UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
COMMISSIONER

July 22, 1992

The Honorable Robert L. Gallucci
Senior Coordinator for the Deputy
Secretary (D/SC)
Room 5214
U.S. Department of State
2201 C Street, N.W.
Washington, DC 20520

Dear Ambassador Gallucci:

It has come to my attention that there is considerable interest within several government agencies in cooperative programs with Russian scientists at Chelyabinsk. Such programs involve studies of health effects of radiation, decontamination and decommissioning, and waste management issues. Various meetings have already been held on the subject. For your information, the enclosed brief "white paper" has been prepared discussing this in more detail.

I am concerned that unless these efforts are coordinated at a high level, the United States may jeopardize a golden opportunity for a cooperative program that could pay significant dividends useful to the scientific and nuclear communities in the U.S. as well as abroad. I would very much appreciate the opportunity to discuss this with you in more detail. I sense that time is of the essence. I have discussed this matter with my fellow Commissioners and would like to meet with you at your earliest convenience.

Sincerely,

E. Gail de Planque

Enclosure:
As Stated

Attachment 1

DRAFT July 24, 1992

SOUTHERN URALS (CHELYABINSK) WHITE PAPER

The political changes that have occurred in the FSU have opened up a unique opportunity to study and greatly increase our understanding of the problems related to decontamination and decommissioning of sites contaminated with radioactive materials, nuclear waste management, as well as health effects of radiation. The results of the studies may have a significant impact upon public policy related to nuclear activities in the U.S. and throughout the world. Full exploitation of this unique opportunity requires a prompt, coordinated USG effort, for which your cooperation is being sought.

Background on the Situation

In 1948, a nuclear weapons production complex, "MAYAK" was established in the Southern Urals, about 100 km. northeast of Chelyabinsk. A closed town was built next to the MAYAK complex for MAYAK workers and their families, "Chelyabinsk-40," (also known as Chelyabinsk-65).

MAYAK operations resulted in the release of enormous amounts of radioactive materials into the environment from a series of accidents from 1948 to 1967, poor management practices, deliberate releases, and adverse weather events. Thousands of square kilometers have been contaminated and hundreds of thousands of people have received significant radiation exposures over a protracted period. Furthermore, because of limited and primitive radiation protection measures and procedures, thousands of MAYAK workers and citizens in the surrounding areas were seriously overexposed to internal and/or external radiation.

Over the years the West heard bits and pieces of information about these events, but most of the information was considered secret and classified. Since the disolution of the Soviet Union and the Russian removal of many restrictions on information, the whole story is becoming public.

Importance to the United States

The preservation, restoration and analysis of radiation exposure, medical and environmental data in the South Urals is extremely important to the United States and to the world. These data may serve as the basis for radiation exposure studies that differ from those concluded in the past. Most of our knowledge on health effects and risks associated with radiation exposure is based on studies of persons exposed for medical purposes and studies of the atomic bomb survivors in Hiroshima and Nagasaki in 1945. The confounding factors in the studies on people exposed for medical reasons include an already diseased population, age and gender distributions unrepresentative of the general population, and in most cases, large doses, delivered at high rates, to just portions of the patients' bodies. The atomic bomb survivors were exposed to a very short burst of external radiation, which does not correspond to the pattern of exposure normally encountered or expected in the nuclear fuel cycle and as well as in other uses of radiation and radioactive materials. In all radiation risk issues, there is no direct human data base equal in robustness to that of the atomic bomb

survivor data base; and thus our current risk and regulation policies are primarily driven by and extrapolated from the Hiroshima and Nagasaki data. However, the extrapolation to low doses and dose rates has not been validated and this important scientific question remains unresolved.

The Southern Urals data base may provide an opportunity to answer the question of whether chronic low level exposures pose a risk different from that previously assumed. The range of doses is comparable to Hiroshima-Nagasaki, and the exposed population is even larger. The significant differences are that the Urals populations were chronically exposed over long periods of time, and the exposures were both external and from internally deposited radionuclides. More definitive studies on these issues may have a major impact on the world's radiation protection standards and regulations.

Accordingly, this situation now provides us with a unique opportunity to address our questions and issues concerning possible risks to populations from protracted exposure to internal and/or external radiation. Possible examples include exposures from uranium mining, from nuclear facilities operations, from transport and disposal of radioactive materials, from radon, from the testing and dismantling of nuclear weapons, from medical exposure, and from contaminated sites or facilities. Verification of a possibly lower risk from chronic radiation exposure could be of major medical and economic significance, as it could provide guidance on risks to actually and potentially exposed populations, populations that today are seriously concerned about future risks from past or future nuclear operations.

In addition to the opportunity to study radiation health effects at Chelyabinsk, the unusually extensive environmental contamination has created a rare opportunity to study the transport of the radioactive material in the air, soil, water and biota. Data from such studies can add to our knowledge in this area and could significantly enhance the technical bases for national and international programs for radioactive waste disposal as well as decontamination and decommissioning of any sites contaminated with radioactive materials.

UNITED STATES RESPONSE

Many agencies of the United States Government, both at their own initiative and the initiative of Russian scientists, have begun to conduct dialogues with those who collected, housed, directed and controlled the health and environmental data of the Chelyabinsk area. It is now incumbent on the USG to coordinate and assess the scientific merit of potential cooperative projects in this area and to negotiate with the appropriate Russian authorities in an organized and uniform fashion. An ad hoc approach could cause confusion and disillusionment and the opportunity to proceed would be lost. It should be emphasized that no single U.S. agency has all the expertise or depth to cover all that should be done, but conversely, our collective national science community is moe than adequately equipped for the task.

At Chelyabinsk, most of the dosimetric and medical data are still on handwritten paper files--without backup. Due to economic conditions in the Russian Federation, there is uncertainty about continuing funding of Russian scientific organizations that have the data and have begun analyzing them. Should support evaporate, both the primary data and the scientific expertise related to the data might disappear, thus jeopardizing this unique opportunity to learn more about the spectrum of effects of chronic radiation exposures on humans. Not only must these data be preserved for future evaluation, but cooperative studies on these populations and their environment must begin as soon as possible, in order to capture the benefits described above. The full understanding and exploitation of this unique opportunity can only be realized through an integrated and well coordinated program. The results from such studies may have a significant impact on public policy related to nuclear activities throughout the world.

Lastly, a coordinated program could avoid duplication among U.S. agencies, keep resource expenditures within reasonable bounds and avoid competition for access to Russian data and facilities by negotiating access once rather than many times for each U.S. participants.

Appendix 1 lists USG agencies interested in carrying out scientific projects in the Chelyabinsk area.

Appendix 2 lists some of the potential research partners in the Russian Federation and some of their interrelations.

Appendix 3 lists some research and scientific projects that would be of benefit for participating USG agencies.

Appendix 1

SOME U.S. GOVERNMENT AGENCIES INTERESTED IN THE SOUTH URALS, INCLUDING A FEW ASPECTS OF PARTICULAR INTEREST

Interested Agencies

U.S. Department of Defense/Defense Nuclear Agency/AFRRI

Nuclear disarmament, acute effects of radiation

U.S. Department of Energy

Dosimetric, occupational, medical, environmental, basic radiation science issues; waste management, decontamination, EH, EM, ER (OHER), International Programs

U.S. Environmental Protection Agency

Environmental contamination limits and dynamics

U.S. Department of Health and Human Services

Occupational and population epidemiology, treatment of radiation illness, public health (CDC, FDA, NIH (NCI))

U.S. Nuclear Regulatory Commission

Health effects, decontamination and decommissioning of nuclear facilities, worker safety, risk assessment, accident consequences analysis, EDO, NRR, RES, IP.

U.S. Department of State

International cooperation, safe nuclear disarmament, assisting in the Scientific Center for employment of former weapons scientists in the Former Soviet Union (FSU).

Potentially Interested Agencies

National Academy of Science/National Research Council/RERF

Health Effects (Hiroshima and Nagasaki)

National Aeronautics & Space Administration

Plutonium dispersal dynamics, atmospheric transport

U.S. Department of Agriculture

Food contamination, soil and crop contamination

U.S. Department of Labor

Occupation Safety & Health Administration

National Oceanic & Atmospheric Administration

Environmental Transport of radionuclides

U.S. Department of Transportation

Research Partners

Ministry of Health of the Russian Federation
Andrei I. Vorobiev, Minister

Institute of Biophysics
Leonid Ilyin, Director

Branch No. 1, Chelyabinsk-65/40
Nina A. Koshurnikova, Head/Epidemiology
Nadeshda D. Okladnikova, Head/Clinical Dept.

Branch No. 4, Chelyabinsk Ural Research Center for Radiation Medicine
Mira M. Kossenko, Head/Clinical Dept.
Marina O. Degteva, Deputy Director

International Radiological Laboratory, Ltd.
Marina O. Degteva, Executive Director

Research Institute of Medical Radiology
Anatoly F. ~~Tysh~~ Tsyb, Director

Interplay Amongst the Potential Russian Partners

The principal executors (on the Russian side) of health research will be field stations originally set up as part of the USSR Ministry of Health's Institute of Biophysics (I.B.); Branch No. 1 in Chelyabinsk-65 (=40) and Branch No. 4. Branch No. 1 is still under the I.B.'s Director in Moscow, Academician Leonid Ilyin but, recently Branch No. 4 was renamed the Ural Research Center for Radiation Medicine, (URCRM), reporting directly to the Ministry of Health, (Academician Vorobiev).

Branch No. 1 has the data on MAYAK workers and the population of Chelyabinsk-65, while Branch No. 4 (URCRM) has the data on Techa River populations and the population exposed to the 1957 Kyshtym accident, (and the subsequent 1967 wind resuspension event).

The personnel of Branch No. 4 have established an independent unit, "International Radiological Laboratory," (IRL), which has access to personnel and data of Branch No. 4. IRL can apparently contract directly without going through the Health Ministry, and is attempting to supplement, but not duplicate tasks and projects supported by the Health Ministry.

For studies on MAYAK workers and their families and others living in Chelyabinsk-65, the management of MAYAK has to be included.

Academician Anatoly F. Tsyb of Obninsk, is the Russian Head of Working Group 7.2 of the Joint Coordinating Committee for Civilian Nuclear Reactor Safety (JCCCNRS) and was head of the USSR Academy of Sciences Commission to study the health effects, environmental contamination and radiation control in the South Urals in 1990.

Due to past practices and the current conditions in Russia, it will be necessary for the researchers in the Chelyabinsk areas to be direct parties to any negotiations with the USA and that any funding, equipment and personnel exchanges be sent directly to the unit in which the work will be done. It is important that the number of intermediaries be minimal.

For studies of waste management practices plus decontamination and decommissioning of contaminated sites, the local and Moscow centralized management of MAYAK must be involved along with the necessary health officials. The current Ministry of Atomic Energy (MINATOM) in Moscow is the "owner-operator" of the facility and would have some say as to access to past records and availability of current participation of scientists in cooperative activities.

Appendix 3

PROPOSED RADIOLOGIC ., DOSIMETRIC AND HEALTH PROJECTS
FOR THE RUSSIAN SOUTH URALS REGION

Environmental Radiological Studies

1. Reconstruction of the "source terms" for each of the releases and events.

2. Determination of the distribution and fate of released radionuclides.
   a. Atmospheric transport
   b. Resuspension of deposited radionuclides
   c. Soil contamination and transport
   d. Aquifer contamination and dynamics
   e. Contamination of the food supply
   f. Estimate of current dose rates and forecast of future exposures
   g. External radiation dose rates, their past, present and future levels

3. Countermeasure methods to reduce population exposures

Stochastic Health Effects Studies

Applies to:

   a. Techa River Populations (1948-1953 and later exposures)
   b. East Ural Radioactive Trace (EURT) Populations (1957 Kyshtym Accident, and the 1967 wind resuspension)
   c. MAYAK workers employed and retired
   d. Chelyabinsk-65/40 Populations, including families of Mayak workers

1. Most important is the immediate preservation of existing radiological, exposure and medical data, (e.g. microfilming, optical scanning, oral histories).

2. Data computerization. Develop a format that will facilitate future manipulation and analysis.

3. Personal Dose Estimation

   a. Biological dosimetry.

   b. Radionuclide body burden determination.

   c. Personal histories and the development of registries.

   d. Dosimetry of deceased persons.

4. Medical data reconstruction and evaluation, including medical files, death certificates, histopathological information and materials.

5. Analyses of data.

Deterministic (Non-stochastic) Health Effects Studies

1. Chronic Radiation Syndrome, evaluation and analyses (data from MAYAK workers and selected Techa River inhabitants.)

2. Acute Radiation Syndrome, evaluation of clinical data and determination of possible threshold values for effects-(MAYAK workers).

3. Pulmonary Syndrome, evaluation of the metabolism and injury from inhaled radioactivity, especially transuranic elements including plutonium-(MAYAK workers).

Revised List of Attendees

Department of Energy
Delegation Head: Dr. Tara O'Toole, Assistant Secretary for Environment, Safety and Health

Participants: Mr. Frank Hawkins, Director, Office of International Health Programs
Dr. Elaine Gallin, Deputy Director, Office of International Health Programs
Dr. Mohandas Bhat, Europe Project Team Administrator

Nuclear Regulatory Commission
Delegation Head: Ms. Greta Dicus, Commissioner

Participants: Mr. Joel Lubenau, Technical Assistant to the Commissioner
Dr. Shlomo Yaniv, Senior Technical Advisor - Health Effects

Department of Defense
Delegation Head: Dr. Anna Johnson-Winegar, Director, Medical Chemical and Biological Defense Research Program

Participants: Dr. John Thomas, Senior Assistant for Russian and CIS Science and Technology
Brig. Gen. Russ Zajtchuk, Commanding General, U.S. Army Medical Research and Materiel Command
Dr. John Ainsworth, Scientific Director, AFRRI
Col. Glen Reeves, New Independent States Initiative Coordinator

Department of Health and Human Services
Delegation Head: Dr. Henry Falk, Director, Division of Environmental Hazards and Health Effects

Participants: Dr. Peter Henry, Director, Office for Europe and the NIS

National Cancer Institute
Delegation Head: Dr. Charles Land, Acting Chief, Radiation Epidemiology Branch

Department of State
Delegation Head: Ms. Carol Kessler, Senior Coordinator for Nuclear Safety

Office of Science and Technology Policy
Delegation Head: Carolyn Huntoon

Attachment 2

JCCRER BUDGET

I. CURRENT FY 1996 FUNDING (to support feasibility studies)

Direction 1 (Population Studies):	Americans:	$467,000 (DOE)
	Russians:	$150,000 (DOE)
Direction 2 (Worker Studies):	Americans:	$150,000 (DOE)
		$100,000 (NRC)
	Russians:	$205,000 (DOE)
TOTAL		$1,072,000

II. PROJECTED FY 1997 FUNDING REQUIREMENTS FOR JCCRER PROJECTS (Projects transitioning to long-term full projects)

A. Direction 1- Population Studies

		Requested	Available DOE Funds[@]	Shortfall
Project 1.1	Americans:	$411,000	$100,000	$311,000
	Russians:	$300,000	$75,000	$225,000
Project 1.2a	Americans:	$71,000	$60,000	$11,000
	Russians:	$247,000	$120,000	$127,000
Project 1.2b	Americans:	$59,000	$40,000	$19,000
	Russians:	$129,000	$75,000	$54,000
Project 1.2c	(NCI supported)			
TOTAL		$1,217,000	$470,000	$747,000

B. Direction 2 - Workers Studies

Project 2.1	Americans:	$273,000	$150,000	$123,000
	Russians:	$150,000	$120,000	$30,000
Project 2.2	Americans:	(NCI supported?)		
	Russians:	$200,000*	$100,000	$100,000
Project 2.3	Americans:	$200,000*	$80,000	$120,000
	Russians:	$100,000*	$80,000	$20,000
TOTAL		$923,000	$530,000	$393,000

C. Projected DOE funding for new proposals based on RFP: $200,000

D. Summary: Estimated total for FY 1997 = $2,340,000; DOE Budget = $1,000,000; Shortfall = $1,140,000

*Estimated

[@]Tentative distribution within categories

Attachment

CHAIRMAN JACKSON'S COMMENTS ON COMGD-96-002

I support in principle the revised focus of the U.S. JCCRER and enhanced funding subject to an explicit provision for NRC direct management of the research proposed under Project 2.3. See separate memorandum to the EDO regarding the specific dollar amount.

Shirley Ann Jackson

9/17/96

A/TO