
Chapter 5

Communications

Approach

***Contents:** This chapter outlines the many steps and challenges that may be associated with a public awareness and education effort conveying the results of a detailed study of the health consequences of nuclear weapons testing. The informational needs as defined by various stakeholder groups are identified and current work being conducted by the NCI on its ¹³¹I/NTS Communications Project is discussed.*

5.1 Introduction

Effective health communication and education efforts increase the awareness and knowledge of a potential health risk. Often, such efforts are launched with hopes to motivate people to seek more information and possibly seek individual care and examination from a health care provider. This is not a simple task, and communicating effectively with multiple audiences about their exposures and the potential health consequences resulting from nuclear weapons tests conducted 4–5 decades ago is particularly challenging. A comprehensive effort to communicate the results of an in-depth scientific assessment of dose and risk, and to address the numerous issues that have been raised by stakeholders regarding fallout, would likely be an extremely complex and resource-intensive public awareness and education effort. This is not only because of the technical nature of the science used to develop the exposure estimates and potential health risks, but also because of the breadth of information that must be included. A study of the health consequences of nuclear weapons testing encompasses exposures to multiple radionuclides present in radioactive fallout and estimates of the likelihood of a number of health consequences resulting from these exposures. In addition, because exposure occurred across the country, information must be designed with sensitivity to educational, cultural, and other differences in population groups. It is clear that the development, implementation and evaluation of any communications plan will require extensive collaboration with state and local health departments, health professional organizations, advocacy groups, and community organizations, as well as the use of multiple channels to disseminate the information once developed.

Given the historical, social justice, and political contexts enveloping testing programs (for example, the United States tests at the NTS and the Marshall Islands), a public awareness and education campaign could engender additional public mistrust of government and possibly intensify demands for Federal government policy and legislative changes. It will be a formidable task to communicate information in a way that is perceived as believable as well as understandable by those concerned about the consequences of the

testing program. Nevertheless, one of the most important public health implications of performing a detailed dosimetric and risk analysis study in the future will be the need to clearly communicate the results of this more detailed study to the American public and health care providers.

This chapter provides general information about the discipline of risk communication and focuses on the many steps and challenges that may be associated with a public awareness and education effort to convey the results of a detailed study of the health consequences of nuclear weapons testing. The informational needs, as defined by various stakeholder groups, have been identified through work conducted by NCI to communicate the results of its report on *Estimated Exposures and Thyroid Doses Received by the American People from Iodine-131 (¹³¹I) In Fallout Following Nevada Atmospheric Nuclear Bomb Tests* (NCI 1997) (hereafter referred to as ¹³¹I/NTS Communications Project). While this chapter deals specifically with communicating the results of a more in-depth study of the health consequences of fallout exposures to the American public, a number of the issues and strategies discussed would be applicable to communicating the results of this feasibility report.

5.2 Components of a Proposed Communications Plan

There are multiple components of a communications plan. However, it is clear that, to be effective, any communications effort must target both the public and health care providers.

5.2.1 Public Communication and Education

The objectives of a nationally coordinated public awareness and education effort toward informing the American public of their potential exposure from fallout from United States and global nuclear weapons testing are:

- ◆ **To Satisfy the Public's 'Right to Know'**

Specifically, to alert Americans alive in the 1950s and the early 1960s that they were exposed to fallout from tests conducted at the NTS and from other global testing events, the potential health consequences of such exposure, and what, if any, steps concerned individuals may take to get answers to questions related to potential health effects from global fallout. This could include educational information on the history and conduct of nuclear testing programs within the United States and globally (for atmospheric testing ending in 1962). This information could also provide the public with the information it needs to enter into a public debate regarding issues of Federal responsibility with regard to the potential health outcomes associated with the United States and global nuclear weapons programs. Additionally, this could be structured to provide a central information repository for educational materials regarding these issues.

- ◆ **To Enable the American Public to Understand the Level of Exposure from Fallout and the Potential Risk of Disease Associated with that Exposure Level**

Specifically, to educate the American public about factors that may have increased their chances of exposure or their risk of disease so that they can self-identify whether or not they may be in a high-exposure and/or high-risk group. Additionally, to provide information on the potential health consequences of radioactive fallout so that people have the knowledge they need to make informed decisions about their health and are motivated to act on recommended follow-up activities (i.e., seeing their health care provider). Emphasis would be on reaching those population groups estimated to have received the greatest exposure and having the greatest likelihood of resultant health risks.

◆ **To Address Special Information Needs Including Access to Health Care and Ability-to-Pay Issues**

Specifically, to address the special information needs of those who are potentially at high risk and/or who are concerned, but do not have a source for medical care.

5.2.2 Health Care Provider Education

The nation's health care providers will likely have the greatest impact on improving the health status of persons who may have been adversely affected by radioactive fallout. This health care provider group includes local health care providers; national, state, and local medical associations; academic medical centers; medical schools; and schools of public health. The objectives of this component of a communications program would be to:

◆ **Inform Physicians/Health Care Providers about the Radionuclides of Concern and Potential Health Consequences**

Specifically, to target health care professionals in the geographic regions that received high doses and those practicing near former United States nuclear weapons program sites. Information should also include current recommendations by professional organizations and others regarding screening, diagnostic, and treatment options.

◆ **Build Expertise**

This could entail educating health care providers about radiation fallout-related disease and potential high-risk populations in their area and building skills through the use of training programs and short courses for health care professionals that guide them through the screening, diagnosis, treatment, and surveillance of specific illnesses.

5.3 Using NCI's ¹³¹I/NTS Communications Project as a Model

In its review of NCI's 1997 report, the IOM (IOM 1999) recommended that the Department of Health and Human Services (DHHS) take additional steps to develop and implement a communication plan to fully explain the potential health implications of ¹³¹I exposure to the American public from nuclear weapons testing at the Nevada Test Site (NTS). In response to the IOM recommendations (IOM 1999), NCI began collaborating with CDC to develop and disseminate accurate, yet understandable, information regarding the potential risks of thyroid cancer and thyroid disease associated with exposure to ¹³¹I

released during nuclear bomb testing in the 1950s and early 1960s at the NTS. In January, 2000 NCI and CDC sponsored a communications workshop entitled “¹³¹I Fallout from NTS: Informing the Public.” Subsequent to this workshop, NCI, in consultation with a group of citizens, scientists, physicians, communication experts, and representatives of the advocacy community and state public health departments, developed its ¹³¹I/NTS Communications Plan (see **Appendix I.1**).

Because a great deal of work has already been accomplished by NCI to structure its ¹³¹I/NTS Communications Project to ensure ongoing public involvement in the development and implementation, it would seem appropriate to use a similar approach for future communication planning efforts associated with a detailed study of the health consequences of nuclear weapons testing by the United States and other countries. In planning for this future work, the specific recommendations made by the IOM in its review of NCI’s 1997 report concerning communicating with health care providers and the public (IOM 1999) should also be considered.

5.3.1 The January 2000 ¹³¹I Communications Workshop

In January 2000, NCI (along with a working group consisting of CDC, citizen, advocacy group, state health department, and the Advisory Committee on Energy Related Epidemiologic Research [ACERER] representatives and a health educator) planned and convened a Workshop to begin the process of designing and implementing the ¹³¹I/NTS Communications Project. The Workshop, entitled “¹³¹I Fallout from NTS: Informing the Public,” was held January 19-21, 2000, in Rockville, Maryland (see Workshop Agenda and Summary in **Appendices I.2 and I.3**). This multi-day Workshop was structured with expert panels that explored relevant issues and public health communications recommendations. Through the Workshop, NCI sought input from affected and concerned citizens, health and environmental nonprofit organizations, health care providers, public health and other local government officials, experts in radiation sciences, and experts in health and risk communications on how to best plan and implement the ¹³¹I/NTS Communications Project.

Over 70 participants and presenters were directly involved throughout the Workshop (see **Appendix I.3** for the participant list). Workshop participants discussed the need for a more comprehensive ongoing information campaign.

At the end of the Workshop, participants agreed that NCI should proceed with plans to communicate to the American public what is known about ¹³¹I/NTS exposures and the potential health consequences. Participants understood that CDC and NCI would be providing Congress with a feasibility study regarding potential doses and health risks from exposures from United States and global testing, and that any communications effort associated with a more in-depth study would be resource-dependent. They agreed that the ¹³¹I/NTS Communications Project should be structured such that it could be broadened as more is learned from continuing work on exposures to global fallout and other radionuclides from the NTS. Thus, DHHS would be able to utilize the model developed for the ¹³¹I/NTS Communications Project in planning for future communications efforts.

The Workshop ended with recommendations for further action and for creation of a citizen review group that would be involved in the planning phases of the ¹³¹I/NTS Communications Project. NCI incorporated these recommendations as it developed the plan for its ¹³¹I/NTS Communications Project.

Keeping in contact with workshop participants

To meet Workshop participant expectations, NCI and CDC have made a commitment to communicate frequently and fully with the community about their timetable and progress toward meeting milestones. One of those milestones was to provide participants with a copy of the feasibility report to review and to inform them of Congressional response to this report. NCI and CDC have developed a process for ongoing communication with Workshop participants to keep them informed about the progress in implementing the ¹³¹I/NTS Communications Plan, any new efforts initiated (for example, if Congress decides to appropriate funds to carry out the work detailed in this report) or the reasons for any delays. This process included:

- ◆ Progress reports sent out via an electronic mailing list – utilizing the National Institutes of Health (NIH) LISTSERV facility. Workshop participants (and any other interested individuals) who subscribed to this service received updates on NCI’s progress implementing the plan for the ¹³¹I/NTS Communications Project. This process was also used to disseminate draft documents and to collect review comments. Workshop participants also “discussed” topics via group e-mail exchanges. (Note: The listserv was discontinued in April 2003 with the launch of the print and Web-based outreach campaign.)
- ◆ Mailings (for those Workshop participants who did not have Internet access, those who preferred mailings, or those who were not subscribed to the Listserv).
- ◆ Other avenues of communication such as postings on NCI’s or CDC’s Web sites.

5.3.2 The ¹³¹I/NTS Communications Development Group

During the ¹³¹I/NTS Communications Workshop, participants determined that a structure was needed for continued public participation in the communication planning process. Workshop participants decided that NCI should form a working group of concerned citizens and health professionals to provide guidance to NCI as it developed the plan for the ¹³¹I/NTS Communications Project. NCI used the feedback received during the Workshop to solicit and select eight people to comprise the Communications Development Group. These individuals represented activists, Native American groups, minority citizens, local and state public health departments, physicians and health care providers, and health educators. This eight-member group provided input and feedback into the development of the ¹³¹I/NTS Communications Plan. Specifically, the group assisted in efforts to:

- ◆ Identify all potential target audiences;
- ◆ Identify the cultural sensitivities of those audiences;
- ◆ Choose appropriate strategies to reach the intended audiences;

- ◆ Develop project message concepts;
- ◆ Identify appropriate delivery channels (e.g., face-to-face, group, organizational, community, and media);
- ◆ Identify appropriate information sources (credible persons to deliver the information); and
- ◆ Identify appropriate materials to use.

5.3.3 ¹³¹I/NTS Communications Project Outreach and Dissemination

In December 2002, the NCI released communication materials for the Project, developed with extensive input from advocacy groups, community representatives, and health officials, as well as extensive focus group testing. Materials included:

- **Get the Facts About Exposure to I-131 Radiation**--This general information brochure provides information about the Nevada tests and identifies individuals at particular risk.
- **Making Choices: Screening for Thyroid Disease**--This decision-aid workbook/brochure is for individuals concerned about their exposure to ¹³¹I from fallout (based on decision support format of the Ottawa Health Decision Center at the University of Ottawa and Ottawa Health Research Institute, Ontario, Canada).
- **Radioactive Iodine (I-131) and Thyroid Cancer**--This flip chart, designed for use in small groups of up to 10 people, addresses concerns specific to Native Americans.
- I-131 Web site (www.cancer.gov/i131), including tools for partners.

5.3.4 The campaign implementation is discussed fully in Appendix I.

5.3.5 Assessing the Effectiveness of the ¹³¹I/NTS Communications Project

Because there will be a significant time lapse between the implementation of the ¹³¹I/NTS Communications Plan and the completion of in-depth research on exposure to radionuclides from global fallout and radionuclides other than ¹³¹I from NTS fallout, sufficient time exists to evaluate the effectiveness of the ¹³¹I/NTS Communications Project. Such an evaluation is necessary to determine if the ¹³¹I/NTS Communications Project could actually be used as a model for communicating the results of other fallout-related scientific research.

A process evaluation should focus on determining the public reaction to the ¹³¹I/NTS Communications Project and the degree to which the original objectives (i.e., determining changes in public awareness, the “reach” of the project, and the effectiveness of the communication channels, etc.) were met. Additionally, an outcome evaluation should assess the appropriateness of any changes in public perceptions and actions. Any changes discovered from an assessment would be relevant to the development of a communications plan based on possible future research described in this report. The structure and content of a communications plan would also need to take into account the publication of new research that could potentially change what is known about the relation between radiation exposure and a health risk or new policies and programs that change how the risk affects the public. The final evaluation design and implementation is discussed in Appendix I.

5.4 Audience Profiling and Message Development

Health communication is the crafting and delivery of messages and strategies, based on consumer research, to promote the health of individuals and communities. Characteristics of a successful national public health communication and education effort include (Arkin 1999):

- ◆ Careful planning;
- ◆ Sufficient funding and staffing;
- ◆ Long-term legislative and public support;
- ◆ In-depth audience identification, focus, and involvement;
- ◆ Clearly identified changes and challenges;
- ◆ Multiple dissemination channels, activities, and strategies;
- ◆ Trustworthy spokespersons and credible information sources;
- ◆ Multiple partners; multiple types of evaluation;
- ◆ Evaluation; and
- ◆ Flexibility to be modified as changes are identified.

5.4.1 Determining the public’s awareness

Before the implementation of any communication effort, the level of public awareness must be examined and considered. Prior to the January 2000 Communications Workshop, NCI conducted limited research to measure the level of public awareness, concern, and familiarity with the United States’ nuclear weapons atmospheric tests conducted during the 1950s and early 1960s at the Nevada Test Site. (See Appendices I.4 and I.5 for a copy of the reports on the key findings from this market research). This market research, along with knowledge gained from the implementation of the ¹³¹I/NTS Communications Project, will be extremely useful to DHHS in developing future communication plans to address fallout issues. What follows is a brief description of the

type of research conducted by NCI and a discussion of the main areas where DHHS would need to conduct supplemental research.

5.4.1.1 In-depth Interviews with Subject Experts

In the Fall/Winter of 1999, NCI conducted 19 in-depth interviews with individuals who were identified by agency and public representatives as having expertise in areas related to the issue of nuclear fallout (see **Appendix I.4**). The main objective of these qualitative interviews was to provide NCI with useful and detailed insights into the perceptions and views of different organizations and experts involved in the ¹³¹I fallout issue and, as such, they were not intended to represent the views of all such groups or persons (NCI 2000a). The interviews yielded results that have helped NCI determine the direction and scope of further research for the ¹³¹I/NTS Communications Project.

5.4.1.2 Public and Physician Focus Groups

In December 1999, NCI conducted six focus groups with three audience segments, referred to as the “higher-exposure public,” the “lower-exposure public,” and “physicians” (see **Appendix I.5**). The higher-exposure and lower-exposure definitions were extracted from NCI’s 1997 report, *Estimated Exposures and Thyroid Doses Received by the American People from Iodine-131 In Fallout Following Nevada Atmospheric Nuclear Bomb Tests* (NCI 1997), which outlined the key risk factors for health effects from ¹³¹I exposure.

Conducting research with both the higher- and lower-exposed public was done to obtain an approximate sense of how exposure status might affect one’s awareness, knowledge, and concerns about the NTS and potential health effects from ¹³¹I exposure. Physicians were defined as general practitioners, family physicians, or general internists who had been practicing medicine for at least 3 years in a high-exposure state (NCI, 2000b).

5.4.1.3 Focus Group Research

NCI conducted twelve additional focus groups consisting of four groups in each of the following regions: Chicago, Illinois; Tulsa, Oklahoma; and Denver, Colorado. These locations were selected based on geographic diversity and the ability to recruit lower-exposed as well as higher-exposed individuals. NCI conducted the groups with lower-exposed and higher-exposed African-Americans, Caucasians, Hispanics, and Native Americans. Determination of higher-exposure was based on age (birth-15) and state of residency during the testing years. These additional focus groups were conducted to test messages and concepts for the development of educational materials about ¹³¹I exposure from NTS. NCI is currently summarizing the focus group findings in a report that will help identify which messages and concepts resonate with the public.

5.4.2 Additional Research Needed for Expanded Communication Efforts

Development and testing would also be necessary for the expanded communication efforts outlined in this feasibility report – specifically, communicating dose and risk information for radionuclides from global testing and from radionuclides other than ^{131}I in fallout from the NTS. This research should help identify the outstanding issues the public may have as they begin to absorb and understand “the big picture” of the potential health consequences associated with atmospheric nuclear weapons testing.

Qualitative and quantitative research would need to be conducted to collect information about the concepts, messages, channels, activities, materials, and strategies appropriate for a far-reaching and large-scale communications and education campaign on the health consequences of fallout from nuclear testing (see **Appendix I.6** for a description of the types of “tools of research” that could be used). Research methods should be selected to augment research collected by NCI for the ^{131}I /NTS Communications Project. The following section discusses the main areas where further formative research should be conducted.

5.4.3 Defining Target Audiences

There is no uniform “general public,” but rather numerous smaller, sometimes intersecting groups of individuals sharing common concerns, interests, perspectives, or demographic characteristics (Arkin 1999). The consumer research NCI has conducted for its ^{131}I /NTS Communications Project provides a good sense of the target population groups for ^{131}I dose and risk information related to nuclear weapons testing at the NTS. However, as the list of radionuclides and potential health consequences expands, more research would need to be conducted in this area to segment the target population groups into main audiences, then select and profile these target audiences (see Figure 5.1). These audience profiles would be used to help frame messages – providing DHHS with the information to address audience-specific needs and issues.

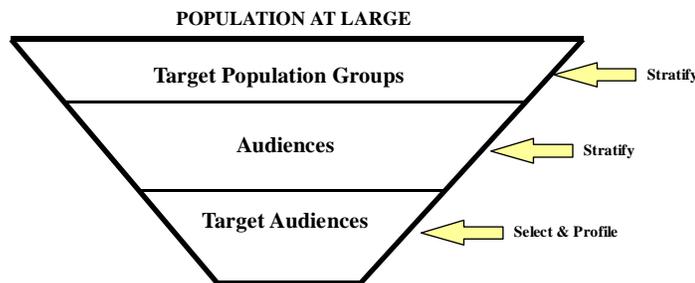


Figure 5.1 Selecting Target Audiences.

It would also be necessary to profile and link with the proposed communications campaign’s secondary audience(s). Secondary audience refers specifically to the

audience(s) that can also benefit the campaign by reaching and influencing primary target audiences (e.g., health care providers, grassroots organizations, etc.) (CDC 1998).

In the ¹³¹I/NTS Communications Project, exposure information on ¹³¹I fallout from the NTS was utilized from NCI's 1997 report. Specifically, it was used to define potentially higher- and lower-exposed populations based on geographic residence and age. With this information in hand, NCI has designed educational messages that address both higher and lower ¹³¹I/NTS exposed populations based on the focus group findings.

Because dose and risk information on radionuclides from global testing sources and other radionuclides from NTS are not yet fully quantified, work to further identify audiences cannot yet occur. The dose and risk estimates, with accompanying uncertainty, that would result from more in-depth research than has occurred in this feasibility study, would more clearly identify the subgroups of the general population that may have received higher exposures and be most at risk. When available, these results would help the Federal government explain to subgroups of the American public how the potential public health impact of ¹³¹I fallout from the NTS and from global fallout compares with that of the other biologically significant radionuclides in fallout as well as other health threats.

To date, the broad target population groups already defined through research and stakeholder input include:

- ◆ The United States population;
- ◆ Native American populations;
- ◆ People at higher risk – those who meet research-identified factors for higher exposure and risk (e.g., lived in high-fallout areas during testing years, were children during time of testing, drank or ate certain foods, etc.);
- ◆ People at lower risk – those who meet research-identified factors for lower exposure and risk (e.g., born after cessation of testing; did not eat or drink foods of concern, etc.);
- ◆ People who worked at, lived adjacent to, or currently live adjacent to the NTS or a United States nuclear weapons production facility;
- ◆ People who are concerned about potential risk from multiple radiation sources;
- ◆ Mobile populations (e.g., migrants and farm workers);
- ◆ Family and friends of those potentially at high risk;
- ◆ Health care providers in areas determined to have had high fallout;
- ◆ Health care providers in areas determined to have had low fallout;
- ◆ State and local health departments;
- ◆ Public health and medical organizations;
- ◆ State and local elected officials;

- ◆ Environmental health advocates and professional and citizen-based associations/organizations;
- ◆ Other federal agencies; and
- ◆ Media.

As stated, the target population groups listed here represent a broad sweep of the work conducted to date for the ¹³¹I/NTS Communications Project. Table 5.1 illustrates some broad assumptions made by participants of the ¹³¹I/NTS Communications Workshop regarding target population groups, the potential information needs and perceptions of those groups, and potential communications channels and activities. These general assumptions could be used as starting points to define and select target audiences and their subgroups.

5.4.4 Developing Messages

Work on the ¹³¹I/NTS Communications Project has revealed broad and basic assumptions and information about the target population groups already identified (see Table 5.1, second column). These broad assumptions could serve as a rudimentary guide in developing messages for work relating to global fallout and other radionuclides contained in NTS fallout. In addition, the following discussion highlights some of the challenges and issues to consider when developing messages for a fallout-related communications and education campaign.

Table 5.1. Broad Target Population Groups, Assumptions and Potential Communications Channels and Activities

Target Population Groups *	Broad Assumptions	Potential Communications Channels and Activities
<p>THE UNITED STATES POPULATION (National plan to educate American public on history of the United States nuclear weapons program, global testing and current knowledge about the potential health consequences of this legacy, and to increase overall national “awareness” of current issues)</p>	<p>(Large portion of population uninformed) Potentially could need: historical context information on United States and global nuclear weapons programs • General information on fallout production mechanisms and fallout patterns • Information on radionuclides of concern (beginning with what is known about ¹³¹I and as information becomes available about other radionuclides) • Information on general risk factors for disease (people will “self-identify” whether they are at “higher” or “lower” risk) • Information on history of government actions/inaction and acknowledgement • Information on ongoing work to address outstanding public concerns and issues • Campaign kickoff messages and materials should be provided at least in one other language and for low-literacy audiences</p>	<p>National mass media • Targeted local media • Internet • Advocate groups • National, regional, local archival projects • Professional organizations • Grassroots organizations • targeted national organizations (i.e., AARP) • Library resource centers • Industry trade associations • Veterans associations • National, state and local medical and public health associations • National and regional advertising • Toll-free telephone systems</p>
<p>NATIVE-AMERICAN TRIBES</p>	<p><i>(Would be targeted simultaneously or soon after main campaign kickoff)</i> Same as “United States Population” Plus: Feel government is not meeting all desires/government efforts are likely to disappoint • Believe that cultural differences never accounted for in formulas (scientific, communication, etc.) • May want dose information specific to Native American diet and migratory patterns • Information on ongoing work to address outstanding public concerns and issues</p>	<p>Mass media is not primary communication channel, intra/inter tribal is best • As sovereign nations, want control of information dissemination and outreach • Nontraditional media and interpersonal communications • Use tribal leaders and existing networks, such as tribal advocacy and grassroots environmental organizations • Indian Health Service • Tribal Councils • Tribal Enrollment System • Internet • Small Group • Toll-free telephone system(s)</p>

Target Population Groups *	Broad Assumptions	Potential Communications Channels and Activities
<p>PEOPLE AT HIGH RISK Those characterized by factors that increased their likelihood of exposure and subsequent disease risk, such as; geographic location, age and diet during testing period.</p>	<p><i>(Would be targeted simultaneously or after campaign kickoff – many would “self-identify” through education on risk factors for disease learned through campaign kickoff messages and materials)</i> Potentially could need: Detailed information on risk factors for disease for exposure to each radionuclide of concern • Information to answer questions related to potential multiple exposures • Assurances that health care providers are getting same information • Information on what to do next, including what to do if health care is not available • May want more than studies can deliver (i.e., comprehensive care, long-term support, compensation) • Government efforts are likely to disappoint • Information that addresses multiple literacy levels, languages, etc. • Many would be outraged at past perceived government secrecy and actions • Need government acknowledgement of involuntary risk • Concerned with physical impact of exposure and psychological stress from exposure • Information on national, regional, state and local support networks • Some percentage of population would be outraged at expenditure of Federal public health funds</p>	<p><i>[Still geographically widespread]</i> Targeted and strategic local media • State and local health departments • Regional and local health care providers • State and local medical institutions and health clinics • Internet • State and local advocacy groups and grassroots organizations • Library resource centers • Industry trade associations • Veterans associations • Toll-free telephone systems • Internet • Community and business health fairs</p>
<p>PEOPLE AT LOW RISK Those who are NOT characterized by factors that increased their likelihood of exposure and subsequent disease risk, such as geographic location, age, and diet during testing period.</p>	<p><i>(Many would “self-identify” as low risk through campaign kickoff, or would go the extra step to confirm low risk status with health care provider)</i> Potentially could need: Repeated information to confirm their understanding that they have low risk • May need to seek confirmation of low- or no-risk status through health care provider • Many would still be outraged at government secrecy and past actions</p>	<p>Main messages received during campaign kickoff for all American public • Would remain updated mainly through Internet and other mass reach media • Advocacy groups and grassroots organizations</p>

Target Population Groups *	Broad Assumptions	Potential Communications Channels and Activities
PEOPLE WHO WORKED AT, LIVED ADJACENT TO, OR CURRENTLY LIVE ADJACENT TO THE NTS OR A UNITED STATES NUCLEAR WEAPONS PRODUCTION FACILITY	Same as “People at High Risk” Plus: May have concerns about multiple doses • Information on what is scientifically known about releases from nuclear weapons research and production facilities and potential health consequences of those releases • Information on worker compensation programs, where applicable	Same as “People at High Risk” Plus: CDC/ATSDR Health Effects Subcommittees (where applicable) • Unions • Trade organizations • Veterans organizations • Grassroots organizations • Internet
PEOPLE WHO ARE CONCERNED ABOUT POTENTIAL RISK FROM MULTIPLE RADIATION SOURCES	Same as “People at High Risk” Plus: Information that addresses multiple dose and “added dose” concerns • more detailed information on what is scientifically known about health effects from medical and diagnostic radiation exposures, occupational exposures (e.g., uranium mines, nuclear weapons production facilities, etc.) and exposures to naturally occurring radiation	Same as “People at High Risk” Plus: Information on CDC/ATSDR Health Effects Subcommittees (where applicable)
FAMILY AND FRIENDS OF THOSE POTENTIALLY AT HIGH RISK	Same as “People at High Risk” Plus: Information on national, regional, state or local support networks	Same as “People at High Risk”
MOBILE POPULATIONS <i>(e.g., migrants and farm workers)</i>	Same as “United States Population” Plus: Information tailored for multiple literacy and language needs	Non-traditional media and interpersonal communications • Member organizations • Unions and worker associations • Religious leaders • Small group and community channels • Internet

Target Population Groups *	Broad Assumptions	Potential Communications Channels and Activities
HEALTH CARE PROVIDERS IN AREAS DETERMINED TO HAVE HAD HIGH FALLOUT	<p><i>(Would likely be targeted before and simultaneous to information delivered in national campaign – geared toward primary care physicians, including those in family practice, general medicine, internal medicine, and other health care providers, such as nurses, physician assistants, and internists with specialties in those areas related to identified health outcomes.)</i></p> <p>(Most under-informed) Information on exposures, risk factors for disease in their areas • Information on fallout pattern, why their area is estimated to have had high fallout • If applicable, patient decision aids • Training and credentials (e.g., CMEs) to evaluate potential patients • Would be primary information source sought by concerned public/potential patient • Information and referral resource list(s) • Receive volumes of educational information daily • Information on national, regional, state or local support networks</p>	Professional journals • Professional associations • State health personnel, training courses and publications • CDC-produced CME sessions (e.g., Grand Rounds) • Satellite information conferences • CDC/ATSDR “case studies” • MMWR • “Dear Colleague” letters • Medical/professional conferences • Internet • Pharmaceutical representatives • Managed health care organizations
HEALTH CARE PROVIDERS IN AREAS DETERMINED TO HAVE HAD LOW FALLOUT	<p><i>(Would likely be targeted same as above)</i></p> <p>Same as health care providers in “high fallout areas” Plus: Specific information materials designed for people at low risk and those living in “low-fallout areas”</p>	Same as health care providers in “high-fallout areas” • More passive communication channels (self-motivating)
STATE AND LOCAL HEALTH DEPARTMENTS	Have a vested interest in activities • Concerned that past issue(s) not affect present perceptions • Some states may prefer to be “project lead” • May want to be involved with communications strategies • States would communicate with local health officials • Would want to use their own information dissemination networks • Would want specific information tools for public health clinics (specific for multiple literacy and language needs) • Would want information for those underinsured	One-on-one meetings • Satellite and/or telephone conferences • Printed materials • Internet • ASTHO, NACCHO, NPHIC, ASTE and other affiliate organizations

Target Population Groups *	Broad Assumptions	Potential Communications Channels and Activities
PUBLIC HEALTH AND MEDICAL ORGANIZATIONS	Same as “Health Care Providers” Plus: Information on national, regional, state or local support networks	Same as “Health Care Providers” and “Environmental and Health Advocates” • Professional conferences • Professional organization newsletters • Mailings to organization memberships
STATE AND LOCAL GOVERNMENTS AND CONGRESSIONAL STAFF MEMBERS	Would want advance notice of campaign kickoff • Would want confirmation that their health departments have been engaged • Have a vested interest in all activities	Status reports • Correspondence • One-on-one meetings • Satellite or telephone conferences • Printed materials • Internet
OTHER FEDERAL AGENCIES	Have a vested interest in all activities • Would want to be informed of activities/issues that potentially concern their agency • May be interested in partnering with CDC/NCI	Headquarters and regional office correspondence • E-mail • Internet • Satellite and/or telephone conferences • One-on-one meetings • Internet
ENVIRONMENTAL AND HEALTH ADVOCATES PROFESSIONAL AND CITIZEN-BASED ASSOCIATIONS/ORGANIZATIONS	Many have disparate viewpoints • Same information as “People at High Risk” and “Health Care Providers” • Need training and education materials • Regular, consistent messages/information • Have questions about government public health agenda(s) • Many would be viewed as more credible information sources to some target audiences • Some would like more service than study • Some may never be satisfied by actions taken • Want to provide input on material development • Desire innovative communication approaches	Professional journals • Direct mail with key information and camera-ready newsletter articles, fact sheets, etc. • Follow-up phone calls • Localized information • Pro-active approaches • National organization partnerships • Direct contact • Focus groups • Localized information/coverage • National, state and local media • Internet • Professional conferences • Professional organization newsletters • Mailings to organization memberships

Target Population Groups *	Broad Assumptions	Potential Communications Channels and Activities
MEDIA	<p>Same as “United States Population”</p> <p>Plus: Need timely, clear, concise, interesting information • Simplified, clarified science to communicate to audiences • Probably would still make mistakes/misinform public and communicate errors • They would seek other scientific information and viewpoints • Would need information on the “process of science” as well as the end results • Information and education on uncertainty involved in estimating doses and risk • Information on context with other causes of morbidity and mortality • Need to educate on difference between absolute and relative risk; individual and population risk • Information on what people can do about risk/what government is doing</p>	<p>Editorial board meetings • Pre-written articles (for outreach activities) to local media outlets • Testimonials/first-person information (Areal people@) • AMass@ conference call link (e.g., telephone press conference, video conference) • Radio talk-show host who is Aopinion leader@ • Info to community channels (cable, radio stations) • Celebrity spokesperson (media-related and/or star) • Environmental and health advocates • Grassroots organizations • Internet</p>

- Would require further segmentation into main audiences, then selection and profiling of those target audiences

5.4.4.1 Understanding the social, political, and cultural context

Understanding the social, cultural, and political context associated with the perceptions of the target population groups will be the most important consideration in developing messages for this proposed public awareness and education plan. Over the past 50 years, Government secrecy, mass media reports, and stories about radioactive contamination have influenced how people think and feel about nuclear issues and activities. Messages would need to be framed with consideration of societal and cultural perspectives that are dominated by nuclear and radioactive stigmatization. Therefore, to understand specific populations, communities, and regions that are targeted for risk messages, appropriate conceptual theories developed in behavioral science research on perceptions of risk, the social amplification of risk, and others would have to be utilized (Kasperson et al. 1988; Weart 1988; Slovic et al. 1991; Kasperson 1992; Gregory et al. 1995; Flynn et al. 1998; Flynn 1999).

Legacy of mistrust

Success in this communications endeavor will depend on the sensitivity of DHHS to the American public's views about the United States and global weapons programs. Given the legacy of mistrust that has developed over the past half-century, this is a formidable social and political context within which to communicate (Flynn 2000). For such an effort to succeed, messages should acknowledge the Government's responsibility for past actions in the history of its nuclear weapons program.

Meeting racial/ethnic and/or cultural needs

Understanding ethnic differences can make or break a successful communication campaign (Huerta and Macario 1999). It is possible that the only broad public messages developed in this proposed campaign would be those constructed to provide historical context to the communications campaign – providing the American public with the facts and issues surrounding the United States and global nuclear weapons testing legacy. Otherwise, messages would need to be tailored so that they are meaningful and appropriate for target audiences and their subgroups. To do this, a two-pronged approach is recommended. This would include: 1) conducting research to determine the racial/ethnic and/or cultural subgroups in each identified target audience, and 2) working with a community group (such as the Communications Development Group formed to assist NCI in the development of the ¹³¹I/NTS Communications Plan) to form partnerships with identified racial/ethnic and/or cultural groups to assist in the planning stages of the communications project. From that point, further research would then be conducted into the cultural sensitivities, diversity, and culture-specific risk perceptions for each subgroup, resulting in unique project planning strategies for each.

Tribal Nations

Because many of the populations affected by the nuclear weapons program throughout the years of the Cold War were Native American populations, any communication efforts should include careful planning with Native American tribal leaders, tribal health care providers, tribal organizations, and the Indian Health Service. Risk

communication research shows that the interactive process of receiving and processing messages involves values, social-cultural perspectives, and emotional responses as well as knowledge (Peters and Slovic 2000; Peters and Slovic 1996; Gregory and Keeney 1994; Damasio 1994). Tribal governments interact and deliberate differently; this must be understood and protocols must be followed, as done with other sovereign nations. The challenge in this regard is daunting and will require careful planning, extensive resources and specific expertise. One possible approach would be to establish a separate Native American caucus where research, audience profiling, message testing, and other communications planning tasks can be designed and conducted in partnership with a consultative panel of Native Americans. This panel could objectively review the communication and education plan for sensitivity to language, moral and religious structures, and cultural perspectives that are distinct to Native American nations.

5.4.4.2 The Challenge of Communicating Estimated Doses and Risks

Estimating the risk of exposure to radiation released from weapons tests involves reconstructing radiation doses from tests that took place 40 to 50 years ago, identifying estimated exposures to populations, and estimating the subsequent potential health effects. The only way this research is possible is to rely on limited data, complex mathematical models, and expert judgments and assumptions. The results of such complex processes are not usually convincing to the average layperson, especially when such results are presented with the appropriate range of uncertainty and are routinely subject to contradicting interpretations, even among scientists. Nor can such results be easily explained to the public in defense of their reliability or accuracy (Purchase, et al. 1999; Slovic 1999; Flynn 2000). In this dose reconstruction and risk assessment work, scientists will not be able to make definite statements about cause and effect and therefore may be seen as “waffling” when asked to definitively answer the question, “Will I get sick or not?” Thus, the very data that will serve as the basis for this public awareness and education effort may be perceived as “poor” or “inadequate” science.

In addition, not everyone identifies with or understands scientific concepts. It is especially confusing when different definitions apply to everyday words used by both scientists and the public (Flynn 2000). How scientists define words like risk, exposure, uncertainty, screening, etc., may differ from how lay people or even other scientists may define those words. For example, what does risk mean? Even if risk is confined to human mortality, there are numerous ways it can be expressed (Slovic 1998; Sandman 1987). In most situations, scientists believe that risk should be conveyed numerically (e.g., percentages, probabilities, ranges, etc.). However, research indicates that numerical probabilities are often meaningless to lay people. The dilemma with verbal expressions of probability is that while people usually feel they understand the information better, it is difficult to get consensus on what that information actually means (Slovic 1996; Mertz et al. 1998; MacGregor et al. 1999; Lipkus and Hollands 1999).

The specific challenge of estimating doses and potential health risks to the American public from exposure to NTS and global fallout adds another layer of complexity. Dose estimates from this research will not be able to account for all the factors that contribute to

individual differences in exposure over time for any single person. Therefore, risk estimates developed from these estimated fallout exposures will only represent the average risk for a population group that shares common characteristics such as age, place of residence, dietary factors, etc. Meaningful estimates of the actual risk to a particular individual will be unobtainable because one cannot account for all the factors that may influence individual risk. This means it will be exceedingly important to develop messages that clearly emphasize that risk estimates generated for NTS and global fallout exposures are average risks and that a person's actual, individual risk may vary greatly from this average. One approach to meeting this communication challenge would be to use hypothetical exposure scenarios in both the exposure and risk assessment. Providing hypothetical individual scenarios that have "characteristics" people can identify with would provide some context for understanding what exposures they may have received and how these exposures may translate into dose and potential disease risk.

As a result, the charge to develop messages to communicate the type of research outlined in this report will be difficult. Partners in this approach must discover how the public, specifically each target audience, uses and responds to risk-related messages. In addition, the complicated issue of trust and credibility must be examined before it is determined how each audience would process and accept risk messages.

Because the scope of fallout-related research is much broader than the issues being addressed by the ¹³¹I/NTS Communications Project, the consumer research conducted for the ¹³¹I/NTS Communications Project would need to be augmented. Further research would allow DHHS to better ascertain each audience's perceptions of risk, understanding of multiple exposure information, and how each audience best receives, understands, responds to, and uses risk information. Such research is vital to develop messages for audiences that are credible and useful rather than messages that overwhelm, confuse, cause undue anxiety, or are misinterpreted.

5.4.4.3 Include Public Health Recommendations in Messages

Informing the public about a health risk without explaining what can be done about that risk can lead to anger and frustration (Arkin 1999). Clearly, recommended actions and other advice would need to be included in messages. In general, these would cover:

- ◆ Recommended actions to lessen the consequence of exposure (e.g., regular physicals, early detection, lifestyle changes); and
- ◆ Sources of additional information or assistance (e.g., toll-free hotline; Federal agencies or organizations; state, regional or local information resource centers).

Identifying discrepancies in medical recommendations and developing consistent public health messages

Before any health communication and education project is launched, it is important to develop consistent messages for all audiences – specifically for messages that make recommendations concerning visits to health care providers. This would require identifying and examining the inconsistencies in current medical and public health recommendations

specific to any health outcomes of concern. There are many differences in scientific and public health policy opinions surrounding what is known (and what is not known) about the potential health consequences from the nation's nuclear weapons legacy as well as the potential health impacts from exposure to fallout from NTS and global nuclear weapons testing. In addition, there are many viewpoints concerning appropriate medical interventions to deal with any potential health impacts from these exposures. An expert panel may need to be convened to explore and evaluate the scientific basis of these differing opinions and recommendations to develop consistent public health recommendations for inclusion in messages. This panel could include relevant scientific, medical, and public health organizations and advocates, such as the Agency for Healthcare Research and Quality (AHRQ) and members of the United States Preventive Services Task Force. DHHS has already begun to address public requests and opinions regarding government-sponsored screening opportunities for thyroid cancer as well as for other (noncancerous) thyroid diseases in the wake of NCI's ¹³¹I NTS Fallout report (NCI 1997) at a thyroid disease screening workshop sponsored by ACERER in June 2000.

5.5 Developing Working Partnerships

Working partnerships would need to be developed with various stakeholder groups for both the planning and implementation phases of any proposed communications and education plan. The NCI Communications Development Group used to plan NCI's ¹³¹I/NTS Communications Project provides an example of the utility of bringing together representatives of various constituencies to assist in communications planning. Because of the added breadth and scope of the potential health consequences of exposure to global fallout and other radionuclides from NTS, partners from the following areas would need to be included in any working partnership that is developed:

- ◆ Federal agencies,
- ◆ State and local health departments,
- ◆ Public health and environmental advocates,
- ◆ National, regional, state, and local grass-roots organizations (public health and environmental),
- ◆ Medical and public health professionals and professional organizations,
- ◆ Tribal leaders and organizations,
- ◆ Religious organizations,
- ◆ National citizen and consumer organizations, and
- ◆ Managed care organizations.

As with other national health communications campaigns, partners are essential because they are the ones "in the field." The partners sought should be those who promote collaboration, possess the ability to problem-solve, and possess skills needed in garnering additional resources – volunteers, mailing lists, service networks, Web sites, conference venues, printing, etc. (CDC 1998). These partners may be needed to gather the necessary

data to develop the communications plan, establish and maintain access to target audiences, and/or develop and pre-test messages and materials. Or they may be needed in the implementation phase to participate in special events (e.g., campaign kick-off); disseminate messages and materials, foster the credibility of messages and the program, keep other concerned groups and organizations up to date, and/or evaluate and revise program activities.

5.5.1 Providing Technical Assistance and Resources

For a national communications and education plan to be effective, provisions must be made to coordinate and provide technical assistance and resources to state and local health departments to ensure that communication and educational programs, materials, and methodologies can be successfully planned for and applied. During the planning phase, federal agencies may have to provide technical assistance and/or resources to enlist assistance from various partners to define and access target audiences, develop and pre-test messages, and conduct material field testing. For the implementation phase, it may be necessary for these agencies to provide technical assistance and/or resources to guide and train external partners' staff on how to integrate effective public education into local programs and services.

Examples of the types of technical assistance and resource support typically necessary for a nationwide communications and education campaign are:

- ◆ Disseminating research results and model educational protocols to state and local health agencies.
- ◆ Developing and maintaining a clearinghouse for partners and other individuals, groups, and organizations to identify and retrieve resources and expertise currently existing in medical organizations, universities, archival projects, grassroots organizations, government agencies, and the private sector. Such an effort could help to better ensure consistency in all communication and educational materials.
- ◆ Increasing the resources needed at the state and/or local level to implement the communications and education campaign as well as to evaluate its reach and success.
- ◆ Providing technical assistance, resources, and training on risk factors for disease to public health workers at federal, state and local levels.
- ◆ Providing informational materials to leading managed care providers to disseminate with nationwide benefit mailings.
- ◆ Developing and providing static and interactive information materials (e.g., fact sheets, decision aids for primary care providers to promote discussion and patient education, Web sites, CD-ROMs, information kiosks).

5.6 Coordinating with Other Programs

There is a growing accumulation of information on the history of the United States nuclear weapons program and the potential health effects from exposure to radioactive

substances. As a result, it is important to identify messages that the American public has already received through other national, regional, or local communication and education programs concerning potential health effects from exposure to radionuclides.

This would require coordination with other relevant public and health care provider education efforts to ensure that messages contained in both the ¹³¹I/NTS Communications Project and in the potential communication and education plan associated with any future in-depth assessment of global and NTS fallout are consistent and accurate. This would probably be most applicable for messages and educational materials containing information on the history and legacy of nuclear weapons production and testing as well as the potential health consequences associated with any radionuclides of concern. In all communication efforts, partners would have to decide how to manage and address errors in fact, discrepancies or contrasting scientific results and opinions.

Some examples of proposed, ongoing, or recently discontinued programs that are relevant to the issues discussed in this report are provided in the following section.

5.6.1 The Hanford Thyroid Disease Study (HTDS)

CDC and the Fred Hutchinson Cancer Research Center conducted the HTDS as a retrospective cohort study. The primary purpose of the study was to determine whether thyroid disease in the population surrounding Hanford is associated with exposure to ¹³¹I released from Hanford between 1944 and 1957, the years when the greatest releases of ¹³¹I occurred. The final report is available on the internet at <http://www.cdc.gov/nceh/radiation>. No demonstrable excess in thyroid cancer risk was found; this suggested that, if there was an increase in risk at the range of thyroid dose estimated for the Hanford population, it was too small to be detected in more than 3,000 people examined in the study.

5.6.2 Case Study in Environmental Medicine on ¹³¹I

The Agency for Toxic Substances and Disease Registry in a cooperative agreement with the American College of Medical Toxicologists (ACMT) has developed a Case Study in Environmental Medicine (CSEM) on ¹³¹I. This CSEM is a self-study guide for PHC professionals about the impact of ¹³¹I on the thyroid gland. It includes a review of the exposures of the American public to ¹³¹I from nuclear weapons production and testing, and also discusses pathways of exposure, who is at risk, potential health effects, diagnosis, and management. It addresses both cancerous and non-cancerous thyroid and parathyroid gland disease, and provides information about prevention of health effects on the thyroid gland in case of nuclear accidents.

This CSEM can be accessed at <http://www.atsdr.cdc.gov/HEC/CSEM/iodine/index.html>.

5.6.3 The Hanford Individual Dose Assessment (Hanford IDA) Project

The Hanford Individual Dose Assessment (Hanford IDA) Project was a public service to provide individual thyroid dose estimates for people who lived or spent time in the Hanford Environmental Dose Reconstruction (HEDR) study area between December 26, 1944 and December 31, 1957. The individual radiation dose estimates were for ¹³¹I released to the air from the Hanford facility. Along with the individual dose estimates, the Hanford IDA Project provided information to help people understand their thyroid dose estimates and what it might mean for their health. The Hanford IDA Project was operated jointly by the state health agencies of Idaho, Oregon, and Washington, and was funded by CDC. This project closed on December 31, 2000. Copies of informational material developed by the project are on file at CDC.

5.6.4 The Hanford Health Information Network (HHIN), the Hanford Community Health Project, and the Hanford Health Information Archives

The Hanford Health Information Network (HHIN) was funded by ATSDR and was managed by the state health agencies of Idaho, Oregon, and Washington, and nine Pacific Northwest Indian Nations. HHIN closed on June 30, 2000. However, over the years, individuals were able to call toll-free to speak with a health educator and request free educational materials on Hanford's releases between 1944 and 1972 and the potential health effects from those releases. The Network also offered a self-study guide for health care professionals. HHIN-generated materials, procedures, and data will be an important source of information to the American public for years to come. In addition, HHIN operating procedures and management principles may serve as an excellent framework to follow if a similar program is funded in the future. Currently, HHIN publications are archived through the Washington Department of Health (www.doh.wa.gov/hanford).

The Hanford Community Health Project, an outreach and education initiative sponsored by ATSDR, provides educational information and materials about potential health risks to individuals who were exposed as young children to past releases of ¹³¹I between 1944 and 1951 from the Hanford Nuclear reservation. Information is available at <http://www.atsdr.cdc.gov/hanford/>.

The Hanford Health Information Archives collects and makes available the personal records and health information of Hanford-exposed people who choose to participate. It is housed at Gonzaga University in Spokane, Washington.

5.6.5 Citizen-Based and Professional Education Programs

Numerous educational materials concerning potential health risks associated with exposure to fallout from nuclear testing at the NTS and from the nuclear weapons program have been developed by citizen and professional advocacy groups (e.g., Alliance for Nuclear

Accountability [ANA 1998]; Physicians for Social Responsibility [PSR 1998]). These materials have been disseminated on a national, state, and local level.

5.7 Implementation

Should additional work as outlined in this feasibility report be recommended and sufficient resources be made available, communications should be built on the tremendous advances in health education theory, social marketing, and communication techniques, and on grassroots expertise. Moreover, as time progresses, ever changing and improving communication technologies and methods may allow DHHS to consider more direct and cost-effective communication channels. Whatever communication strategies are selected, community members should be involved in all phases of the communication plan to help provide information materials and activities that are compatible with audience need.

5.7.1 Development of Education Materials

Before developing any educational materials, an information database to promote a nationally and regionally coordinated approach to public and health care provider education should be developed. Thus, the nature and extent of existing educational materials regarding the history of the United States nuclear weapons program, global testing programs, radionuclides of concern, and information on the potential health consequences of exposures to those radionuclides can be determined. This will ensure:

- ◆ Consistency in the information the public receives;
- ◆ Prompt development and dissemination of general informational materials -- eliminating time needed to “start from scratch;” and
- ◆ Holistic review of materials to identify gaps and needs.

After existing health education materials have been collected from both local and national resources, review and pre-tests of the materials collected would need to be conducted to decide if they are appropriate for use. Pre-testing methods should be used to ensure that concepts and resulting materials are appropriate and relevant for the intended audiences. This will help DHHS obtain insight into the perceptions, beliefs, and languages of the intended audience(s). This approach will ultimately save resources, but will take more time and effort initially.

5.7.2 Determining Communication Channels

Developing and implementing innovative and effective methods for communicating with this project’s defined target audiences will be necessary. Table 5.1, shown earlier in this chapter, provides examples of the wide range of communication channels and activities that would have to be considered – from interpersonal and small group to organizational, community, and mass reach media. To be successful in such a communications effort, these channels and activities would be defined for each target audience and subgroup(s) as more research is conducted. And as the focus turns to specific audience subgroups, priority consideration should be made to identify effective interventions (e.g., nontraditional media

and interpersonal communications) – for those audience groups who are low-literacy, minority, under- or uninsured, oral-culture-based, or non-English-speaking.

To determine communication channels, the sources of health information among targeted audiences and their various subgroups would need to be analyzed and a broad range of communication channels and activities, such as libraries and resource centers, the Internet, print materials, advertising, video news releases, toll-free telephone information services, commercial tie-ins, training classes, and community partnerships would need to be considered. Extensive time and resources may be needed to adapt messages, communication channels, and communication activities to audience needs and perceptions, cultural norms, and linguistic variations to increase the understanding and reception of those messages.

The communications and education plan envisioned would be designed to include an array of mass media and interpersonal communication activities. Multiple mass media strategies can include public service announcements (PSAs), radio and television programs, an interactive Web site, news coverage, and perhaps even informational brochures or CD-ROMs mailed directly to homes. Interpersonal communication activities can include such channels as physician-patient counseling, presentations to high-risk individuals, a speakers' bureau, and assistance of local grassroots organizations to provide for more personal support and message reinforcement.

For example purposes only, four mass-reach mediums that could likely be considered for this proposed communications and education plan are highlighted below:

5.7.2.1 Interactive Technology – The Internet and Electronic Media

Today's consumers do not just rely on their doctors – they look to the media and the Internet for health care advice. It is estimated that 110 million adults nationwide “go online” to look for health care information. On average, they do so three times a month, searching mainly through portals or search engines rather than by going directly to particular sites (Harris Interactive). The Internet brings health information simultaneously to both the public and to health care professionals. Interactive technology can be used to relay health information on demand, enable informed decision-making, promote interaction between the public and health professionals, and even allow for peer information exchange and emotional support. Interactive technology also allows for the presentation of more in-depth information.

For example, both the public and health care providers would benefit from a final study report and associated reference materials in electronic media format and on the Internet. Users could instantly “jump” to the report's glossary, appendices, tables and graphs, supporting data, and references as they read. Alternatively, through an Internet site or other electronic media, users could link to related Web sites, other government databases, professional or grassroots organizations, or library/resource centers.

Additionally, a Web site could be designed along similar lines as was done by NCI for its 1997 ¹³¹I/NTS report. A key component of NCI's Web site has been its dose

calculator. Since NCI first launched this dose calculator, they have received consumer feedback regarding its usefulness and readability. As a result, they conducted usability testing to provide insight into how best to modify the Web site design to improve its ease of use and understandability. In 2003, the new dose/risk calculator was released and is available at <http://ntsi131.nci.nih.gov/>. The feedback they have received and “lessons learned” can be incorporated into any new Web site developed if a more detailed dose and risk study is conducted.

5.7.2.2 Toll-Free Information Services

As part of its communication strategy, toll-free telephone information services could be considered. Three options in this area are to provide the public with access to an automated toll-free voice/fax information system, a staffed toll-free information clearinghouse and “hotline,” or a combination of the two. It would be relatively cost-friendly to provide an automated toll-free information service if it is included as part of an existing toll-free voice/fax information system. For example, CDC has a system that provides CDC-supplied voice recordings and fax-on-demand services to the public and health care or public health workers through a toll-free telephone number. Users hear a menu of items about which they can receive information. The system also captures address information to facilitate on-demand mailings as well as provide mailing lists for mass-mailing campaigns.

The automated system is less costly than a staffed “hotline,” and it does provide accurate and timely delivery of materials. However, because of the social and political context framing the issues discussed in this report, this communications effort may be best served by a combination of an automated toll-free service and a staffed (at least part-time) information clearinghouse and toll-free telephone service. In addition, a pilot program to monitor public usage of the staffed hotline to forecast extended need would be necessary.

5.7.2.3 Education for Public Health Professionals

CDC has been a central source of practice-based, job-relevant, high-priority training for public health professionals in state and local health departments since its beginning in 1946. For many years, this training was primarily delivered in the classroom or laboratory. But fundamental changes in the American health care system increased both the number of persons who needed training and the number of content and skill areas they needed training in, and in recent years CDC found itself unable to meet the increased demand using traditional methods. In June 1993, CDC launched the Public Health Training Network (PHTN) (CDC 2000). This network could be used as the main communication channel to educate and train physicians/health care providers on the potential health consequences of exposure to NTS and global radioactive fallout.

PHTN is a distance learning system that uses a variety of instructional media: print-based self-instruction, interactive multimedia, videotapes, two-way audio conferences, and interactive satellite videoconferences. Since 1993, PHTN has delivered nearly one million training opportunities to professionals in public health settings and, increasingly, in health care and related settings. PHTN’s success has stimulated state and federal health agencies to

produce training programs and to build their own capacity to meet training needs through distance learning. State health departments are expanding their own capacity, supporting field operations, and developing new courses that address their audiences' unique needs.

PHTN successful in the past

Evaluation studies demonstrate that PHTN programs, and distance learning as a medium, are effective ways to update and enhance professional competencies. In particular, CDC has successfully used PHTN to educate health care providers about potential health effects from exposure to ionizing radiation. CDC used the PHTN in its nationwide public health awareness campaign to alert physicians to the potential adverse health effects associated with past nasopharyngeal radium irradiation treatment. This project altered the policy of the Department of Veterans' Affairs (VA) and the Department of Defense (DOD) concerning head and neck exams for veterans and military personnel who received the treatment in the early 1940s and 50s. It also was the impetus behind DOD's notification project to alert veteran service personnel to the treatment's possible health risks.

Using PHTN technology, in 1996 CDC convened a live satellite videoconference to address the history and potential health consequences of nasopharyngeal radium irradiation treatments. This conference linked CDC with more than 250 VA and DOD medical facilities throughout the country. Its target audience was physicians, nurse practitioners, and physician assistants in general practice, family practice, internal medicine, otolaryngology, radiology, and nuclear medicine. The program served as a continuing medical education program for physicians and other health care providers about the potential adverse health effects of this treatment, and included a demonstration of a thorough head and neck examination. Moreover, to capture attention in the public health community, the program offered CME, CEU, American Academy of Family Practice elective credits and Continuing Nursing Education Credits.

Since then, CDC has provided the videotaped version to the VA for use in more than 200 VA medical centers, to more than 50 public and private hospitals in Connecticut and Rhode Island, to the media, and to interested citizens. This effort, in combination with publishing information in medical journals (e.g., CDC's *Morbidity and Mortality Weekly Report*, the *Journal of the American Medical Association* and *Otolaryngology – Head and Neck Surgery*), was a successful and far-reaching effort to educate public health care providers on this issue.

5.7.2.4 Public Service Announcements (PSAs)

Within the context of a large communications program, PSAs are most useful for creating public awareness or heightening the public's sensitivity to a health problem or issue, or transmitting specific information to the public. They are also appropriate for increasing recognition of a health program, generating requests for health information or recruiting volunteers (NCI 1996). The use of PSAs may or may not be useful during the initial "launch" of a plan to create nationwide public awareness for fallout issues. The benefits of using PSAs would have to be further explored. However, if PSAs are developed, they must be carefully crafted and their delivery carefully planned before launch, so that all messages,

partner support structures, and media planning (at the federal, state and local levels) are in place to respond to the public's health concerns and potential outrage emotional issues.

5.8 Additional Work Outside the Scope of this Report

A public awareness and education effort dealing with fallout would be perceived by the public as just one part of the big picture of potential health impacts from environmental radiation exposure from the NTS, global, and individual emissions from nuclear weapons production facilities. Therefore, for this communications effort to be considered credible by the American public, all issues must be acknowledged, though some are beyond the scope of the proposed research and communication efforts.

With that premise in mind, any proposed communication and education plan should contain communications strategies that speak to outstanding public concerns and issues. The following outstanding public concerns and issues have been raised by stakeholders:

- ◆ Concern over multiple and cumulative exposures from all phases of the United States nuclear weapons program, including weapons testing and operational and cleanup activities related to research laboratories and weapons production facilities;
- ◆ Diverse opinions from the scientific community regarding health consequences of radiation exposures;
- ◆ The provision of follow-up medical services for those in high-risk groups and/or for those underinsured;
- ◆ Government accountability for past actions;
- ◆ Government acknowledgement of health impacts;
- ◆ Government compensation;
- ◆ The desire to receive formal promises at upper Administration levels that prove the U.S. Government's commitment not to harm its public again in the name of National Security.
- ◆ The need for dose and risk estimates specific for Native American diets and migratory patterns;
- ◆ The need for dose and risk estimates for workers and military participants

As some of these are policy issues, an intergovernmental task force would be needed to address these issues.

5.9 Conclusion

Development and implementation of a nationwide communications project would require careful planning to provide appropriate, effective, and credible messages and educational materials to the American public and to the nation's health care providers about the potential health risks associated with fallout from atmospheric nuclear weapons tests conducted in the 1950s and early 1960s by the United States and other countries. This

public awareness and educational effort would be a necessary step in providing United States citizens and residents with the information they need to evaluate their potential risk from the United States and global nuclear weapons legacy.

Because the research concerning the health consequences of radioactive fallout from the NTS and global sources is not complete, it is too early to provide a communications and education plan for communicating those results to the American public. Instead, it is recommended that the American public receive information on the potential health consequences from nuclear test fallout in a staggered approach. The DHHS can draw on the efforts already underway for NCI's ¹³¹I/NTS Communications Project. This effort, led by NCI and advocated by CDC, began in 1999 in response to public interest and the IOM's review of NCI's 1997 report, *Estimated Exposures and Thyroid Doses Received by the American People from Iodine-131 In Fallout Following Nevada Atmospheric Nuclear Bomb Tests (NCI 1997)*. Because a great deal of work has already been accomplished by NCI to structure its existing ¹³¹I/NTS Communications Project to ensure ongoing public involvement in plan development and implementation, it may be appropriate to use a similar approach for future communication planning efforts associated with a more in-depth analysis of the research discussed in this feasibility report. The effectiveness of NCI's approach should, however, be formally evaluated before it is adopted for this potentially much larger communications project.

In this chapter, the numerous steps and challenges associated with communicating information of NTS and global nuclear weapons fallout were discussed. Also discussed were the two major components of such a proposed national education and public awareness campaign: public communication and education, and health care provider education. The first component addresses "right-to-know" issues and educates the American public on scientifically determined risk factors for disease for each of the radionuclides of concern, so that individuals can self-identify whether or not they are in a "high-exposure" and/or "high-risk" group. The second component serves the premise that the nation's health care providers will have the greatest impact on improving the health status of persons who may have been adversely affected by radioactive fallout. Physicians and health care providers could be educated on risk factors for disease, risks and uncertainties of exposure to the radionuclides of concern and their potential health consequences, and recommended testing and screening procedures. This will enable them to not only serve as a source of information to the public, but also to help with the decision process for a concerned patient.

Additionally, recruiting working partners would be extremely important for both the planning and implementation phases of a communications and education project. The goal in establishing these partnerships is to ensure that the proposed communications project meets the needs of the intended audiences, and that the materials and activities developed are compatible with each audience's needs.

Finally, it is important to consider a broad range of communication channels and activities, such as libraries and resource centers, the Internet, print materials, advertising, video, news releases, toll-free telephone information services, commercial tie-ins, training classes, and community partnerships to meet these needs.

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