

CHERNOBYL PROPOSAL

Chernobyl Proposal

**PHOTOCOPY
PRESERVATION**

From the Office of the Chief of Staff

Phone: 202/456-6797 Fax: 202/456-1121

Date: 7-7-93 Response needed by: 7-14-93

COS Office Contact: Bill Burton

	Action	FYI		Action	FYI
Joan Baggett			Leon Panetta	✓	
Rahm Emanuel			Howard Paster		
Mark Gearan			John Podesta		
David Gergen			Jack Quinn		
Jack Gibbons			Carol Rasco	✓	
Marcia Hale			Bob Rubin		
Alexis Herman			Eli Segal		
Nancy Hernreich			Ricki Seidman		
Tony Lake			George Stephanopoulos		
Bruce Lindsey			Christine Varney		
Katie McGinty			David Watkins		
Regina Montoya			Maggie Williams		
Dee Dee Myers					
Roy Neel					
Bernie Nussbaum					

Remarks: Please have the attached reviewed with your advice as to whether we should proceed in recommending this grant as requested.

Thanks.

Response:

GENERAL LAND OFFICE

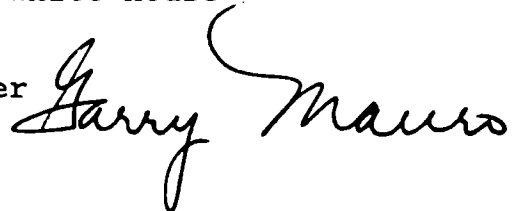
GARRY MAURO
COMMISSIONER

MEMORANDUM

DATE: June 17, 1993

TO: Bill Burton, Policy and Staff Director,
Office of the Chief of Staff, The White House

FROM: Garry Mauro, Texas Land Commissioner

A handwritten signature in cursive script that reads "Garry Mauro". The signature is written in dark ink and is positioned to the right of the "FROM:" line, partially overlapping the "SUBJECT:" line.

SUBJECT: Chernobyl Proposal

Attached is a proposed memo from you to Energy Secretary Hazel O'Leary indicating White House support for the Chernobyl low-level radiation study proposed by the International Consortium for Research on the Health Effects of Radiation.

Those involved in this initiative wish to thank you and Chief of Staff Mack McLarty for your support and encouragement on this highly important health care initiative. Given the tremendous demands on your time, we felt that such a memo would be the most efficient and effective way of communicating that support to the Secretary.

PROPOSED MEMORANDUM

Dear Madam Secretary:

During the last several months, the White House has become aware of a proposal submitted to the Department of Energy that we feel holds great potential to further the President's policies with regard to the former Soviet Union, Israel and the United States. The proposal is to study the human health effects of low level radiation from the Chernobyl accident, and involves residents in Russia, Belarus, Ukraine as well as emigres in Israel and the United States.

We feel this initiative fits well under the President's commitment for assistance announced following his Vancouver summit meeting with Russian President Yeltsin, and that the timing is right for the Department of Energy to consider fully funding the proposal.

The recent Tomsk-7 nuclear explosion reminded us dramatically that Russia, and much of the rest of the world, is terribly vulnerable. Another Chernobyl is almost inevitable and the proposed research can aid us in helping the Russian people, as well as ourselves, to understand and prepare for such an event.

This project is of a humanitarian nature and would be recognizable as such by the Russian, Israeli and American publics. Funding would be consistent with the \$1.6 billion assistance package announced by the President in Vancouver. Specifically, this project will require \$4 million the first year and \$3.9 million the second year.

Aspects of this project of particular interest to the President:

1. It is in line with his plan/commitment to invest in Russia and the Administration's objectives of improving nuclear safety and expanding "people-to-people" exchange programs.
2. It builds infrastructure (communications/training/facilities) in Russia with a high degree of accountability -- funds can be positively tracked.
3. The research is directed at health effects of radiation -- a significant concern of the American population, which is surrounded by radiation.
4. It initiates a critical public/private partnership between the people and governments of Israel, Russia, Belarus, Ukraine and the United States.
5. It helps to prepare the world for another nuclear "accident".

I have asked Admiral E.R. Zumwalt, who is, as you know, chairman of the International Consortium for Research On the Health Effects of Radiation, to contact you regarding implementation of this program.

TO: Carol Rasco
FROM: Brian Burke

July 13, 1993

SUBJ: PROPOSAL FOR FUNDING TO STUDY THE HUMAN HEALTH AFFECTS
OF LOW LEVEL RADIATION FROM THE CHERNOBYL ACCIDENT

SUMMARY AND CONCLUSION

You have asked me to advise you on whether the White House should endorse the International Consortium for Research on the Health Effects of Radiation ("ICRHER") in its effort to obtain funding from DOE. (See attached). ICRHER seeks funding to begin a pilot program for the long term study of the human health affects of low level radiation on Chernobyl accident survivors. In short, the request for White House support is moot. DOE and ICRHER have already reached an amicable conclusion. DOE has decided to fund a revised version of the project.

Background

ICRHER originally submitted its proposal to DOE in September 1992. The National Marrow Donor Program was designated as the Coordinating Center for all aspects of the proposed research. Four research teams contributed specific projects to the proposal, including the following: the Fred Hutchinson Cancer Research Center in Seattle ("FHCRC"),¹ the Hadassah Medical Organization in Jerusalem, the Methodist Hospital/Baylor College of Medicine in Houston, and the National Marrow Donor Program in Minneapolis. The original proposal represented a broad range of research proposals and objectives. Only one component of the project proposed to be conducted within Russia itself, the pilot study proposed by the FHCRC team.

DOE formed an ad hoc review committee to assess the proposal. The committee concluded they could endorse funding only for the FHCRC component which was designed to conduct a preliminary assessment of the radiation dose and to conduct a pilot cohort study in Bryansk. Consequently, DOE invited ICRHER to resubmit a more focused proposal.

In April 1993, DOE received a revised proposal which focused on the FHCRC component of the original proposal. DOE has reviewed the modified proposal, met with ICRHER's Chairman, Admiral E.H. Zumwalt, and worked with ICRHER to further design the FHCRC pilot program. Subsequently, in June of this year (approximately the same time that ICRHER requested White House support for the project), DOE decided unilaterally to fund the project and initiated the funding appropriation process. The

¹ Since mid-1990 a team of investigators at FHCRC in Seattle has been working to develop collaborative ties with scientific colleagues in areas of the former Soviet Union that were contaminated by radiation from the Chernobyl accident.

revised project will receive funding shortly.

Available Research Funds/Original Proposal Costs

ICRHER originally requested \$7.9 million to fund the first two years of its proposal. (The need for long term funding is inherent in the proposal). This amount drastically exceeded the \$ 2 million total annual amount available for all DOE research funding.

DOE has agreed to fund \$200,000 for the FHCRC pilot program. Regarding the original ICRHER proposal submitted in September 1992, DOE scientists and technical staff concluded that it was: complex; beyond the existing charter of agreement between the United States and Russia; far in excess of DOE's available funds; would require a large administrative commitment and costs; and would have no clear scientific pay-off.

RECOMMENDATION

It is my understanding that ICRHER's request for support is now moot. However, if ICRHER continues to seek White House support for funding each of the components contained in its original proposal, despite the complexity and costs problems, the National Institute for Health would be a more appropriate funding source.

Department of Energy
Washington, D.C. 20585

Office of Epidemiology and Health Surveillance

Sharp FO-5000

Commercial (301) 903-4677

Verification

Commercial (301) 903-5926

DATE: 7/12/93 **Fax Number:** 202-456-7739

To: Brian Burke, Domestic Policy Council 202-456-7777
Name Location Confirmation Number

FROM: Dr. Robert Goldsmith, Director, EH-42 301-903-5926
Name Location Telephone Number

This transmittal consists of 2 pages (Excluding the cover sheet)

Attached for your use is a background paper concerning radiation studies on human populations. We hope this will be helpful to you. If you have any questions, please let us know. I can be reached on 301-903-5926.

Research by the Department of Energy on the Effects of Radiation on Human Populations

Background

The Department and its predecessor agencies have, over the last half of this century, actively sponsored research on the possible human health effects of exposure to ionizing radiation. The initial, and longest running, research focused on survivors of the atomic bombs at Hiroshima and Nagasaki. The United States government started the first studies in 1947 under the auspices of the Atomic Bomb Casualty Commission, which has evolved in 1974 into the bi-national Radiation Effects Research Foundation.

The ongoing research program of the Radiation Effects Research Foundation has several components including studies of the effects of a wide range of acute radiation exposure levels on mortality, the immune system, on cells, and on chromosomes.

Studies conducted on the exposed Japanese population over the years by the Atomic Bomb Casualty Commission and the Radiation Effects Research Foundation and their conclusions, which are often presented in terms of risk of cancer induction or other health outcomes per unit of dose, have formed much of the basis for existing radiation protection standards utilized throughout the world.

Since the exposures to the Japanese populations were by nature termed "acute", meaning the entire exposure occurred over a very short time span, there has always been concern about the validity of extrapolating such risks per unit dose to radiation workers who experience very long-term chronic exposure to radiation. Studies of the effects of chronic exposure to low-levels of radiation on workers at facilities operated by the Department and its predecessor agencies began in the mid-sixties, and continue today.

These studies have traditionally been mortality studies, and discovered some slight excess mortality due to the higher range of exposures in a few groups of workers (e.g. multiple myeloma among some workers at Hanford), but have not found deleterious effects, such as increased mortality risk, associated with exposures within current limits for Department of Energy workers.

A feasibility study by the Nuclear Regulatory Commission in 1980 determined that the only remaining population to be studied for more precise estimates of the health risk of low-level radiation exposure are workers at commercial nuclear power plants. The Department of Energy is negotiating with the Nuclear Regulatory Commission to initiate prospective studies of these workers and combine their data with that from DOE workers to form a nationwide radiation worker registry similar to those in Canada, the United Kingdom, and Japan.

Funding History

Funding for the health outcome studies of atomic bomb survivors over the last fifty years has exceeded several hundred million dollars cumulatively, with a current funding level of approximately \$20 million per year. Studies of Department of Energy workers are funded at approximately \$35 million per year, including efforts by Department of Energy laboratory scientists, states and academic institutions, and in cooperation with the Department of Health and Human Services.

Future

Since any presumed health effects of low-level radiation exposure are expected to be relatively small compared to the normally occurring rates of disease, large exposed populations are required to discern these induced effects and increased rates. The United States worker populations are now reaching the ages where cancers normally occur more frequently (i.e. twenty or more years after exposure). Thus, it is important to continue follow-up of populations under study, and expand the size of these populations. In this way, we can be more confident that actual health effects associated with chronic low-level radiation exposure are not much greater than those estimated from the data on acute exposures among Japanese atomic bomb survivors.

Prepared by: Dr. Robert Goldsmith, Director, Office of Epidemiology and Health Surveillance, Office of Health, Department of Energy, 7/12/93
Telephone: 301-903-5926.

DEPARTMENT OF ENERGY
OFFICE OF ENERGY RESEARCH
FORRESTAL BUILDING
WASHINGTON, DC 20585



Fujitsu Dex 530
202-586-4120

Verification
202-586-0095

DATE: 7/9

TO: Brian Burke
(Name/Office Symbol/Telephone No.)

FROM: Dore Nelson 586-0095
(Name/Office Symbol/Telephone No.)

This transmittal consists of 2 pages, (INCLUDING cover sheet).

Comments:

**Department of Energy**

Washington, DC 20585

JUL 09 1993

MEMORANDUM FOR: Brian Burke, Domestic Policy Council

FROM: David Nelson, Acting Principal Deputy Director
Office of Energy Research, US DOE

A handwritten signature in dark ink, appearing to read "David Nelson", is written to the right of the "FROM:" line.

You asked about DOE research on the effects of low levels of radiation on humans. I assume that you mean ionizing radiation, such as from nuclear processes. (DOE is also doing research on health effects from electromagnetic radiation, such as from electric power lines.)

DOE does three types of research in this area:

1. Human epidemiology studies
 - a. Studies of survivors of atomic bombs on Hiroshima and Nagasaki
 - b. Studies of populations exposed to low levels of radiation such as uranium miners and nuclear industry workers
2. Studies of animal response to radiation from which one infers human response
3. Microbiological studies of effects of radiation at the genetic and cellular level, from which one learns the specific mechanisms of radiation damage.

These studies form the basis for regulations and guidelines regarding radiation exposure.

**A PROPOSAL TO THE DEPARTMENT OF ENERGY
FOR FUNDING OF
INTERNATIONAL COLLABORATIVE PILOT AND FEASIBILITY STUDIES
ON THE HEALTH EFFECTS OF THE CHERNOBYL ACCIDENT**

September 25, 1992

SUBMITTED BY:

Craig Howe, M.D., Ph.D., Principal Investigator
National Marrow Donor Program
3433 Broadway Street N.E., Suite 400
Minneapolis, MN 55413
612-627-5800

IN CONJUNCTION WITH:

Robert D. Day, M.D., Ph.D., Site Director
Fred Hutchinson Cancer Research Center
1124 Columbia Street, LY-301
Seattle, WA 98104
206-667-4302

Michal Roll, M.D., Site Director
Hadassah Medical Organization
Kiryat Hadassah, P.O. Box 12000
Jerusalem 91120, Israel
972-2-776-695

Armin D. Weinberg, Ph.D., Site Director
The Methodist Hospital/Baylor College of Medicine
6560 Fannin, ST400
Houston, TX 77030
713-798-4614

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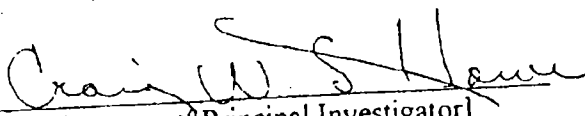
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**UNSOLICITED PROPOSAL SUBMITTED
TO THE DEPARTMENT OF ENERGY
BY**

**NATIONAL MARROW DONOR PROGRAM
3433 BROADWAY STREET N.E., SUITE 400
MINNEAPOLIS, MN 55413**

PROPOSED DURATION:	24 MONTHS
AMOUNT REQUESTED:	\$7,780,003
REQUESTED STARTING DATE:	
TYPE OF BUSINESS:	NONPROFIT
PRINCIPAL INVESTIGATOR:	CRAIG HOWE, M.D., Ph.D.
PHONE:	612-627-5800
DATE OF SUBMISSION:	September 25, 1992

THIS PROPOSAL MAY BE SUBJECTED TO EXTERNAL REVIEW


[Signature of Principal Investigator]



National Marrow
Donor Program

September 25, 1992

National Coordinating Center
3433 Broadway Street N.E.
Suite 400
Minneapolis, MN 55413
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1-800-526-7809
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Laura Graves Award:
Hon. C. W. "Bill" Young
John A. Hansen, M.D.

A collaborative
effort of the
American Association
of Blood Banks

Council of Community
Blood Centers

With funding from
The National Heart, Lung,
and Blood Institute and
Naval Medical Research and
Development Command

Harry J. Pettengill, Ph.D. (EH-40)
Assistant Secretary for Health
Department of Energy
19901 Germantown Road
Germantown, Maryland 20874

Dear Dr. Pettengill:

On behalf of the National Marrow Donor Program, Fred Hutchinson Cancer Research Center, the Methodist Hospital/Baylor College of Medicine, and the Hadassah Medical Organization in Israel, I am pleased to formally submit the enclosed unsolicited proposal for funding of *International Collaborative Pilot and Feasibility Studies on the Health Effects of the Chernobyl Accident*.

This proposal represents a unique international collaborative effort which includes the formal support and involvement of the Health Minister of the Russian Federation, Academician Andrei I. Vorobiov. It consists of a master pilot and feasibility research strategy to be carried out at four sites over the course of two years. Identification of appropriate study populations in Bryansk, Russia, along with registries of exposed emigres from the Chernobyl region in Israel and the United States, are immediate tasks. Dosimetry studies are of the highest priority as they will help define a framework for identifying cohorts and interpreting the data collected from other projects. Coordination and standardization working groups will assist the overall steering committee in developing consistent policies and procedures while an external advisory committee will ensure the efficacy of the research programs. A coordinating center will be established to serve as the fiscal and administrative agent, manage the committees and working groups, and provide core support functions such as data management and sample repository coordination.

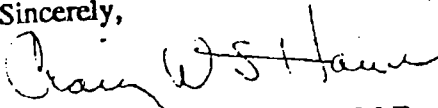
We believe the proposed project will significantly contribute to the mission, goals and objectives of the Department of Energy, especially those articulated for your area and the Office of Energy Research as well.

Harry J. Pettengill, Ph.D.
September 25, 1992
Page 2

Four copies of the proposal accompany this letter. The original and three copies have been forwarded to Mr. George Cooperrider. As Principal Investigator, I am the authorized individual to which you may direct questions and comments. In addition, to facilitate review, please feel free to contact directly the following individuals: Dr. Robert Day for FHCRC/Bryansk, Russia, (206-667-4305) and Dr. Armin Weinberg for the TMH/BCM site in Houston, Texas (713-798-4614). Also, Dr. Weinberg will answer questions and or facilitate obtaining responses from the research site in Israel, or you can contact Dr. Michal Roll in Israel directly at 972-2-437550.

Thank you for considering this proposal. I look forward to hearing from you.

Sincerely,



Craig W. S. Howe, Ph.D., M.D.
Principal Investigator

c: George Cooperrider
Dr. Armin Weinberg
Dr. Robert W. Day
Dr. Michal Roll

ABSTRACT

The International Consortium for Research and Treatment of Radiation - Induced Injury, seeks funding to study the long-term health effects of the Chernobyl accident. The goals of the proposed two-year project are to: 1) assess radiation doses and formulate large cohorts of individuals with different levels of radiation exposure for prospective, long-term clinical observation; 2) define innovative scientific methods for identifying individuals at risk for the development of radiation-related illness; 3) conduct multi-disciplinary pilot studies to elucidate mechanisms of radiation damage as well as measures to prevent radiation toxicity; and 4) establish core support, quality control and coordination mechanisms.

This project offers a unique opportunity for long-term, prospective cohort analysis. Approximately 150,000 emigrants from contaminated regions can be observed longitudinally in Israel and the United States and grouped into cohorts based on exposure levels.

Dose reconstruction is the cornerstone and major challenge of this project and will be conducted in Russia, Israel, and the U.S. Biological, geographical, historical and physical dosimetry methodologies will be employed to determine the extent of radiation exposure and will be performed and monitored by experts in the field of dosimetry.

The National Marrow Donor Program, Minneapolis is the lead agency and coordinating center. Pilot and feasibility investigations will be carried out by: Fred Hutchinson Cancer Research Center, Seattle; The Methodist Hospital/Baylor College of Medicine, Houston; and Hadassah Medical Organization, Jerusalem.

If successful, this project will yield a paradigm for evaluation of the health effects of low level radiation exposures in regions such as those surrounding nuclear power plants in the U.S.

I. OVERALL GOALS, PROPOSAL PURPOSE AND OBJECTIVES

The International Consortium for Research and Treatment of Radiation-Induced Injury is guided by three overriding goals:

1. to facilitate and/or undertake scientific studies to acquire the knowledge and information needed to care for and treat persons who have been, or will be, adversely effected by exposure to ionizing radiation;
2. to engage, develop and support a cadre of world-class investigators to carry out long term studies in this area; and
3. to foster the application of new knowledge resulting from this effort to the treatment of other diseases when appropriate.

The specific purpose of this proposal is to obtain funding for:

- collaborative pilot and feasibility studies on the health effects of the Chernobyl power plant accident in 1986 on residents of Bryansk, Russia and uniquely defined immigrants from the effected regions who have since relocated to Israel or the United States; and
- the requisite management and coordination support services and research resources.

The overall objectives of the proposed two-year project are to:

- assess radiation doses and the feasibility of large cohort studies in Bryansk, Russia and to initiate pilot epidemiological, clinical and basic studies if possible;
- assess radiation doses and the feasibility of large cohort studies in Israel while initiating pilot epidemiological, clinical and basic research on exposed individuals already available through the Israeli health care system;
- establish a U.S. based registry of immigrants from contaminated regions, starting with those now residing in Texas, to determine adequacy of dose reconstruction, and initiate clinically relevant, multi-disciplinary pilot studies;
- identify cohorts of exposed individuals now removed from exposure (i.e., immigrants to Israel and the U.S. since 1986) for studies comparing these cohorts with those who have remained in contaminated regions since the accident;
- establish a consortium of collaborating institutions for the purposes of priority setting, standardization and coordination, oversight and quality assurance, and resources development; and
- establish a coordinating center in the U.S. to facilitate collaborative research and resources sharing by centralizing fiscal administration, data management, standardization and quality control measures (including consortium and committee management), research project monitoring, the US sample repository and donor registries and facilitating repository development in Israel and Bryansk.

II. BACKGROUND AND JUSTIFICATION

On April 26, 1986, the Chernobyl nuclear power plant became the site of the world's worst nuclear reactor disaster. The force of the explosion emitted radiation over a broad area of the Northern Hemisphere with an especially intense level of fallout centered on the western half of the former Soviet Union, specifically the New Independent States known as Ukraine, the Russian Federation and Byelorussia. While millions of persons were exposed in varying degrees to diverse harmful radioactive material, it remains unclear as to how many have since died either directly or indirectly as a result of their exposure. Nor is it understood what the impact is (or will be) of ongoing and/or long-term exposure to lower dose concentrations on those who stayed in the contaminated regions for some time or continue to live there today. Thus, the Chernobyl accident poses a new challenge for researchers as it contrasts markedly from the experience in Japan where single blasts dictated amount and duration of exposure.

The medical, scientific and social ramifications of the Chernobyl accident pose serious challenges for the affected New Independent States and their struggling scientific and medical care systems. The consequences of the disaster extend far beyond the contaminated regions, however, as the special needs of exposed immigrants offer significant emerging challenges to scientists and health care providers in their new countries of residence as well. For example, it is estimated that from September 1989 through December 1991, approximately 400,000 immigrants from the former Soviet Union relocated to Israel. Of this group, about 100,000 persons lived in the contaminated regions. (reference - Hadassah Medical Organization). In the United States, the Hebrew Immigrant Aid Society reported that over 157,000 Jewish refugees from the former Soviet Union have relocated into the US since the accident, of which at least 40,000 are from the exposed regions. We know, of course, that these US estimates are very conservative as they do not account for actual immigrants or refugees who are not Jewish.

There are additional compelling reasons for concern as more and more becomes known about the condition of other nuclear reactors located in the New Independent States. Moreover, although there is general public confidence in the more than 180 civilian nuclear reactors in the US, low level exposure from plants such as the Hanford site, carry unclear estimates of biological risk. The proposed study will enhance efforts to understand these public health risks, if any.

Efforts to address the medical and scientific challenges of the Chernobyl accident were delayed because of the initial lack of information about the severity of the disaster. The late response was fragmented and further encumbered by the political and social change which sharply increased in the former Soviet Union in the immediate years after the accident. Finally, since the ultimate dissolution of the Soviet Union in 1991, attempts to orchestrate research activities in the contaminated regions have been limited until recently.

June 1992 Agreement with the Minister of Health of the Russian Federation

The impetus for the proposed collaborative effort is provided by an international agreement signed just three months ago by six individuals representing the following participating organizations (in alphabetical order):

- C.W. Young Donor and Research Center, Bethesda, Maryland (U.S. Navy)
- Fred Hutchinson Cancer Research Center, Seattle, Houston
- Hadassah Medical Organization, Israel (By formal affiliation with THMRF)
- Ministry of Health of the Russian Federation, Moscow
- National Heart, Lung, and Blood Institute, Bethesda, Maryland
- National Marrow Donor Program, Minneapolis, Minnesota
- Texas Hadassah Medical Research Foundation (THMRF), Houston
- The Marrow Foundation, Arlington, Virginia
- The Methodist Hospital, Houston, Texas (By formal affiliation with THMRF)

It is in the spirit of international cooperation and in recognition of the of the long-term benefits to all mankind that these organizations agreed to establish a joint research program on the impact of the radiation exposure on the populations affected by the Chernobyl accident. (Please see Tab 14 for the complete text of the Agreement.) It is anticipated, as implied in the Agreement, that the formal involvement of Ukraine and Byelorussia in the cooperative effort will be pursued in the coming months.

Working within the framework of the already established relationship between Admiral E.R. Zumwalt, Jr. and Russian Minister of Health, A. I. Vorobiev, the Texas Hadassah Medical Research Foundation (THMRF), along with The Methodist Hospital in Houston and the Hadassah Medical Organization in Israel, were able to organize and host a meeting yielding a draft Agreement (finalized a week later). Acknowledging the compelling need to address the physical and psychosocial requirements of a new and ever increasing emigrant population, these organizations began working together in August of 1991 to facilitate appropriate medical evaluation, treatment and monitoring of former residents of contaminated regions (especially children) now living in Israel. With the significant migration of former Soviet Jews from these same regions to the U.S. as well, the opportunity to investigate prospectively the short and long term effects of radiation exposure on these uniquely identified cohorts has become an additional motivating factor for collaboration among Israeli and Texas - based scientists. THMRF continues to be a catalytic force in the implementation of the Agreement, while the highly regarded

investigators and clinicians located in both countries have begun to focus their considerable talents and energies on organizing their respective research sites for this effort.

With obvious interest in both the clinical research and treatment issues resulting from the Chernobyl accident, Admiral Zumwalt and other leaders of the National Marrow Donor Program (NMDP) and The Marrow Foundation took on the task of orchestrating the development and signing of the Agreement. Working closely with the other signatories, these organizations have utilized their significant experience in coordination of collaborative efforts and centralized direction very effectively to facilitate the proposed collaborative research described herein. The Marrow Foundation will work with the THMRF to assure implementation of the Agreement as well as to develop long-term, multi-source support for the project. NMDP will serve as the planning and integrative component of the proposed multinational collaboration as well as the repository of samples and centralized research tracking mechanisms.

The relationship of the Fred Hutchinson Cancer Research Center (FHCRC) with the Chernobyl incident is inveterately rooted. Beginning with the treatment of Russian pilots exposed to the nuclear fallout, FHCRC had dispatched a team of scientific investigators to the former Soviet Union to aid local efforts. Plans to establish a collaborative effort with the All-Union Scientific Center for Hematology in Moscow were interrupted by geopolitical changes in the former Soviet states. Thus, the groundwork laid by FHCRC in the former Soviet Union and the world-renown status of the Center in both exercise of cancer research and the delivery of medical care to cancer patients make their involvement in this agreement of benefit to all. FHCRC will be responsible for the organization of the Bryansk research site.

As a world leader in hematological research and transplantation, the National Heart, Lung and Blood Institute (NHLBI) brings considerable resources and experience to the proposed collaboration which is clearly within its areas of interests. The C.W. "Bill" Young Marrow Donor and Research Program (US Navy) also has expressed interest in this project and offers critical resources and guidance to this effort.

Justification

The purpose and objectives of the proposed collaborative project are in concert with the interests of the Department of Energy. The activities proposed herein are consistent with the policy guidelines of Working Group 7 and compliment rather than duplicate current efforts for several reasons including:

1. the project will create the first privately initiated, independent multi-national collaborative research effort to address and monitor the long-term health effects of the Chernobyl accident;
2. the project will effect an opportunity for wide acceptance of standardization of protocols, measures, approaches, and scientific review that will portend greater opportunities for cooperative research; and

3. the proposed dosimetry, registry and repository projects will expand both the research cohorts and the scientific personnel, data and sample exchanges currently underway.

The overall project, and its proposed pilot and feasibility studies, will enhance the efforts of both the Office of Environment, Safety, and Health as well as the Biological and Environmental Research Program to elucidate the effects of low dose nuclear radiation on the health, safety and security of the public. It also falls within the epidemiological and managed studies responsibilities of the Office of Epidemiology and Health Surveillance.

As part of its mission, DOE seeks to enhance environmental quality and protect the environment. To this end, the proposed project focuses on the degree of environmental exposure and the long-term investigation of individuals at risk.

Technology transfer is a priority mission of every DOE research and development activity. It is also a priority for this project as the infrastructure has been designed to eliminate fragmentation and poor communications, the major impediments to achieving this important goal. The scientific framework proposed will significantly enhance information sharing and the application of research results.

Most significantly, this proposal offers the Department of Energy an independent, credible and flexible collaborative mechanism to assist in carrying out their lead agency responsibilities with regard to the Chernobyl accident. This is particularly important in efforts to develop and foster international collaborations between various medical/scientific, public and private groups that are striving for mutually-beneficial goals. This proposal offers a way to coordinate often disparate responsibilities during a time of intense fragmentation both within the former Soviet Union and among various potential interested collaborators in other countries. The standardization and quality assurance systems proposed will not only serve the interest of this project, but will also lay the foundation for future new cooperative endeavors. And finally, a realistic opportunity for coordination and long-term follow-up is provided by the careful, prospective tracking of the affected cohorts in Russia, Israel and the United States.

Selected references:

- The International Chernobyl Project: Technical Report. Assessment of Radiological Consequences and Evaluation of Protective Measures.* IAEA, 1991
- Nuclear Reactors Built, Being Built, or Planned: 1990*, DOE, Office of Scientific and Technical Information, July 1991
- Taylor, J.M., *Status of US-USSR Nuclear Safety Cooperation*, NRC, Memorandum and Attachments, December 18, 1991
- Watkins, J. D., *United States Department of Energy. Posture Statement and Fiscal Year 1993 Budget Overview*, DOE, January 1992
- National Energy Strategy: Powerful Ideas for America*, DOE 1992

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Craig Howe, M.D., Ph.D.
National Marrow Donor Program
3433 Broadway Street, N.E., Suite 400
Minneapolis, Minnesota 55413

Dear Dr. Howe:

Your proposal to conduct international collaborative pilot and feasibility studies on the health effects of the Chernobyl accident was evaluated by our *ad hoc* review committee in November 1992. The results of this evaluation were generally favorable, and we have enclosed a copy of the synopsis of this review for your files.

As you are aware, the Department of Energy is in a state of transition. A new Assistant Secretary for Environment, Safety and Health has not yet been appointed, and the Office of Health's plans for additional research activities in Russia and the former Soviet Union have not yet been approved or funded. As a result, decisions on the funding of any new project must be postponed until general goals are set for our Office and levels of funding are determined. Hopefully, these decisions will be made in the near future. Until that time, however, it is important to emphasize that we are unable to make any commitments in funding.

If funding to support our proposed activities does become available at some future date, the only component of the proposal that we would consider for possible funding is the plan for the Fred Hutchinson Cancer Research Center to conduct a preliminary assessment of the radiation dose and to conduct a pilot cohort study in Bryansk. The reviewers agreed that this portion of the project is relevant to the goals of our ongoing program in relation to improving the scientific understanding of the effects of radiation on humans and the relationship of dose to effects. This component clearly fits in with the types of activities we are currently supporting under the Joint Coordinating Committee for Civilian Nuclear Reactor Safety and involves collaboration with the Russian side of this agreement.

If you would like to submit a proposal for a smaller scale version of the Fred Hutchinson component of the project, we would then attempt to procure funding for these activities. This revised submission would not have to undergo the peer review process again. However, it is emphasized that we cannot ensure that there would eventually be funding available to support the full-scale project. Most of our funding

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for long-term commitments is already budgeted, and it would be difficult for us to support any project like this longterm unless we receive a new appropriation.

We hope to hear from you shortly. Do not hesitate to call if you have any questions.

Sincerely,

Harry J. Pettengill
Deputy Assistant Secretary
for Health

Enclosure

cc w/enclosure:
E.R. Zumwalt, National Marrow
Donor Program

GENERAL LAND OFFICE

MEMORANDUM

GARRY MAURO
COMMISSIONER

DATE: March 4, 1993

TO: Thomas "Mack" McLarty, Chief of Staff to the President
Rahm Emanuel, Assistant to the President and Director of
Political Affairs

FROM: Garry Mauro, Texas Land Commissioner
Steve Gutow, Executive Director, National Jewish Democratic
Council

SUBJECT: Chernobyl Radiation Study; Meeting with President Clinton;
Secretary Hazel O'Leary invited to Houston

The International Consortium for Research and Treatment of Radiation-Induced Injury is seeking approval of a \$7.8 million grant from the Department of Energy to study people exposed to low level radiation from the Chernobyl accident. Critical to the study are Russians who have immigrated to Israel and the U.S., representing as high as 40 percent of the affected population.

Reports back from DOE on the grant are that it is viewed positively scientifically, but that funding is in question (draft letter attached). Support for this initiative would be very timely in light of Prime Minister Yitzhak Rabin's meeting with President Clinton on March 15.

Billy Goldberg, a major supporter of the Chernobyl radiation study, said it is of high importance to Prime Minister Rabin. Baruch Ram, counselor for information at the Israeli Embassy in Washington, is in close communication with the Hadassah Medical Organization in Jerusalem on the project. He too emphasized that Prime Minister Rabin views this project as a priority.

Mr. Goldberg will be meeting with the Prime Minister on March 13 in New York to personally give him a progress report. He would like to meet with President Clinton at the White House on March 12 to discuss the project.

In a related development, Energy Secretary Hazel O'Leary has been invited to Houston on March 31 to speak at a conference on the Chernobyl disaster sponsored by the Consortium. This conference (letter attached) provides an excellent opportunity for the Secretary to meet with key energy and health officials in Texas.

TEXAS GENERAL LAND OFFICE

GARRY MAURO
COMMISSIONER

MEMORANDUM

DATE: April 27, 1993

TO: Marilyn Yager

FROM: Andy Mangan

SUBJECT: Update on Chernobyl Low-level Radiation Study

Admiral E. R. Zumwalt met with Energy Secretary Hazel O'Leary on April 20th to discuss funding the Chernobyl study in the former Soviet Republics, Israel, and the U.S. He sought approximately \$4 million in year one and \$4 million in year two.

Secretary O'Leary informed the Admiral that she would leave the decision on this project in the hands of her staff, which has already expressed an inability to deliver funding at this time. The Secretary also indicated that the situation could change if she received word from the White House. I have arranged meetings between Admiral Zumwalt and Bill Burton and Admiral Zumwalt and Bill White on Friday of this week. I will keep you posted.

On another note, I have been in touch with the State Department on funding possibilities. I was told by the office in charge of nuclear-related projects (Carol Kessler's office) that no funds were available, but that they would look into the possibility of funds in the newly drafted aid package for Russia. They did profess a lack of familiarity with that package and its protocols.

I have also been in touch with Housing and Human Services. Officials there were pleased to hear that DOE indicated to me that HHS has the lead in epidemiological study outside the U.S. This, they said, was a major shift in policy, one that they welcomed. The arrangements in this area were spelled out in an MOU between the two agencies. HHS officials said that if this, indeed, was a shift in policy, they would request additional funds from DOE to carry out the responsibilities.

I will be in touch about the meetings with Admiral Zumwalt.

AM/lb

GENERAL LAND OFFICE

GARRY MAURO
COMMISSIONER

MEMORANDUM

DATE: March 4, 1993

TO: Thomas "Mack" McLarty, Chief of Staff to the President
Rahm Emanuel, Assistant to the President and Director of
Political Affairs

FROM: Garry Mauro, Texas Land Commissioner
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Memo to Mr. McLarty and Mr. Emanuel
page 2

Word on Secretary O'Leary attending the conference is positive so far, but not confirmed. In addition to a speaking engagement, the Secretary is invited to attend a meeting with Sen. Bob Krueger and a group of oil and gas industry leaders. There is also an opportunity for her to meet with Governor Ann Richards, who this month will sign an executive order creating a Sustainable Energy Council to help develop a renewable energy industry in Texas.

In summary, we are interested in answers to three specific questions:

1. Can you help identify funding for the \$7.8 million low level radiation study prior to the March 15 meeting?
2. Is there any time on March 12 for Billy Goldberg to meet with President Clinton on these matters?
3. Can you encourage Secretary O'Leary to attend the conference on March 31 in Houston?

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Craig Howe, M.D., Ph.D.
National Marrow Donor Program
3433 Broadway Street, N.E., Suite 400
Minneapolis, Minnesota 55413

Dear Dr. Howe:

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If you would like to submit a proposal for a smaller scale version of the Fred Hutchinson component of the project, we would then attempt to procure funding for these activities. This revised submission would not have to undergo the peer review process again. However, it is emphasized that we cannot ensure that there would eventually be funding available to support the full-scale project. Most of our funding

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for long-term commitments is already budgeted, and it would be difficult for us to support any project like this longterm unless we receive a new appropriation.

We hope to hear from you shortly. Do not hesitate to call if you have any questions.

Sincerely,

Harry J. Pellengill
Deputy Assistant Secretary
for Health

Enclosure

cc w/enclosure:
E.R. Zumwalt, National Marrow
Donor Program

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TO

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INTERNATIONAL CONSORTIUM FOR RESEARCH AND TREATMENT OF RADIATION-INDUCED INJURY

STEERING COMMITTEE

Admiral E. R. Zurewili, Jr.
Chair
The Marrow Foundation

Academician A. I. Vorobiov
Co-Chair
National Center for Hematology
Russian Federation

Amin Q. Weinberg, Ph.D.
Vice Chair
Texas Hadassah Medical
Research Foundation

Graig W. S. Howe, M.D., Ph.D.
Principal Investigator
National Marrow Donor Program

Nikita Schiklovsky-Korda, Ph.D., M.D.
Principal Investigator
Russian Activities

Robert W. Day, M.D., Ph.D.
Fred Hutchinson Cancer
Research Center

Robert C. Graves, D.M.
National Marrow Donor Program

Capt. Robert J. Hartman, M.D.
DoD/Mary

Shmuel Potmahe, M.D.
Hadassah Medical Organization
Israel

Philip Robinson
The Methodist Hospital/Baylor
College of Medicine

Michael E. Spira
National Marrow Donor Program

RESEARCH SITES

Bryansk, Russia
Jerusalem, Israel
Houston, Texas
Seattle, Washington
Minneapolis, Minnesota
Moscow, Russia

COORDINATING CENTER

3433 Broadway St. NE
Suite 400
Minneapolis, MN 55412

Telephone (612) 827-8843
Facsimile (612) 827-5898

February 27, 1993

The Honorable Hazel O'Leary
Secretary of Energy
Department of Energy
1000 Independence Ave. SW
Washington, D.C. 20585-9999

Dear Secretary O'Leary,

This letter is to invite you to speak in Houston on the evening of March 31 at the International Conference on Low-Dose Radiation which is sponsored by the International Consortium for Research and Treatment of Radiation-Induced Injury.

This conference is a follow-on to a symposium held in Bryansk, Russia. Our consortium is gearing up to conduct coordinated radiation studies in Bryansk, and in Jerusalem and Houston involving the emigre population. These studies will focus on the Chernobyl accident and thus are of significant interest to the Department of Energy. The conference attendees will include a large contingent of Russian scientists led by Dr. Andrei Vorobiov, the former Health Minister of the Russian Federation who now heads the National Center for Hematology. In addition there will be leading scientists in this field from Ukraine, Belarus, Israel, the World Health Organization, and the United States. Many of the U.S. and Israeli participants are collaborators involved directly in these studies.

If you can arrive early afternoon on Wednesday, March 31, Mr. Billy Goldberg, a director of one of our member organizations, the Texas Hadassah Medical Research Foundation, will arrange for you to meet with a group of Houston's most involved petroleum executives. From six to seven-thirty you are invited to be the honored guest at a supper for the conference participants which will be followed by a reception that will include the conferees, members of the Houston oil and gas industry and other business leaders.

Dr. Vorobiov is a valued friend, a man of monumental courage, honesty and candor, and a scientist who has vast knowledge of the Chernobyl accident. He will bring great credibility to the studies done in Russia. I believe he could give you important insights into the situation of radiation hazards related to Chernobyl as well as an overview of the radiation problem throughout the for Soviet Union.

We hope that you will be able to join us.

Sincerely,



INTERNATIONAL CONSORTIUM FOR RESEARCH AND TREATMENT OF RADIATION-INDUCED INJURY

STEERING COMMITTEE

Admiral E. R. Zumwalt, Jr.
Chair
The Marrow Foundation

Academician A. I. Vorobiov
Co-Chair
*National Center for Hematology
Russian Federation*

Armin D. Weinberg, Ph.D.
Vice Chair
*Texas Hadassah Medical
Research Foundation*

Craig W. S. Howe, M.D., Ph.D.
Principal Investigator
National Marrow Donor Program

Nikita Schklovsky-Korde, Ph.D., M.D.
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Robert W. Day, M.D., Ph.D.
*Fred Hutchinson Cancer
Research Center*

Robert C. Graves, D.V.M.
National Marrow Donor Program

Capt. Robert J. Hartzman, M.D.
DoD/Navy

Shmuel Penchas, M.D.
*Hadassah Medical Organization
Israel*

Philip Robinson
*The Methodist Hospital/Baylor
College of Medicine*

Michael E. Spiro
National Marrow Donor Program

RESEARCH SITES

Bryansk, Russia
Jerusalem, Israel
Houston, Texas
Seattle, Washington
Minneapolis, Minnesota
Moscow, Russia

COORDINATING CENTER

3433 Broadway St. NE
Suite 400
Minneapolis, MN 55413

Telephone (612) 627-5843
Facsimile (612) 627-5899

April 20, 1993

The Honorable Hazel O'Leary
Secretary of Energy
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

Dear Madam Secretary:

On March 30 I sent you the background materials concerning the International Consortium for the Research and Treatment of Radiation-Induced Injury proposal which had been previously submitted to the Department of Energy. This proposal would encompass the accumulation of data and analysis concerning the population exposed as a result of the Chernobyl tragedy. There are to be three streams of efforts dealing with:

1. Those who have emigrated to Israel;
2. those who have emigrated to the U.S; and
3. those remaining in the contiguous countries.

I attach herewith a copy of the summary provided to me by the Fred Hutchinson Cancer Research Center which will update you on the readiness of that member of our Consortium to proceed immediately with the analysis of the population remaining in the contiguous countries. This is the one which your department had previously indicated an interest in funding.

We believe the proposed collaboration offers a unique and unprecedented opportunity for research that is likely to benefit not only science, but large numbers of people in vast areas of the former Soviet Union as well. If this type of work is shown to be feasible, we anticipate initiating in-depth studies of radiation dosimetry, radiation biology, and epidemiologic studies of health effects.

As you know, most of our current understanding of radiation effects in humans is derived from the

The Honorable Hazel O'Leary
Page Two

experience of survivors of the atomic bombings of Hiroshima and Nagasaki, and of persons treated medically with various forms of radiation. Although valuable, these studies are limited in that the radiation exposures under study generally produced relatively high doses that were delivered at relatively high dose rates (i.e., over short periods of time or instantaneously). Much more relevant to most modern radiation exposures, and to the concerns of people living and working around sources of radiation, are the effects of exposures that produce much lower doses, and that accrue over longer periods of time. The circumstances at Chernobyl are truly unique in this regard. They potentially allow for the investigation of a much broader range of radiation dose, including very low doses, delivered at varying and prolonged rates over time.

Thus, if we are successful in eventually conducting long-term studies of the health effects of Chernobyl radiation exposures, and are able to relate health risks to quantitative estimates of radiation doses in individuals, we will likely contribute significantly both to our scientific understanding of radiation effects on human health, and to the well-being of affected persons. In the latter regard, it is important to note that by conducting studies of the type we envision, it is hoped that people in affected areas will eventually be provided with very good information about their likely radiation doses from Chernobyl, and any risks to their health that may be related to those exposures. It is hoped that such information would lead to improved medical surveillance and follow-up, and perhaps even medical management.

Finally, we should never lose sight of the fact that such collaborations will also provide valuable technical and professional skills, and resources, through training and exchange programs affiliated with the research efforts. Such development is crucial in building a firm foundation within Russia (and perhaps other Independent States nearby) so the affected populations can be adequately monitored and provided for.

My request for your urgent consideration today are as follows:

1. A policy approval from you for the support by your department of our objectives to obtain \$4 million for the first year and \$3.9 million for the second year for the accomplishment of the foregoing three-part study.

The Honorable Hazel O'Leary
Page Three

2. Designation of Mr. William White, when confirmed, as the action person to deal with this matter within DOE.

3. A decision by you to go forward immediately with the funding of the in-country analyses as outlined in the attachment. This would require \$1.2 million for the first year effort by Fred Hutchinson Cancer Research Center.

Sincerely,

A handwritten signature in dark ink, appearing to read "ER Zumwalt", with a stylized flourish at the end.

E. R. Zumwalt, Jr.
Admiral, USN (Ret.)
Chairman

1500 Wilson Boulevard, Suite 641
Arlington, Virginia 22209

(703) 527-5380

Enclosure



FRED
HUTCHINSON
CANCER
RESEARCH
CENTER

April 16, 1993

E.R. Zumwalt, Jr.
Admiral, U.S. Navy (Ret)
1500 Wilson Boulevard
Arlington, VA 22209

Dear Admiral Zumwalt:

I am writing to update you regarding progress we have recently made in developing collaborative arrangements with Russian colleagues to initiate research designed to investigate possible adverse health effects of the Chernobyl accident.

As you know, a team of investigators based at the Fred Hutchinson Cancer Research Center (FHCRC) in Seattle has been working since mid-1990 to develop collaborative ties with scientific colleagues in areas of the former Soviet Union that were contaminated by radiation from the Chernobyl accident. After a number of exchanges and working meetings, reasonably firm plans had been developed by early 1992 to initiate a series of feasibility studies in Russia.

Plans for such activities were more formalized in a broader context in June, 1992, with the signing of an agreement with (then) Russian Minister of Health Andrei Vorobiov by not only the FHCRC team, but interested scientists from other institutions in the United States and Israel as well. Under your leadership, the signatories of this agreement subsequently formed a Consortium to develop further plans for collaborative research.

On September 25, 1992, a proposal for funding was submitted by the Consortium to the U.S. Department of Energy entitled: "International Collaborative Pilot and Feasibility Studies on the Health Effects of the Chernobyl Accident". The National Marrow Donor Program was designated as the Coordinating Center for all aspects of the proposed research. Four research teams contributed specific projects to the proposal. These included: the Fred Hutchinson Cancer Research Center in Seattle, the Hadassah Medical Organization in Jerusalem, the Methodist Hospital/Baylor College of Medicine in Houston, and the National Marrow Donor Program in Minneapolis. Although the proposal represented a broad range of research proposals and objectives, the only project proposed to be conducted within the Russian Federation itself was a pilot study proposed by the FHCRC team for a region in southwestern Russia near the Chernobyl site called Bryansk.

The Consortium was notified of the results of the Department of Energy peer review in a letter dated March 3, 1993 from Harry J. Pettengill, Deputy Assistant Secretary for Health. Although the overall rating of the proposal was "good", the letter indicated that "the only

component of the proposal that we would consider for possible funding is the plan for the Fred Hutchinson Cancer Research Center to conduct a preliminary assessment of the radiation dose and to conduct a pilot cohort study in Bryansk". The letter further stated that: "If you would like to submit a proposal for a smaller scale version of the Fred Hutchinson component of the project, we would then attempt to procure funding for these activities. This revised submission would not need to undergo the peer review process again".

Following an international meeting in Houston organized by the Consortium, nine key scientists from Moscow and Bryansk were invited to Seattle for three days of working meetings with the FHCRC team. The primary purpose of these meetings was to formalize and agree upon the detailed content of a proposal for feasibility studies in Bryansk. The specific objective of the meeting was to assemble all of the information necessary to prepare a revised application for funding.

The Seattle meetings were most productive and successful. All participants were able to identify and agree upon a set of primary objectives for the proposed research, and were able to specify methods and procedures for achieving those objectives. Detailed discussions were held regarding workplans, timelines, roles and responsibilities, and budget. Upon their return home, our Russian colleagues will assemble the remaining information needed to complete a revised funding application. Summarized below are the agreed-upon study objectives and a listing of the principal collaborators for the project.

Study Objectives

The primary purpose of this two-year pilot study is to test the feasibility of establishing a collaborative structure that will enable the conduct of long-term joint research regarding radiation doses that could have been received and the possible adverse health effects that may have resulted from the explosion at the Chernobyl Power Station on April 26, 1986. More specifically, this study is designed to: 1) establish and develop the working relationships necessary to conduct long-term collaborative research; 2) identify and establish two relatively large cohorts of persons who were likely exposed to radiation from Chernobyl; 3) develop and evaluate methods for estimating radiation doses received by members of the cohorts; 4) develop and evaluate methods for ascertaining and verifying health status; and 5) establish the capability for storing DNA and RNA specimens.

Accomplishment of these purposes will serve as the basis for initiating epidemiologic studies of the consequences of the Chernobyl accident. It is expected that following this two-year pilot phase, full-scale epidemiologic studies will be undertaken within the specific cohorts identified as part of this project, or expansions thereof. It is expected that such studies will include multiple disease endpoints, including cancer, adverse reproductive outcomes, and possible genetically-determined diseases. In addition, the results of this effort will provide a more scientifically defensible and accurate description of radiation doses that may have been received by persons exposed to the releases of radiation from Chernobyl.

In order to achieve these general purposes, the following specific objectives are identified. The proposed study will:

1. Test the feasibility of conducting collaborative epidemiologic and biomedical research with scientific colleagues from the Russian Federation.
2. Identify a cohort of residents of the Bryansk Oblast for potential long-term study.
3. Identify a cohort of clean-up workers from southern regions of the Russian Federation for potential long-term study.
4. Identify selected patients from the National Center For Hematology in Moscow, who received substantial radiation doses from Chernobyl, for in-depth radiobiological study.
5. Select at random small groups of individuals from each of the two major cohorts.
6. Collect biological specimens, demographic, and medical information from each member of the small groups selected from the cohorts.
7. Develop and test comprehensive protocols for data collection and management, to include the following major areas: subject identification and tracking; sample labeling and management; personal interview, medical record location and review; biological specimen collection, transportation, processing, and storage; dosimetric data collection; and demographic database construction.
8. Establish Bi-National Working Groups to be responsible for data management and quality assurance regarding: laboratory methods, specimen handling, database design, epidemiology, and subject confidentiality.
9. Investigate the use of several state-of-the-art methods for estimating individual radiation doses, and compare results obtained from each of these methods.
10. Investigate the use of state-of-the-art methods of population-based epidemiology in the Russian Federation, including the characterization of the uncertainty of individual radiation doses and the development of integrated databases for multiple users.
11. Develop and test methods for public communication and public involvement in all aspects of the research.
12. Evaluate the effectiveness of public involvement, and compare results to similar endeavors undertaken in relation to studies currently being conducted around nuclear facilities in the United States.

13. Develop recommendations and specific proposals for research initiatives that are feasible, based upon results of the pilot project.

C. Key Personnel For the Proposed Project

The following individuals contributed to the development of the current proposal and will assume significant responsibility for one or more aspects of the research. They are considered the key personnel for the project.

United States

1. Robert W. Day, M.D., Ph.D., Director, FHCRC
2. Scott Davis, Ph.D., Epidemiology, FHCRC
3. Kenneth J. Kopecky, Ph.D., Biostatistics, FHCRC
4. Elaine Bryant, Ph.D., Cytogenetics, FHCRC
5. Stephen Collins, M.D., Molecular Biology, FHCRC
6. Jerry Radich, M.D., Molecular Biology and Clinical Medicine, FHCRC
7. John Hansen, M.D., Director, Clinical Research, FHCRC
8. Paul Voilleque, M.S., Radiation Dosimetry, MJP Risk Assessment, Inc.
9. John Till, Ph.D., Radiation Dosimetry, Radiological Assessments Corporation
10. Ronald Jensen, Ph.D., Molecular Biology, University of California-San Francisco

Russian Federation

1. Andrei I. Vorobiov, M.D., Director, National Center For Hematology, Moscow
2. Igor V. Osechinsky, M.D., Ph.D., Epidemiology, National Center For Hematology, Moscow
3. Sergei M. Kulikov, Ph.D., Computer Science and Biostatistics, National Center For Hematology, Moscow
4. Elena V. Domracheva, Ph.D., Cytogenetics, National Center For Hematology, Moscow
5. Nikita E. Shklovsky-Kordi, M.D., Clinical Medicine, National Center For Hematology, Moscow
6. Valeriy G. Savchenko, M.D., Transplantation Biology and Medicine, National Center For Hematology, Moscow
7. Valery F. Kobelyatsky, Ph.D., Data Management, National Center For Hematology, Moscow
8. Alexander M. Pivnik, M.D., Clinical Medicine, National Center For Hematology, Moscow
9. Pavel G. Pleshanov, Ph.D., Molecular Biology, Scientific Center "Gidrobios", Moscow
10. Valerij F. Stepanenko, Ph.D., Radiation Dosimetry, Center For Medical Radiology, Obninsk
11. Nikolai B. Rivkind, M.D., Radiation Dosimetry and Biology, Diagnostic Center, Bryansk
12. Vitali V. Dorokhov, Ph.D., Epidemiology, Diagnostic Center, Bryansk

Although the primary objectives of this project, as summarized above, are somewhat revised and expanded from the original application last September, the principal tasks to be undertaken and the field methods proposed are largely the same. We are currently working to make a number of more detailed revisions to the study protocol, based upon the discussions held in Seattle two weeks ago. Once these revisions are agreed upon by all, we will prepare a more detailed and specific application for funding. We anticipate this process to be complete by approximately June 1, 1993. It is our intention to re-submit the revised application to the Department of Energy for further consideration on or before that date.

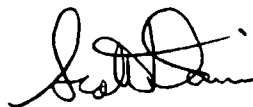
Admiral E.R. Zumwalt, Jr.
April 16, 1993

Page 6

Before then, I would be happy to answer any questions you have about either the process that has brought us to this point, or the specifics of our proposed feasibility studies. If I can provide additional information of any kind, please let me know.

Thank you again for your diligent efforts to encourage and facilitate the development of such important collaborative initiatives. I have great optimism that we will be successful in our efforts, once funding can be obtained.

Sincerely,

A handwritten signature in black ink, appearing to read 'Scott Davis', with a stylized flourish at the end.

Scott Davis, Ph.D.
Member

cc: Dr. Robert W. Day
FHCRC Investigative Team

ROUTING AND TRANSMITTAL SLIP		Date
		7/9/93
TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Brian Burke		
2.		
3.		
4.		
5.		
Action	File	Note and Return
Approval	For Clearance	Per Conversation
As Requested	For Correction	Prepare Reply
Circulate	For Your Information	See Me
Comment	Investigate	Signature
Coordination	Justify	

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**TRIP REPORT
MOSCOW AND TOMSK, RUSSIA
JUNE 19-29, 1993**

MEMBERS OF THE USDOE TEAM FOLLOWING THE TOMSK-7 EXPLOSION

**F.C. GILBERT, USDOE
F.E. WITMER, USDOE
R.E. FELT, WINCO
L.W. GRAY, LLNL
M.L. HYDER, WSRC
D.D. WODRICH, WHC
L.H. SULLIVAN, LANL**

JUNE 28, 1993

BACKGROUND:

DESCRIPTION OF THE TOMSK-7 ACCIDENT.

- o ON APRIL 6, 1993, AT THE FUEL REPROCESSING ("RADIOCHEMICAL") PLANT OF THE SIBERIAN CHEMICAL COMBINE IN TOMSK-7, RUSSIA, A SEQUENCE OF EVENTS OCCURRED THAT CAUSED SUBSTANTIAL PHYSICAL DAMAGE TO THE FACILITY.**
- o A RUNAWAY EXOTHERMIC CHEMICAL REACTION OCCURRED IN A LARGE PROCESS VESSEL WHICH CONTAINED A CONCENTRATED SOLUTION OF URANYL NITRATE ALONG WITH NITRIC ACID, PLUTONIUM NITRATE, RESIDUAL FISSION PRODUCTS TOTALING ABOUT 560 CURIES, AND UNCERTAIN AMOUNTS OF ORGANIC CONSTITUENTS DERIVED FROM THE SOLVENT EXTRACTION PROCESS.**
- o THIS REACTION PRODUCED COPIOUS AMOUNTS OF FLAMMABLE ORGANIC AND INORGANIC GASES, AND STEAM WHICH PRESSURIZED AND BURST THE VESSEL, DISLODGED THE CONCRETE CELL COVER, AND THEN IGNITED IN THE AREA IMMEDIATELY ABOVE THE CELL.**

CONSEQUENCES OF THE ACCIDENT

- o THE EXPLOSION CAUSED SUBSTANTIAL DAMAGE TO THE CRANE BAY ABOVE THE PROCESS AREA, BLOWING OUT SEVERAL HUNDRED FEET OF NON-REINFORCED MASONRY WALL, SERIOUSLY DAMAGING THE ROOF, WRECKING INTERNAL COMPONENTS, AND STARTING SMALL FIRES.**
- o THE EXPLOSION(S) CONTAMINATED AN AREA OF ABOUT 123 SQ. KILOMETERS INSIDE AND OUTSIDE THE PLANT WITH APPROXIMATELY 40 CURIES OF RADIOACTIVE MATERIAL (LESS THAN 10 PERCENT OF TANK CONTENTS).**
- o FORTUNATELY, THE SOLUTION INVOLVED HAD BEEN THROUGH ONE CYCLE OF EXTRACTION AND PURIFICATION, SO THE RELEASE OF ACTIVITY THROUGH THE STACK AND THE OPENINGS WAS A SOURCE OF RATHER LOW LEVEL CONTAMINATION OVER THE AREA OF DISPERSAL. IT WAS ADDITIONALLY FORTUNATE THAT THE PREVAILING WIND BLEW THE PLUME INTO LARGELY UNPOPULATED AREAS, RATHER THAN THE CITIES TO THE SOUTH AND WEST.**
- o RUSSIAN MEASUREMENTS SHOW THE HIGHEST LEVELS IMMEDIATELY ADJACENT TO THE PROCESS BUILDING. THE CANYON BUILDING WAS MADE UNUSABLE, AND REPAIR WORK HAS BEEN PROCEEDING ON AN ACCELERATED BASIS.**

WHY DOE INVOLVEMENT?

- o BECAUSE THE TOMSK-7 FACILITY UTILIZES THE PUREX PROCESS, SIMILAR TO THAT USED AT U.S. FACILITIES, THE DEPARTMENT OF ENERGY (DOE) HAS UNDERTAKEN TO LEARN THE DETAILS OF THIS ACCIDENT AND ITS CAUSES.**

GENERAL OVERVIEW

- o THE COMBINE CONSISTS OF SEVERAL FACILITIES: A URANIUM ISOTOPE ENRICHMENT PLANT, TWO OPERATING DUAL-PURPOSE REACTORS (PLUTONIUM AND POWER), A REPROCESSING PLANT FOR PLUTONIUM EXTRACTION, VARIOUS CIVIL PRODUCTION FACILITIES, AND FISSIONABLE MATERIALS STORAGE FACILITY.**

**TRIP REPORT
MOSCOW AND TOMSK, RUSSIA
JUNE 19-29, 1993**

PLACES VISITED: **U.S. EMBASSY, MOSCOW, RUSSIA**

**MINISTRY OF THE RUSSIAN FEDERATION ON ATOMIC ENERGY
(MINATOM), MOSCOW, RUSSIA**

**SIBERIAN CHEMICAL COMBINE (ALTERNATE NAMES:
SIBIRSKIY KHMICHESKIY KOMBINAT, SIBKIMKOMBINAT,
SKhK, SIBERIAN GROUP OF CHEMICAL ENTERPRISES),
SEVERSK OR TOMSK-7, RUSSIA**

DATES OF VISIT: **MOSCOW, RUSSIA: JUNE 19-23, 1993**

TOMSK-7, RUSSIA: JUNE 23-26, 1993

MOSCOW, RUSSIA: JUNE 26-29, 1993

LOCATION

- o THE TOMSK-7 COMPLEX IS LOCATED ABOUT 15 KILOMETERS NORTH-NORTHWEST OF THE SIBERIAN CITY OF TOMSK**
- o TOMSK IS A CITY OF APPROXIMATELY 500,000 INHABITANTS. IT IS LOCATED ABOUT 1,700 MILES EAST OF MOSCOW (FOUR TIME ZONES). TOMSK, AN OLD CITY, IS THE LARGEST CITY IN TOMSK OBLAST. IT HAS SEVERAL SCIENTIFIC RESEARCH/ACADEMIC INSTITUTES.**

FACILITIES AT THE TOMSK-7 SITE

- o REACTORS: ORIGINALLY FIVE NUCLEAR PRODUCTION REACTORS. TWO STILL RUNNING TO PRODUCE ELECTRICITY AND STEAM.**
- o REPROCESSING PLANT: SIMILAR TO F AND H CANYONS AT SAVANNAH RIVER AND USES TYPICAL PUREX TECHNOLOGY.**
- o URANIUM ENRICHMENT: PROVIDES URANIUM ENRICHMENT.**
- o WASTE MANAGEMENT FACILITIES.**
- o MILITARY PRODUCTION ACTIVITIES: NUCLEAR WEAPONS MATERIALS PRODUCTION, INCLUDING PLUTONIUM AND URANIUM PRODUCTION AND PLUTONIUM COMPONENT PRODUCTION.**
- o CIVIL PRODUCTION FACILITIES: PROCESSING OF URANIUM PRODUCTS (INCLUDING LOW-ENRICHED URANIUM), RADIOACTIVE MATERIALS FOR FOREIGN FIRMS; INORGANIC FLUORIDES, AND OXIDES; MAGNETIC ALLOYS, AND STRONG PERMANENT HIGH-ENERGY MAGNETS.**
- o SUPPORT FACILITIES: LABORATORIES, RADIOLOGICAL PROTECTION, WASTE MANAGEMENT FACILITIES, COAL FIRED POWER PLANTS, ETC.**

TEAM ACCOMPLISHMENTS

- o DRAFT TRIP REPORT**
- o MECHANISM MODEL (FUTURE ACTIVITY)**
- o LESSONS LEARNED FOR APPLICATION TO DOE FACILITIES**
- o CONCLUSIONS**

MECHANISM MODEL (FUTURE ACTIVITY)

- o THE U.S. TEAM HAS BEEN ATTEMPTING TO DEVELOP ANALYTICAL MODELS OF THE INCIDENT TO BETTER UNDERSTAND WHAT OCCURRED AND WHAT ARE THE CONTROLLING FACTORS TO AVOID RED-OIL TYPE PHENOMENA IN U.S. FACILITIES.**
- o THE MODEL DEVELOPED FROM THIS SCENARIO NEEDS TO BE REWORKED USING THE BEST-ESTIMATE OF INITIAL CONDITIONS AS PROVIDED BY THE MINATOM AND TOMSK-7 VISITS. IN ADDITION, SOME CLARIFICATION OF SYSTEM CONFIGURATION, PIPING VALVE DIMENSIONS, AND TIMING HAVE BEEN REQUESTED BY THE U.S. TEAM.**
- o THIS ADDITIONAL INFORMATION IS IMPORTANT FOR DEVELOPING A REFINED MODEL, WHICH MAY BE USEFUL TO BOTH U.S. AND RUSSIAN ORGANIZATIONS.**

CONCLUSIONS

- o THE U.S. TEAM HAS VISITED BOTH MINATOM AND THE TOMSK-7 FACILITIES IN AN EFFORT TO DETERMINE INFORMATION THAT WOULD SUPPORT THE SAFETY REVIEW OF SIMILAR REPROCESSING FACILITIES IN THE UNITED STATES. BOTH THE MEETINGS WERE PRODUCTIVE IN ACHIEVING THIS OBJECTIVE.**
- o WE BELIEVE THAT CONTINUED INTERCHANGES OF INFORMATION RELATED TO CHEMICAL NUCLEAR FACILITIES SAFETY IN THE FUTURE WOULD BE MUTUALLY BENEFICIAL TO THE U.S. AND RUSSIAN PROGRAMS.**
- o SIGNIFICANT FINDINGS THAT RELATE TO THE U.S. FACILITIES ARE:
INCREASED ATTENTION TO THE ADDITION OF HIGHLY CONCENTRATED ACID TO ORGANICS, ENSURING THAT TANKS ARE WELL VENTILATED DURING FEED ADJUSTMENT WITH ACIDS, NEED FOR ADEQUATE AGITATION DURING MIXING;
PROVIDING PROPER INSTRUMENTATION FOR OPERATING PERSONNEL TO EVALUATE ANY POTENTIAL UPSET CONDITIONS AT AN EARLY STAGE, AND ENSURING THAT A WELL DEFINED SAFETY ENVELOPE EXISTS AND OPERATING PERSONNEL UNDERSTAND POTENTIAL UPSET CONDITIONS AND CORRECTIVE ACTIONS.**

CONCLUSIONS (CONTINUED)

- o MINATOM AND TOMSK-7 PERSONNEL HAVE PROVIDED MANY DETAILS OF FACILITY DESIGN, OPERATIONS PRIOR, DURING, AND AFTER THE EVENT, THEIR INTERPRETATION OF THE EVENT, AND THEIR CORRECTIVE ACTIONS. THESE WILL BE USEFUL IN U.S. SAFETY REVIEWS. PRESENTATIONS AND DISCUSSIONS GIVEN BY THE U.S. TEAMS AT BOTH MINATOM AND TOMSK-7 CONTRIBUTED TO THE TECHNICAL INTERCHANGE.**

- o THE EXCHANGE GENERALLY WENT WELL. PROTOCOL WAS FOLLOWED AT ALL TIMES. SMALL GIFTS WERE GIVEN TO MEMBERS OF THE RUSSIAN DELEGATION, VODKA CONSUMED IN MEASURED QUANTITY, AND THANKS EXPRESSED TO THE RUSSIANS.**

**OMB BRIEFING FOR
CONGRESSIONAL STAFF
ON ACTIVITIES OF THE
INTERAGENCY WORKING GROUP ON
HUMAN RADIATION EXPERIMENTS**

MARCH 21, 1994

THIS BRIEFING PACKET CONTAINS THE FOLLOWING INFORMATION:

- INTERAGENCY WORKING GROUP MILESTONES
- COST OF THE INTERAGENCY EFFORT
- EXECUTIVE ORDER
- TABLE: CHARACTERISTICS OF COMPENSATION ASSISTANCE PROGRAMS
- OUTLINE: POTENTIAL ELEMENTS OF A FEDERAL RESPONSE

MILESTONES

Interagency Group and Advisory Committee Established

- On January 3, 1994, the Interagency Working Group on Human Radiation Experiments was established to coordinate the government-wide effort to uncover the nature and extent of any government-sponsored experiments on individuals involving intentional exposure to ionizing radiation. Agencies represented on the Working Group are: the Departments of Energy, Defense, Health and Human Services, Justice, and Veterans Affairs; the National Aeronautics and Space Administration; the Central Intelligence Agency; and the Office of Management and Budget.
- On January 18, 1994, the President signed an Executive Order forming a fifteen-member Advisory Committee on Human Radiation Experiments to provide advice and recommendations to the Interagency Working Group. The Advisory Committee will be chaired by Dr. Ruth R. Faden.¹ Other Committee members, including private citizens, and experts in ethics, medicine, and law, will be named soon (a list of candidates for the Committee is provided in a separate briefing package). The Committee is expected to hold its first meeting in April.
- The Interagency Group and the Advisory Committee are charged with investigating experiments on individuals involving intentional exposure to ionizing radiation (other than routine clinical practices) and specifically identified incidents involving intentional environmental releases of radiation that occurred between 1944 and May 30, 1974 — the date of issuance of the Department of Health, Education, and Welfare regulations for the protection of human subjects (45 CFR 46). The Advisory Committee will submit an interim report six months after it begins work, and will provide a final report within one year.

Additional Presidential Guidance

- On February 17, a Presidential Memorandum was issued, instructing all Executive Departments and Agencies to review their policies on the protection of human subjects in scientific research, and to strictly enforce such regulations. Currently, all human subject research must meet stringent informed consent guidelines that are established by federal regulation. All experiments involving human subjects are reviewed by Institutional Review Boards — committees that are required at every research site to ensure conformance with informed consent and other ethical standards.

¹ Dr. Faden is a professor of health policy and management and Director of the Program in Law, Ethics and Health of the Department of Health Policy and Management at Johns Hopkins University and a Senior Research Scholar of the Kennedy Institute of Ethics at Georgetown University.

COSTS ASSOCIATED WITH THE INTERAGENCY EFFORT

At this point, it appears that all agencies involved in this effort can cover the costs of participating in the Interagency effort without supplemental funds in FY 1994.

Specific costs expected to be incurred by agencies are discussed below:

- **Department of Energy (DOE).** Currently, DOE is financing activities, such as its telephone hotline, using funds from its Environment, Safety, and Health program. However, DOE expects to submit a reprogramming request to the House and Senate Energy and Water Development Subcommittees to put more resources into activities associated with the interagency investigation. The Department's reprogramming request will cover the following costs: researching claims made by individuals; ensuring that all DOE research is peer-reviewed and in conformance with ethical protocols; and support for the Advisory Committee. The DOE reprogramming request is expected to be approximately \$10 million for FY 1994. An additional \$5 - \$10 million may be required in FY 1995.
- **Department of Defense (DOD).** DOD expects to incur administrative costs of about \$7 million for activities associated with the interagency effort. The Department believes that such funds can be reprogrammed without Congressional approval.
- **Other Agencies.** At this time, none of the other agencies involved in the interagency investigation anticipate incurring administrative costs that would require supplemental funds or reprogramming.

THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release

January 18, 1994

EXECUTIVE ORDER

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ADVISORY COMMITTEE ON HUMAN RADIATION EXPERIMENTS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Establishment. (a) There shall be established an Advisory Committee on Human Radiation Experiments (the "Advisory Committee" or "Committee"). The Advisory Committee shall be composed of not more than 15 members to be appointed or designated by the President. The Advisory Committee shall comply with the Federal Advisory Committee Act, as amended, 5 U.S.C. App. 2.

(b) The President shall designate a Chairperson from among the members of the Advisory Committee.

Sec. 2. Functions. (a) There has been established a Human Radiation Interagency Working Group, the members of which include the Secretary of Energy, the Secretary of Defense, the Secretary of Health and Human Services, the Secretary of Veterans Affairs, the Attorney General, the Administrator of the National Aeronautics and Space Administration, the Director of Central Intelligence, and the Director of the Office of Management and Budget. As set forth in paragraph (b) of this section, the Advisory Committee shall provide to the Human Radiation Interagency Working Group advice and recommendations on the ethical and scientific standards applicable to human radiation experiments carried out or sponsored by the United States Government. As used herein, "human radiation experiments" means:

- (1) experiments on individuals involving intentional exposure to ionizing radiation. This category does not include common and routine clinical practices, such as established diagnosis and treatment methods, involving incidental exposures to ionizing radiation;
- (2) experiments involving intentional environmental releases of radiation that (A) were designed to test human health effects of ionizing radiation; or (B) were designed to test the extent of human exposure to ionizing radiation.

Consistent with the provisions set forth in paragraph (b) of this section, the Advisory Committee shall also provide advice, information, and recommendations on the following experiments:

more

(OVER)

- (1) the experiment into the atmospheric diffusion of radioactive gases and test of detectability, commonly referred to as "the Green Run test," by the former Atomic Energy Commission (AEC) and the Air Force in December 1949 at the Hanford Reservation in Richland, Washington;
- (2) two radiation warfare field experiments conducted at the AEC's Oak Ridge office in 1948 involving gamma radiation released from non-bomb point sources at or near ground level;
- (3) six tests conducted during 1949-1952 of radiation warfare ballistic dispersal devices containing radioactive agents at the U.S. Army's Dugway, Utah, site;
- (4) four atmospheric radiation-tracking tests in 1950 at Los Alamos, New Mexico; and
- (5) any other similar experiment that may later be identified by the Human Radiation Interagency Working Group.

The Advisory Committee shall review experiments conducted from 1944 to May 30, 1974. Human radiation experiments undertaken after May 30, 1974, the date of issuance of the Department of Health, Education, and Welfare ("DHEW") Regulations for the Protection of Human Subjects (45 C.F.R. 46), may be sampled to determine whether further inquiry into experiments is warranted. Further inquiry into experiments conducted after May 30, 1974, may be pursued if the Advisory Committee determines, with the concurrence of the Human Radiation Interagency Working Group, that such inquiry is warranted.

(b)(1) The Advisory Committee shall determine the ethical and scientific standards and criteria by which it shall evaluate human radiation experiments, as set forth in paragraph (a) of this section. The Advisory Committee shall consider whether (A) there was a clear medical or scientific purpose for the experiments; (B) appropriate medical follow-up was conducted; and (C) the experiments' design and administration adequately met the ethical and scientific standards, including standards of informed consent, that prevailed at the time of the experiments and that exist today.

(2) The Advisory Committee shall evaluate the extent to which human radiation experiments were consistent with applicable ethical and scientific standards as determined by the Committee pursuant to paragraph (b)(1) of this section. If deemed necessary for such an assessment, the Committee may carry out a detailed review of experiments and associated records to the extent permitted by law.

(3) If required to protect the health of individuals who were subjects of a human radiation experiment, or their descendants, the Advisory Committee may recommend to the Human Radiation Interagency Working Group that an agency notify particular subjects of an experiment, or their descendants, of any potential health risk or the need for medical follow-up.

(4) The Advisory Committee may recommend further policies, as needed, to ensure compliance with recommended ethical and scientific standards for human radiation experiments.

(5) The Advisory Committee may carry out such additional functions as the Human Radiation Interagency Working Group may from time to time request.

Sec. 3. Administration. (a) The heads of executive departments and agencies shall, to the extent permitted by law, provide the Advisory Committee with such information as it may require for purposes of carrying out its functions.

(b) Members of the Advisory Committee shall be compensated in accordance with Federal law. Committee members may be allowed travel expenses, including per diem in lieu of subsistence, to the extent permitted by law for persons serving intermittently in the government service (5 U.S.C. 5701-5707).

(c) To the extent permitted by law, and subject to the availability of appropriations, the Department of Energy shall provide the Advisory Committee with such funds as may be necessary for the performance of its functions.

Sec. 4. General Provisions. (a) Notwithstanding the provisions of any other Executive order, the functions of the President under the Federal Advisory Committee Act that are applicable to the Advisory Committee, except that of reporting annually to the Congress, shall be performed by the Human Radiation Interagency Working Group, in accordance with the guidelines and procedures established by the Administrator of General Services.

(b) The Advisory Committee shall terminate 30 days after submitting its final report to the Human Radiation Interagency Working Group.

(c) This order is intended only to improve the internal management of the executive branch and it is not intended to create any right, benefit, trust, or responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person.

WILLIAM J. CLINTON

THE WHITE HOUSE,
January 15, 1994.

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CHARACTERISTICS OF COMPENSATION ASSISTANCE PROGRAMS

Legislation/ Compensation Program	Eligible Population/# of claimants	Monetary Compensation	Health Care/ Monitoring or Other Services	Apology/ Recognition	Public Outreach/ Research Programs	Program Cost	Terms or Conditions for Compensation
Radiation Exposure Compensation Act (1990)	220,000 military personnel and 150,000 civilians exposed to testing; 3,825 claims filed through 1994. 1,570 paid; 532 pending; 1,493 denied.	\$50,000 for civilian claims related to open air testing ("downwinders"); \$75,000 for test participants; \$100,000 for claims related to uranium mining.	No.	Yes.	No.	\$276 million estimated through FY 1994; projected \$1.1 billion total program cost through 2012.	Claimants must have been exposed to radiation through testing or mining and have developed specific forms of cancers.
U.S. Government compensation for Marshall Islands residents exposed to radiation through nuclear weapons tests	Four atolls are explicitly covered in Compact. Cash compensation settlement provided directly to government.	\$12,500 - \$125,000	Yes. DOE Office of Environmental Health monitors radiological conditions, provides medical treatment, and monitors health of exposed persons.	No.	Yes.	Roughly \$500 million has been spent to mitigate testing effects (1946 - 1994). \$150 million settlement to Republic of Marshall Islands in 1986.	Compensation has included resettlement trust funds, a health and environmental monitoring program, a feeding program, and payments to individuals.

Legislation/ Compensation Program	Eligible Population/# of claimants	Monetary Compensation	Health Care/ Monitoring or Other Services	Apology/ Recognition	Public Outreach/ Research Programs	Program Cost	Terms or Conditions for Compensation
Veterans Dioxin and Radiation Compensation Standards Act (1984; amended 1988) (Benefits are one component of a broad veterans' compensation program)	15,000 so-called atomic veterans have submitted claims for death/disability payments; 1,400 have been allowed by VA. Many claims do not meet eligibility requirements.	Tax-free benefit of \$85 to \$4,943 per month, based on disability, if presumption of service-related disability is extended. Surviving spouses/children eligible for indemnity compensation. Death benefits paid at \$9,228 to \$19,632 per year.	Yes. Priority medical care at VA hospitals available for veterans exposed to herbicides during Vietnam War or exposed to radiation.	No.	Yes. Epidemiological studies of health effects of veterans exposed to radiation and herbicide mandated in legislation.	No estimate currently available.	Veterans exposed to radiation during atomic weapons tests or occupation of Hiroshima or Nagasaki. Presumption of service-connected disability if claimant has one of thirteen specified cancers.
DOE Health Monitoring Program for Workers Exposed to Occupational Hazards	No estimates currently available.	No.	DOE provides health monitoring to workers occupationally exposed to radioactive or hazardous substances.	No.	Yes.	No estimate currently available.	All employees subject to significant health risks are covered.

Legislation/ Compensation Program	Eligible Population/# of claimants	Monetary Compensation	Health Care/ Monitoring or Other Services	Apology/ Recognition	Public Outreach/ Research Programs	Program Cost	Terms or Conditions for Compensation
Japanese Internment Reparation Program (administered by DOJ Civil Rights Division)	120,000 people interned. 78,000 claims expected through end of program in FY 1994.	\$20,000 to each interned individual or to internee's family, if deceased.	No.	Yes.	No.	\$1.5 billion paid through FY 93. FY 94 \$100 million will complete program at \$1.6 billion.	Acceptance of claim constitutes full satisfaction of claims against U.S. Government.
National Vaccine Injury Compensation Program	1,700 cases resolved since 10/88; approx. 500 successful. Several thousand cases still pending.	Yes, awards range from \$120 to \$4 million. Justice-appointed "special masters" determine award amounts.	No.	No.	Yes, includes program promotion, information materials, and studies of child vaccine risks.	\$416 million awarded by end of 1993.	Compensates people with vaccine-related injuries from childhood for medical expenses, damages, and pain and suffering.
Tuskegee Syphilis Study Subjects Compensation Program (HEW, HHS predecessor)	Approximately 450 persons affected.	No.	Yes. Full lifetime medical benefits paid for all subjects involved, including health monitoring for subjects and their families, if affected.	Yes.	Yes. Full access to information.	Several tens of millions of dollars.	Monitoring and assistance provided to any family member, (including grandchildren) affected by the disease.

POTENTIAL ELEMENTS OF A FEDERAL RESPONSE

Compensation Options

1. Monetary compensation
 - a. Lump sum
 - Amount(s)
 - Variation by claimant circumstances
 - b. Periodic
 - Amount(s)
 - Variation by claimant circumstances
 - c. Duration
 - Survivors' benefits
 - d. Program(s) under which benefits administered
 - Existing program(s)
 - New program
2. Health or Other Services
 - a. Medical monitoring
 - b. Health care services (physical, mental)
 - Eligibility for select programs (e.g., VA)
 - Special program
 - c. Follow up study(s) of individuals and groups to determine health and other effects
 - d. Administering agency(s)
 - e. Duration
 - Survivors' benefits

3. Notification/Disclosure of Personal Information

- a. For subjects and their families
- b. Full disclosure of government's information on circumstances of each individual case

4. Apology or Recognition

- a. Formal apology
 - By whom (responsible agency(s), President, Congress, Government?)
 - To whom (individual participants, families, groups?)
 - Form (letter, public announcement, legislation?)
- b. Appreciation for contribution to the National interest
- c. Memorial
 - Plaque/monument/memorial building

5. Outreach or Research Programs

- a. Research program/endowment
- b. Information archives and periodic reports to the Nation
- c. Education programs