1}{8}$
- 4. $\frac{1}{4}$
- 5. $1 \frac{1}{2}$
- 6. 8
- 7. $1 \frac{3}{8}$
- 11. $\frac{3}{4}$
- 13. $\frac{3}{4}$
- 17. $\frac{7}{8}$

Tri-City Herald (Tri-Cities, Washington) - 6th

- 6. $1 \frac{1}{2}$

Tri-City Herald (Tri-Cities, Washington) - 10th

- 3. $1 \frac{1}{4}$
- 6. $7 \frac{1}{8}$
- 7. $1 \frac{7}{8}$
- 8. $1 \frac{1}{8}$
- 12. $1 \frac{3}{4}$

Tri-City Herald (Tri-Cities, Washington) - 12th

- 4. $8 \frac{5}{8}$
- 6. $4 \frac{1}{2}$
- 7. $1 \frac{5}{8}$
- 8. $\frac{3}{4}$

Tri-City Herald (Tri-Cities, Washington) - 14th

- 1. $5 \frac{1}{4}$
- 3. $4 \frac{3}{8}$
- 6. $4 \frac{3}{4}$
- 7. $\frac{3}{8}$
- 13. $\frac{1}{2}$
- 17. $2 \frac{1}{4}$

Tri-City Herald (Tri-Cities, Washington) - 29th

- 3. $3 \frac{1}{2}$

March, 1989

East Oregonian (Pendleton, Oregon) - 18th

- 3. 3/4
- 6. 1 1/2
- 8. 2 3/8

The Olympian (Olympia, Washington) - 19th

- 3. 2 1/2
- 6. 3 7/8
- 7. 2 1/2
- 8. 2
- 10. 1 1/4
- 16. 7/8

Seattle Post Intelligencer (Seattle, Washington) - 18th

- 5. 1 7/8
- 6. 3 3/8
- 8. 3/4

Spokesman Review (Spokane, Washington) - 18th

- 1. 1 1/4
- 3. 2 1/2
- 4. 2 7/8
- 6. 4 3/8
- 10. 1/2
- 13. 3 1/4

Tri-City Herald (Tri-Cities, Washington) - 18th

- 3. 2 1/2
- 6. 3 7/8
- 7. 2 1/2
- 8. 2
- 10. 1 1/4
- 16. 7/8

Tri-City Herald (Tri-Cities, Washington) - 18th

- 3. 5/8
- 4. 2 1/8
- 5. 3
- 6. 13 5/8
- 8. 1 1/8
- 10. 1 1/4
- 17. 3 1/4

Tri-City Herald (Tri-Cities, Washington) - 19th

- 6. 4 1/8
- 8. 7/8
- 17. 1 1/8

APPENDIX G

SUMMARY OF RESULTS FROM THE WASHINGTON STATE ADVISORY COUNCIL SURVEY

NUCLEAR WASTE COUNCIL QUESTIONNAIRE

1. The first question has to do with nuclear power plants. I am going to read a list of general policies concerning nuclear power plants which our country could follow. As I read each one, I would like to know whether you AGREE or DISAGREE with each statement.

	<u>AGREE</u>	<u>DISAGREE</u>	<u>DK/NA</u>
1. WE SHOULD CONTINUE TO BUILD AS MANY NUCLEAR POWER PLANTS IN THE UNITED STATES AS ARE NEEDED TO MEET OUR ELECTRICITY REQUIREMENTS.	40%	52%	8%
2. WE SHOULD BUILD NEW NUCLEAR POWER PLANTS ONLY IF THEY ARE ABSOLUTELY NEEDED TO MEET OUR ELECTRICITY REQUIREMENTS.	78%	19%	3%
3. WE SHOULD CONTINUE TO USE THE NUCLEAR POWER PLANTS WE ALREADY HAVE, BUT NOT START TO BUILD ANY NEW ONES.	51%	39%	10%
4. WE SHOULD STOP CONSTRUCTION OF NUCLEAR PLANTS WHICH ARE NOT COMPLETE.	29%	59%	12%
5. WE SHOULD SHUT DOWN EXISTING NUCLEAR POWER PLANTS.	10%	84%	6%

2. Associated with nuclear power is the problem of disposing of nuclear waste. As you may know, there are basically two kinds of nuclear waste: High-Level Waste and Low-Level Waste. What comes to mind when you hear the term "High-Level Radioactive Waste?"

1. RISK - 47%	4. HEALTH PROBLEMS - 9%	8. ECON. RESOURCE - 2%
2. RADIATION - 25%	5. NEGATIVE EMOTIONAL RESPONSE - 7%	9. GENERAL OPPOSITION - 2%
3. ENVIRON. EFFECTS - 9%	6. METHOD OF DISPOSAL - 5%	10. MISCELLANEOUS - 7%
	7. ORIGIN - 4%	11. DK/NA - 12%

3. Where does High-Level Nuclear Waste come from, to the best of your knowledge?

1. INDUSTRY - 54%	4. ENVIRONMENT - 1%
2. FUEL CYCLE - 19%	5. ACCIDENTS - 1%
3. ARMS - 5%	6. GEOGRAPHIC - 1%

4. What comes to mind when you hear the term "Low-Level Radioactive Waste?"

1. RADIATION - 24%	5. NEGATIVE EMOTIONAL RESPONSE - 5%	9. METHOD OF DISPOSAL - 1%
2. ORIGIN - 17%	6. HEALTH PROBLEMS - 5%	10. MISCELLANEOUS - 1%
3. RISK - 16%	7. ENVIRON. EFFECTS - 3%	11. DK/NA - 49%
4. GENERAL OPPOSITION - 7%	8. RESOURCE VALUE - 1%	

5. Where does low-level nuclear waste come from?

1. INDUSTRY	- 49%	4. ENVIRONMENT	- 2%
2. FUEL CYCLE	- 12%	5. ACCIDENTS	- 1%
3. ARMS	- 2%	6. GEOGRAPHIC	- 1%

6. (As you have said) High-level waste is radioactive and hazardous. It must be stored in a safe place for thousands of years. Do you think that the problem of high-level radioactive waste disposal can be solved in an acceptable way?

1. YES	- 58%	2. NO	- 29%	3. DK/NA	- 13%

If NO: Why not?

1. INADEQUACY OF STORAGE	- 11%	5. RISK	- 3%
2. NO TECHNICAL SOLUTION	- 10%	6. MISCELLANEOUS	- 1%
3. DURATION OF TOXICITY	- 8%	7. DK/NA	- 72%
4. MANAGEMENT BARRIERS	- 3%		

If YES: Do you think that the technology exists now to safely dispose of high-level waste, or do you think it is still some time away?

1. EXISTS NOW	- 46%	2. STILL AWAY	- 48%	3. DK/NA	- 6%

7. As you may know, the Federal Government is studying several possible sites for a permanent national repository for high-level radioactive waste. One of the sites under consideration is deep underground in Southeast Washington State on the Hanford Nuclear Reservation. Having a national waste repository in this state could have both benefits and problems. In your opinion, what would be some BENEFITS to having such a facility in Washington?

1. ECONOMIC	- 31%	4. FUTURE RESOURCE	- 3%	7. MISC.	- 2%
2. REVENUE	- 13%	5. TECH. INCENTIVE	- 1%	8. DK/NA	- 41%
3. GOOD STORAGE	- 11%	6. NO BENEFITS	- 41%		

8. In your opinion, what would be some problems with having a nuclear waste repository in Washington State?

1. ENVIRON. EFFECTS	- 54%	4. HEALTH HAZARD	- 15%	8. TARGET	- 2%
2. ACCIDENTS	- 17%	5. TRANSPORTATION	- 12%	9. MISC.	- 3%
3. STORAGE	- 16%	6. ORIGIN	- 11%	10. DK/NA	- 10%
		7. DANGER	- 9%		

9. I am going to read you a list of reasons that have been mentioned for putting a repository on the Hanford Site. As I read each one, tell me whether you think that would be a GOOD Reason or a BAD Reason to put a permanent waste repository on the Hanford Reservation. The first reason is . . .

	<u>GOOD</u>	<u>BAD</u>	<u>DK/NA</u>
1. BUILDING AND OPERATING A SITE HERE WOULD HELP THE LOCAL AND STATE ECONOMY.	50%	44%	6%
2. IT WOULD PROVIDE A PERMANENT PLACE FOR WASTES ALREADY STORED TEMPORARILY AT HANFORD	56%	37%	8%
3. HIGH-LEVEL WASTE DOES EXIST NOW AND MUST BE DISPOSED OF SAFELY	58%	31%	11%

10. Now I am going to read you a list of concerns that have been expressed about putting a nuclear waste repository in this state. For each one I read, please tell me whether you think it would be a MAJOR PROBLEM, a MINOR PROBLEM, or NOT A PROBLEM AT ALL. The first one is . . .

	MAJOR PROBLEM	MINOR PROBLEM	NOT A PROBLEM	DK/NA
1. THE WASTE MAY LEAK OUT OF THE CONTAINERS.	77%	18%	4%	2%
2. AN EARTHQUAKE MAY RELEASE THE MATERIALS.	60%	29%	9%	2%
3. THERE MAY BE AN EXPLOSION FROM TOO MUCH RADIOACTIVITY.	44%	20%	24%	13%
4. SAFETY FOR WORKERS AT THE DISPOSAL SITE MAY BE REDUCED TO CUT COSTS.	56%	25%	14%	5%
5. FUTURE GENERATIONS MAY ACCIDENTALLY DIG INTO THE SITE.	41%	29%	27%	3%
6. ACCIDENTS MAY OCCUR IN TRANSPORTING THE WASTE TO THE SITE.	72%	25%	3%	1%

In your opinion, who is best able to deal with nuclear waste, from a technical standpoint:

1. PRIVATE BUSINESS	- 13%	5. SOMEONE ELSE (NAME)	- 18%
2. LOCAL GOVERNMENTS	- 4%	6. NO ONE	- 4%
3. STATE GOVERNMENT	- 15%	7. NO OPINION	- 7%
4. FEDERAL GOVERNMENT	- 41%		

11. All levels of government, Federal, State and Local will be involved in the decision of where to put such sites. In your opinion, who should have the final say about whether a repository is put in a particular location?

1. THE FEDERAL GOVERNMENT	- 16%	4. RESIDENTS/CITIZENS (VOL.)	- 29%
2. THE STATE GOVERNMENT	- 31%	5. OTHER	- 4%
3. LOCAL GOVERNMENT (Like Cities and Counties)	- 16%	6. NO OPINION	- 4%

12. Why should () have the final say, in your opinion?

1. EXPERTISE	- 25%	4. NAT'L-STATE CONFLICT	- 14%
2. AUTHORITY	- 17%	5. DEMO. IDEAL	- 33%
3. RESPONSIBILITY	- 13%	6. POLITICAL	- 30%
		7. MISCELLANEOUS	- 6%

13. Before a permanent site is chosen, the Government is likely to choose a number of sites around the country for extensive testing. If the Hanford Reservation were selected as a test site, what are some things you personally would like to know about putting a high-level radioactive waste repository there?

1. SAFETY	- 78%	6. TRANSPORTATION	- 12%
2. SELECTION PROCESS	- 59%	7. WASTE CHARACTERISTICS	- 3%
3. STORAGE FACILITIES	- 45%	8. OTHER	- 21%
4. ENVIRON. EFFECTS	- 24%	9. MISCELLANEOUS	- 3%
5. MONITORING	- 5%	10. DK/NA	- 9%

14. Of all the things you have just mentioned, which interest you the most?

1. SAFETY	- 44%	6. TRANSPORTATION	- 4%
2. PROCESS	- 15%	7. WASTE CHARACTERISTICS	- 3%
3. STORAGE FACILITIES	- 14%	8. OTHER	- 20%
4. ENVIRON. EFFECTS	- 9%	9. MISCELLANEOUS	- 5%
5. MONITORING	- 5%	10. DK/NA	- 14%

15. If you wanted to find out more about this issue, what would you be likely to do first?

1. ACTIVE INFO. SEEKING	- 26%	7. CONTACT INTEREST GROUP	- 2%
2. CONTACT GOVT. AGENCIES	- 26%	8. CONTACT UTILITIES, BUSINESSES	- 2%
3. PASSIVE INFO. SEEKING	- 23%	9. MISCELLANEOUS	- 1%
4. CONTACT OFFICIALS	- 20%	10. DK/NA	- 12%
5. ASK EXPERT	- 9%		
6. GET INVOLVED	- 4%		

16. What else would you be likely to do?

1. ACTIVE INFO. SEEKING	- 45%	6. GET ACTIVELY INVOLVED	- 16%
2. CONTACT GOVT. AGENCIES	- 45%	7. CONTACT INTEREST GROUP	- 6%
3. PASSIVE INFO. SEEKING	- 35%	8. CONTACT UTILITIES, BUSINESSES	- 4%
4. CONTACT ELECTED OFFICIALS	- 29%	9. MISCELLANEOUS	- 1%
5. ASK EXPERT	- 20%	10. DK/NA	- 10%

17. When it comes to providing information about high-level radioactive waste and waste disposal, how much would you trust each of the following to provide reliable information:

	VERY MUCH	A LITTLE	NOT TOO MUCH	NOT AT ALL
1. FEDERAL NUCLEAR AGENCIES	32%	35%	23%	10%
2. INDEPENDENT CITIZEN GROUPS	27%	34%	25%	11%
3. FEDERAL ENVIRONMENTAL AGENCIES	30%	36%	23%	8%
4. UTILITY OFFICIALS IN YOUR COMMUNITY	17%	52%	28%	20%
5. WASHINGTON STATE AGENCIES	29%	43%	17%	7%
6. OFFICIALS IN YOUR COUNTY AND CITY	22%	39%	24%	10%
7. ENVIRONMENTAL ORGANIZATIONS	39%	35%	15%	8%
8. UNIVERSITY SCIENTISTS	69%	23%	5%	2%

18. I have just a few last questions for our statistical analysis. How old are you please?

19. What is your occupation or profession?

1. PROF./MGR.	- 28%	4. HOMEMAKER	- 12%	6. RETIRED	- 12%
2. WHITE COLLAR	- 11%	5. STUDENT	- 9%	7. OTHER	- 5%
3. BLUE COLLAR	- 23%				

20. What is the last year of schooling you completed?

1. HIGH SCHOOL (or less)	- 38%	4. GRADUATE OR	
2. VOC/TECH	- 7%	PROF. DEGREE	- 14%
3. SOME COLLEGE &		5. DK/NA	- 1%
COLLEGE DEGREE	- 41%		

21. How long have you been a resident of Washington State? [How many years have you been a resident of Washington State?]

1. 11 OR MORE	- 79%	3. 3 TO 5	- 7%
2. 6 TO 10	- 10%	4. 0 TO 2	- 4%

22. Do you belong to any organizations, clubs, or associations? (Which ones?)

1. WORK RELATED	- 17%	5. CIVIC	- 5%	8. INDIVIDUAL	
2. SERVICE	- 16%	6. FAMILY	- 2%	RECREATION	- 2%
3. RELIGIOUS	- 10%	7. ORGANIZED		9. ENVIRON.	- 2%
4. CULTURAL	- 6%	RECREATION	- 6%	10. NONE	- 54%

23. Finally, which of these categories best describes your approximate family income, before taxes, for last year?

1. UNDER \$8,000	- 10%	4. \$25,000 TO 40,000	- 26%
2. \$8,000 TO 15,000	- 17%	5. OVER \$40,000	- 15%
3. \$15,000 TO 25,000	- 23%	6. DK/NA	- 9%

24. Is there anything else about these issues you would like to say that I have not asked about?

25. Record respondent sex:

1. MALE	- 51%
2. FEMALE	- 49%

APPENDIX H

SUMMARY OF RESULTS FROM THE SPOKANE SPOKESMAN-REVIEW SURVEYS

SPOKESMAN REVIEW SURVEYS

1. Prior to this interview, were you aware that Hanford is one of three sites being considered for the nation's first permanent nuclear waste site?

	<u>STATE</u>	<u>TRI-CITIES</u>
YES	88%	96%
NO	12%	4%

2. If a nuclear waste disposal accident occurred, who should pay for the cleanup?

LOCAL GOVERNMENT WHERE THE ACCIDENT OCCURRED	3%	2%
STATE GOVERNMENT WHERE THE ACCIDENT OCCURRED	4%	7%
FEDERAL GOVERNMENT	80%	68%
OTHER	6%	15%
DON'T KNOW/REFUSED	7%	8%

THE FOLLOWING TWO QUESTIONS CONCERN THE POSSIBLE ENVIRONMENTAL
IMPACT OF A HANFORD NUCLEAR WASTE SITE. (Read to respondents.)

3. How likely is a nuclear materials spill during transportation to Hanford?

EXTREMELY UNLIKELY	13%	35%
SOMEWHAT UNLIKELY	30%	33%
SOMEWHAT LIKELY	37%	23%
EXTREMELY LIKELY	14%	3%
DON'T KNOW/REFUSED	7%	6%

4. What are the chances that radioactive material would leak into the Columbia River during the next century?

NO CHANCE	5%	26%
LESS THAN 50 PERCENT	20%	27%
50-50	29%	18%
BETWEEN 50 AND 100 PERCENT	23%	9%
100 PERCENT	12%	4%
DON'T KNOW/REFUSED ^a	11%	17%

5. Should the government locate the nation's first permanent nuclear waste disposal site at Hanford?

YES	21%	59%
NO	68%	26%
DON'T KNOW/REFUSED ^b	12%	14%

^a This category was not reported in the newspaper articles. For the state sample it was obviously deleted accidentally. For the Tri-Cities sample, however, it was not reported in the BBR report, and percentages for the other categories were computed on a base of 320 rather than 385. My figures assume 65 cases fall into "DON'T KNOW" or "REFUSED," and differ considerably from those reported in the BBR report and newspaper article.

^b This category was reported as "0" for the Tri-Cities sample in the newspaper article and was not shown in the BBR report. Since the latter shows a total of only 330 for this item, my figures assume 55 cases fall into "DON'T KNOW" or "REFUSED" and thus differ from 69 percent "YES" and 31 percent "NO" reported in the BBR report and newspaper article.

THE FOLLOWING THREE ITEMS WERE ASKED ONLY IN THE TRI-CITIES SURVEY:

6. Do you or an immediate family member work for the Department of Energy or a Department of Energy contractor?

TRI-CITIES ONLY

YES	32%
NO	68%

7. If you were deciding whether the waste site should be located at Hanford, how important would the jobs created by the project be in your decision?

VERY IMPORTANT	40%
MODERATELY IMPORTANT	30%
NOT TOO IMPORTANT	12%
UNIMPORTANT	14%
DON'T KNOW	3%

8. If the disposal site is located at Hanford, do you believe that information which might affect community safety will always be disclosed?

YES	49%
NO	45%
DON'T KNOW*	5%

* This item was not discussed in the newspaper articles, but in the BBR report, "DON'T KNOW" was not reported. Since the latter shows a total of only 365 for this item, my figures assume 20 cases fall into "DON'T KNOW" or "REFUSED" and differ somewhat from those reported in the BBR report.

APPENDIX I

SUMMARY OF RESULTS FROM THE SEATTLE TIMES SURVEY

SEATTLE TIMES SURVEYS

1. As you may know, the Federal Government is studying three possible sites for permanent storage of commercial, high-level radioactive waste. One of the sites under study is in Southeast Washington State on the Hanford Nuclear Reservation. Have you seen or heard anything about this issue recently?

	<u>STATE (Feb.)</u>	<u>STATE (July)</u>	<u>TRI-CITIES</u>
YES	70%	90%	96%
NO	30%	10%	4%

2. Have you had any conversations with friends or family in the last couple of weeks about the issue of nuclear waste or the Hanford site?

YES	27%	---	---
NO	73%	---	---

3. Compared to other issues facing Washington State, how important to you, personally, is the question of whether to establish a nuclear waste repository at Hanford? Would you say it's...

VERY IMPORTANT	53%	---	---
SOMEWHAT IMPORTANT	28%	---	---
NOT TOO IMPORTANT	11%	---	---
NOT AT ALL IMPORTANT	6%	---	---
NO OPINION	2%	---	---

4. Based on what you know now, do you favor or oppose having a national nuclear waste repository at Hanford?

FAVOR	19%	10%	43%
OPPOSE	69%	78%	37%
DON'T KNOW/UNDECIDED	12%	12%	20%

5. High-level waste is radioactive and hazardous. One of the issues related to this question is the length of time that high-level nuclear waste must be safely stored. Do you recall how long government scientists say it will be necessary to store nuclear waste before it is no longer dangerous? (OPEN-ENDED: RESPONDENTS VOLUNTEERED ANSWERS.)

0 TO 4,999 YEARS	30%	---	---
5,000 TO 15,000 YEARS	8%	---	---
MORE THAN 15,000 YEARS	12%	---	---
NON-SPECIFIC RESPONSE	11%	---	---
DON'T KNOW	40%	---	---

6. According to one federal agency, it must be stored in a safe place for thousands of years. Do you think that the technology exists now to safely store high-level waste?

YES	20%	21%	53%
NO	67%	61%	26%
DON'T KNOW	13%	12%	21%

7. I'm going to read you a list of some statements that have been made about putting a nuclear waste repository on the Hanford site.

For each one I read, tell me whether you AGREE (A), AGREE STRONGLY (AS), DISAGREE (D), or DISAGREE STRONGLY (DS). (DON'T KNOW was listed (DK).) The first reason is . . . (ORDER WAS ROTATED)

	<u>AS</u>	<u>A</u>	<u>D</u>	<u>DS</u>	<u>DK</u>
AFTER SO MUCH RESEARCH HAS GONE INTO THIS DECISION, WE CAN BE CONFIDENT THAT THE NUCLEAR WASTES WILL BE STORED SAFELY.	2%	22%	48%	23%	5%
HIGH-LEVEL WASTE DOES EXIST NOW AND MUST BE DISPOSED OF IN SOME WAY.	31%	68%	0%	0%	1%
BUILDING AND OPERATING A SITE HERE WOULD HELP THE LOCAL AND STATE ECONOMY.	8%	47%	31%	9%	5%
THE ROCK FORMATION AT HANFORD MAKES IT A SAFE SITE.	2%	14%	35%	15%	34%
NOTE: ONLY THE LAST ITEM WAS USED IN JULY, WITH RESULTS REPORTED AS SHOWN.	<u>AGREE</u> <u>DISAGREE</u> <u>DK</u>				
STATE (July)		14%	64%	22%	
TRI-CITIES (July)		47%	27%	26%	

8. Now I am going to read a list of concerns that have been expressed about putting a nuclear waste repository in this State. For each one I read, please tell me whether you think it would be a MAJOR Problem, a MINOR Problem, or NOT a Problem at All. The first one is . . . (ORDER WAS ROTATED)

	<u>MAJOR</u>	<u>MINOR</u>	<u>NOT</u>	<u>DK</u>
ACCIDENTS MAY OCCUR IN TRANSPORTING THE WASTES TO AND FROM THE SITE.	72%	25%	3%	0%
FUTURE GENERATIONS MAY ACCIDENTALLY DIG INTO THE SITE.	39%	33%	26%	2%
THERE MAY BE AN EXPLOSION FROM TOO MUCH RADIOACTIVITY.	35%	25%	26%	14%
AN EARTHQUAKE MAY RELEASE THE MATERIALS.	63%	29%	6%	2%
THE WASTE MAY LEAK OUT OF THE CONTAINERS.	72%	23%	3%	2%

9. Which of the things we have just talked about concerns you MOST? (LIST NOT READ)

WASTE MAY LEAK	35%
ACCIDENTS IN TRANSPORT	35%
EARTHQUAKE RELEASE MATERIALS	10%
FUTURE GENERATION MAY DIG IT UP	4%
EXPLOSION FROM TOO MUCH RADIOACTIVITY	3%
NONE OF THESE	9%
NO OPINION	4%

10. All levels of government--Federal, State and Local--will be involved in the decision of where to put nuclear waste disposal sites. In your opinion, who should have the final say about whether a repository is put in a particular location? (LIST NOT READ)

THE RESIDENTS/CITIZENS	40%
THE STATE GOVERNMENT	27%
THE FEDERAL GOVERNMENT	14%
LOCAL GOVERNMENT	8%
SCIENTISTS/EXPERTS	4%
OTHER	3%
NO OPINION	4%

11. Do you think the final decision on where the nuclear repository goes will be made more on the basis of politics or science?

POLITICS	74%
SCIENCE	21%
NO OPINION	6%

12. In addition to the question of whether to establish a national repository for nuclear waste, there is the issue of the waste that is already at Hanford. The federal government is currently storing 53 million gallons of high-level radioactive waste at Hanford. Were you aware that high-level defense waste is being stored at Hanford?

YES	68%
NO	32%

13. How confident are you that this existing waste is being stored in a safe manner? Would you say you are . . .

VERY CONFIDENT	9%
SOMEWHAT CONFIDENT	33%
NOT SO CONFIDENT	33%
NOT AT ALL CONFIDENT	21%
NO OPINION	4%

NOTE: QUESTION 14 WAS ASKED ONLY IN THE JULY SURVEYS.

14. As you may know, the Governor has called a special session of the state legislature to consider putting the question of a nuclear repository on the ballot this fall. In your opinion, should the question of making Hanford a national nuclear repository be put to a vote of Washington State voters?

	<u>STATE (July)</u>	<u>TRI-CITIES</u>
YES	86%	66%
NO	9%	29%
DON'T KNOW	5%	5%

APPENDIX J

SUMMARY OF RESULTS FROM THE TACOMA NEWS TRIBUNE POLLS

TACOMA NEWS TRIBUNE POLLS

1. Do you favor or oppose having state officials continue challenges to the federal selection process for high-level nuclear waste repositories?

	<u>TRI-CITIES</u>	<u>STATE (Sept.)</u>	<u>STATE (Oct.)</u>
FAVOR	45%	68%	72%
OPPOSE	34%	14%	11%
DON'T KNOW/UNDECIDED	22%	18%	17%

2. Would you favor or oppose having a means provided for voter disapproval of any Washington State site?

FAVOR	63%	78%	---
OPPOSE	24%	12%	---
DON'T KNOW/UNDECIDED	14%	10%	---

3. Do you favor or oppose location of a nuclear waste repository at the Hanford Nuclear Reservation in Eastern Washington?

FAVOR	47%	16%	12%
OPPOSE	32%	72%	76%
DON'T KNOW/UNDECIDED	21%	12%	12%

THE NEXT TWO QUESTIONS WERE "ASKED ONLY OF PEOPLE WHO SAID THEY WERE UNDECIDED OR OPPOSED TO A WASTE REPOSITORY AT HANFORD," ACCORDING TO THE TACOMA NEWS TRIBUNE, AND "ASKED ONLY OF THOSE WHO WERE OPPOSED TO OR UNDECIDED ON THE FIRST THREE QUESTIONS," ACCORDING TO THE TRI-CITY HERALD. IT IS UNCLEAR IF THEY WERE ASKED OF THOSE WHO RESPONDED "OPPOSE" TO ANY ONE OF THE THREE QUESTIONS OR OF ALL THREE OR OF THE THIRD QUESTION ONLY.

4. Would you favor or oppose depositing nuclear waste at Hanford if it was proven scientifically to be a safe site for nuclear waste burial?

FAVOR	54%	33%	---
OPPOSE	34%	57%	---
DON'T KNOW/UNDECIDED	12%	10%	---

5. If Hanford was selected as the safest site for nuclear waste storage in the nation, would you favor or oppose depositing nuclear waste at Hanford?

FAVOR	40%	25%	---
OPPOSE	46%	66%	---
DON'T KNOW/UNDECIDED	14%	9%	---

6. Has the recent publicity about Hanford caused you to change your mind about that issue?

YES	12%
NO	82%
DON'T KNOW/UNDECIDED	6%

APPENDIX K

SUMMARY RESULT FROM THE HANFORD HEALTH CONCERNS SURVEY

1. In general what things cause you to have concerns about your own, or your family's health?

Percentage Volunteering
Each Response:*

____County of Residence (unweighted)____.

	<u>TOTAL</u> <u>(weighted)</u>	<u>BENTON</u>	<u>FRANKLIN</u>	<u>WALLA</u> <u>WALLA</u>	<u>YAKIMA</u>	<u>SPOKANE</u>
Major Disease	9%	2%	4%	9%	8%	12%
Health Care Costs	8%	6%	---	10%	11%	8%
Diet/Physical Conditioning	8%	11%	4%	6%	6%	8%
Illness (general)	7%	6%	3%	5%	8%	8%
Smoke/Smoking	7%	---	1%	1%	5%	11%
Water Pollution	7%	3%	1%	1%	3%	10%
<u>Hanford</u>	6%	3%	11%	3%	11%	3%
Cancer	4%	3%	5%	5%	6%	4%
Accidents	4%	1%	3%	4%	3%	6%
<u>Nuclear Waste</u>	4%	2%	3%	4%	4%	5%
Aging	2%	2%	1%	3%	3%	2%
Food Additives/Preservatives	2%	2%	1%	---	2%	3%
Pesticides	2%	2%	3%	3%	3%	2%
Allergies	1%	5%	---	---	1%	1%
Cardio Vascular Disease	1%	2%	4%	4%	1%	*
Food Tampering	1%	---	---	---	---	2%
No Jobs	1%	1%	1%	---	---	1%
Toxic Waste	1%	2%	---	---	---	*
Other	5%	11%	1%	4%	7%	3%
Nothing, We Are Healthy/ Don't Know	28%	39%	55%	44%	22%	23%
Number of Cases	(600)	(125)	(75)	(80)	(118)	(202)

* Percents can exceed 100% due to multiple answers.

* Less than 1 percent.

2. Now thinking about anything which you feel poses a health risk, this could be something to do with the environment, or industry, or lifestyle, or anything else. What one factor do you feel poses the greatest risk to the health and well being of your family?

Percentage Volunteering
Each Response:^a

____County of Residence (unweighted)____.

	<u>TOTAL</u> <u>(weighted)</u>	<u>BENTON</u>	<u>FRANKLIN</u>	<u>WALLA</u> <u>WALLA</u>	<u>YAKIMA</u>	<u>SPOKANE</u>
Air Pollution	18%	14%	11%	4%	10%	25%
<u>Hanford</u>	10%	6%	21%	18%	14%	7%
Smoke/Smoking	6%	6%	4%	6%	6%	7%
Water Pollution	6%	4%	4%	5%	6%	7%
Accidents	6%	7%	4%	5%	8%	4%
<u>Nuclear Waste</u>	5%	2%	3%	5%	3%	7%
Pesticides	4%	2%	4%	8%	9%	1%
Diet/Physical Conditioning	4%	9%	1%	8%	3%	2%
Stress	4%	1%	—	—	3%	6%
<u>Nuclear Power</u>	3%	4%	—	5%	2%	4%
Nuclear War	3%	1%	1%	1%	2%	5%
Drugs/Alcohol	3%	2%	—	3%	6%	1%
Major Diseases	2%	2%	3%	3%	2%	2%
Food Additives/Preservatives	2%	3%	3%	1%	3%	1%
Toxic Waste	2%	2%	1%	1%	2%	1%
Cancer	2%	1%	1%	4%	2%	1%
<u>Radiation Leaks/</u> <u>Reactor Emissions</u>	2%	1%	3%	1%	1%	2%
Seven Others Volunteered By 1% Or Less						
Other	4%	6%	4%	3%	4%	3%
Nothing/None/Don't Know	11%	27%	29%	15%	7%	7%
Number of Cases	(600)	(125)	(75)	(80)	(118)	(202)

3. What other things come to mind that pose a health risk?

Percentage Volunteering
Each Response:*

____ County of Residence (unweighted) ____.

	<u>TOTAL</u> <u>(weighted)</u>	<u>BENTON</u>	<u>FRANKLIN</u>	<u>WALLA</u> <u>WALLA</u>	<u>YAKIMA</u>	<u>SPOKANE</u>
Water Pollution	10%	6%	1%	5%	8%	13%
Air Pollution	9%	10%	1%	9%	9%	9%
Drugs/Alcohol	7%	7%	5%	6%	6%	8%
Accidents	7%	4%	5%	6%	8%	6%
Pesticides	5%	6%	8%	9%	9%	2%
Smoke/Smoking	5%	7%	5%	11%	3%	5%
Major Disease	5%	5%	4%	6%	8%	3%
Diet/Physical Conditioning	4%	3%	4%	5%	6%	4%
Food Additives/Preservatives	4%	6%	—	5%	3%	4%
<u>Nuclear Waste</u>	3%	1%	—	4%	3%	4%
<u>Radiation</u>	3%	2%	5%	1%	3%	3%
Nuclear War	2%	2%	—	—	2%	2%
Other People/Crime	2%	2%	3%	1%	—	2%
Environment	2%	—	1%	—	1%	3%
Cancer	2%	1%	3%	1%	3%	1%
<u>Hanford</u>	2%	1%	—	—	1%	2%
Six Others Volunteered By 1% Or Less						
Other	15%	6%	7%	11%	12%	20%
Nothing/None/Don't Know	44%	50%	60%	48%	46%	39%
Number of Cases	(600)	(125)	(75)	(80)	(118)	(202)

4. Using a scale of 1 to 5, where 5 equals extreme health risk, and 1 equals no health risk, how would you rate the health risk associated with . . .

Mean Rating For Each Risk:

_____ County of Residence (unweighted) _____

	TOTAL (weighted)	BENTON	FRANKLIN	WALLA WALLA	YAKIMA	SPOKANE
A. Disposal of Industrial Chemicals	3.98	3.58	3.53	3.88	4.11	4.08
B. Cigarette Smoke	3.78	3.62	3.70	3.92	3.69	3.87
C. Nuclear Operations	3.59	2.41	2.73	3.72	3.46	4.04
D. Water Pollution	3.29	3.07	2.96	3.24	3.28	3.39
E. Use of Agricultural Pesticides	3.13	2.89	2.94	3.22	2.95	3.30
F. Automobile Pollution	2.80	2.63	2.42	2.65	2.82	2.91

5. You rated "nuclear operations" as a (1-5) on the 1 to 5 scale. What are your reasons for giving nuclear operations a (low/medium/high) health risk rating?

SUMMARY OF RESPONSES:

Reasons For Low (1 or 2) Rating:

Those who gave "nuclear operations" a low health risk rating gave the following reasons most frequently:

JUST DONT FEEL IT'S A PROBLEM	34%
THEY HAVE EVERYTHING UNDER CONTROL	24%
IT'S SAFE AS LONG AS SAFEGUARDS ARE TAKEN	21%
HIGH SAFETY STANDARDS/CONTROLS/REGULATIONS	19%
LIVED IN AREA A LONG TIME, KNOW IT'S SAFE	13%

Reasons For High (4 to 5) Rating:

Those who gave "nuclear operations" a high health risk rating gave the following reasons most frequently:

THINK IT'S RISKY LIVING NEAR HANFORD	34%
CONCERNED ABOUT HEALTH RISK OF EMISSIONS	26%
BECAUSE OF CHERNOBYL	24%
NUCLEAR POWER IS SOMETHING WE DONT KNOW ENOUGH ABOUT TO USE SAFELY	19%
DONT TRUST PLANT OPERATORS/DONT TELL US EVERYTHING	14%
BECAUSE HANFORD IS CONSIDERED AS A NUCLEAR WASTE DUMP SITE	11%

6. Now I'd like to get your opinions about the operation of the Hanford Nuclear Facility. Tell me if you generally agree or generally disagree with the following statement:

"Nuclear operations at Hanford create a significant health risk for you and your family."

____ County of Residence (unweighted)____.

	TOTAL (weighted)	BENTON	FRANKLIN	WALLA WALLA	YAKIMA	SPOKANE
Disagree Strongly	19%	48%	37%	21%	23%	8%
Disagree Somewhat	30%	26%	23%	29%	29%	32%
Neutral/Don't Know	3%	4%	5%	9%	1%	3%
Agree Somewhat	19%	10%	12%	15%	22%	21%
Agree Strongly	28%	7%	23%	25%	25%	36%
Refused	1%	5%	—	1%	—	—

7A. What is your main reason for feeling this way about the nuclear operations at Hanford?

7B. What other reasons do you have for feeling this way about Hanford?

SUMMARY OF COMBINED RESPONSES FOR 7A AND 7B:

Those Who Agree With Question 6:

Reasons most often given by those who agree that nuclear operations at Hanford create a health risk:

THINK IT'S RISKY/WORRY ABOUT LIVING NEAR HANFORD	37%
CONCERNED ABOUT HEALTH RISK OF RADIOACTIVITY/EMISSIONS/LEAKS	28%
DON'T TRUST PLANT OPERATORS/DON'T TELL US EVERYTHING	20%
BECAUSE OF CHERNOBYL	14%
NUCLEAR ENERGY IS SOMETHING WE DON'T KNOW ENOUGH ABOUT	
TO USE IT SAFELY	13%
BECAUSE HANFORD IS CONSIDERED AS A NUCLEAR WASTE DUMP SITE	13%

Those Who Disagree With Question 6:

Those who disagree give the following reasons most frequently:

JUST DON'T FEEL IT'S A PROBLEM, OR RISK	25%
THEY HAVE EVERYTHING UNDER CONTROL	20%
SAFE AS LONG AS SAFEGUARDS/PRECAUTIONS ARE TAKEN	11%
LIVED IN AREA A LONG TIME, KNOW IT'S SAFE	10%
HIGH SAFETY STANDARDS/CONTROLS/REGULATIONS	10%

8. Once again, using a 1 to 5 scale, this time where 5 equals extremely concerned, and 1 equals not at all concerned, how concerned are you with whatever health risk may be posed by the nuclear operations at Hanford?

____ County of Residence (unweighted) ____.

	<u>TOTAL</u> <u>(weighted)</u>	<u>BENTON</u>	<u>FRANKLIN</u>	<u>WALLA</u> <u>WALLA</u>	<u>YAKIMA</u>	<u>SPOKANE</u>
(5) Extremely Concerned	31%	12%	19%	29%	28%	39%
(4) Very Concerned	14%	7%	9%	13%	14%	17%
(3) Somewhat Concerned	21%	12%	16%	26%	22%	23%
(2) Not Very Concerned	14%	22%	15%	14%	14%	11%
(1) Not At All Concerned	19%	41%	35%	15%	22%	10%
Don't Know	1%	4%	5%	4%	—	—
Refused	*	2%	1%	—	—	—
Mean of 1-5 Responses	3.29	2.23	2.60	3.27	3.11	3.65

9. If we had asked this question one year ago what would your answer have been? Remember, 5 equals extremely concerned, and 1 equals not at all concerned.

____ County of Residence (unweighted) ____.

	<u>TOTAL</u> <u>(weighted)</u>	<u>BENTON</u>	<u>FRANKLIN</u>	<u>WALLA</u> <u>WALLA</u>	<u>YAKIMA</u>	<u>SPOKANE</u>
(5) Extremely Concerned	19%	8%	12%	15%	18%	24%
(4) Very Concerned	11%	5%	9%	14%	10%	14%
(3) Somewhat Concerned	22%	12%	17%	24%	25%	23%
(2) Not Very Concerned	18%	22%	11%	16%	20%	17%
(1) Not At All Concerned	26%	44%	39%	25%	25%	20%
Don't Know	3%	7%	12%	6%	2%	1%
Refused	*	2%	—	—	—	*
Mean Of 1-5 Responses	2.80	2.02	2.38	2.76	2.74	3.06

Comparison of Question 8 (this year) and Question 9 (last year):

	<u>Last Year</u>	<u>This Year</u>	<u>Change</u>
EXTREMELY CONCERNED	19%	31%	+12%
VERY CONCERNED	11%	14%	+3%
SOMEWHAT CONCERNED	22%	21%	-1%
NOT VERY CONCERNED	18%	14%	-4%
NOT AT ALL CONCERNED	26%	19%	-7%
DONT KNOW/REFUSED	4%	1%	-3%
MEAN OF 1-5 RESPONSES	2.80	3.26	+.46

DISTRIBUTION

No. of
Copies

No. of
Copies

OFFSITE18 Technical Steering Panel

D. S. Barth
University of Nevada
4505 Maryland Parkway
Las Vegas, NV 89154

W. A. Bishop
2503 Wedgewood Court SE
Olympia, WA 98501

M. L. Blazek
Oregon Department of Energy
625 Marion Street N.E.
Salem, OR 97310

G. G. Caldwell
Director
Tulsa City-County Health Dept
4616 East 15th Street
Tulsa, OK 74112

S. N. Davis
Dept. of Hydrology & Water
Resources
Bldg. 11
University of Arizona
Tucson, AZ 85721

N. J. Germond
224 Iron Mountain Blvd.
Lake Oswego, OR 97034

P. C. Klingeman
Civil Engineering Dept.
Oregon State University
Corvallis, OR 97331-2302

K. J. Kopecky
Fred Hutchinson Cancer
Research Center
1124 Columbia Street
Seattle, WA 98104

R. L. Morrill
Dept. of Geography
OP-10
University of Washington
Seattle, WA 98195

A. H. Murphy
c/o Climate Analyses Center
National Weather Service, NOAA
W/NMC51, WWB, Room 604
Washington, DC 20233

V. Nguyen
EWA, Inc.
133 1st Ave. N.
Minneapolis, MN 55401

D. W. Price
Agricultural Economics
Hulbert Hall Room 211
Washington State University
Pullman, WA 99164-6210

M. A. Robkin
Radiological Sciences SB-75
University of Washington
Seattle, WA 98195

G. S. Roessler
Rt. 1, Box 139H
Elysian, MN 56028

No. of
Copies

B. Shleien
2421 Homestead Drive
Silver Springs, MD 20902

A. P. Slickpoo, Sr.
P. O. Box 331
809 Nez Perce Lane
Kamiah, ID 83536

J. E. Till
Rt. 2 Box 122
Neeses, SC 29107

D. E. Walker, Jr.
P.O. Box 4147
Boulder, CO 80306

- 2 DOE Office of Scientific and
Technical Information
Technical Information Center
P.O. Box 62
Oak Ridge, TN 37830

- 18 K. CharLee
Office of Nuclear Waste Mgmt.
Department of Ecology
99 South Sound Center
Mail Stop PV-11
Olympia, WA 98504

J. Thomas, HEAL
325 Oak St.
Spokane, WA 99204

No. of
CopiesONSITE

- 2 DOE Richland Operations

R. F. Brich, SED A5-55
M. W. Tiernan, SED A5-55

- 35 Pacific Northwest Laboratory

J. M. Daer (10) K6-89
W. A. Glass (6) K4-13
S. P. Gydesen P8-55
G. L. Harvey K1-55
C. W. Holmes (5) K6-66
A. H. McMakin K6-86
B. A. Napier K3-54
W. L. Templeton K1-30
Public Reading Room (5) A1-65
Publishing Coordination K1-11
Records Center K3-70
Technical Library (2) P8-55