Coordination Meeting for Cancer Radiation Research Related to the Mayak Nuclear Facility and Semipalatinsk Nuclear Testing Site.

Schloss Elmau
Germany

November 12, 13, 1998

Executive Summary

Prepared by: Scott C. Miller, Ph.D.

Scientists from the European Union, Russia, Kazakstan and the United States who were directly involved with the health studies being conducted at the Mayak Production Association (MPA), the Techa River areas and the Semipalatinsk testing areas convened for a 2 day scientific and coordination meeting. This meeting followed the annual European Commission meeting for these studies. All scientists presented brief overviews of their respective studies. Scientific overlap, coordination and integration issues were discussed.

The meeting was divided into 3 sessions, or working groups:

- Mayak worker studies
- Semipalatinsk nuclear site studies
- Techa river studies.

The Mayak group and the Semipalatinsk group met concurrently on November 12, while the Techa River group met on November 13. Specific recommendations were made from the working groups, but only those from the Mayak and Techa River studies are summarized here.

A.1. Mayak worker studies: Presentations

The following scientists presented overviews of their projects. The session was chaired by Dr. Elaine Ron (NCI) and Dr. Michael Kreishiemer (GSF).

- Sergei Romanov (FIB-1): Overview of the FIB-1 organization.
- Nina Koshurnikova (FIB-1): Overview of Project 2.2 and some specific data on liver and bone cancers.
- Ethel Gilbert (NCI): Project 2.2. Expect to prepare a manuscript on bone cancers first, followed by liver cancers. These will be largely descriptive papers.
- Dale Preston (RERF): Preliminary dose-response studies using the Project 2.2 cohort.
- Albrecht Kellerer (GSF): Lung cancer studies from reactor, radiochemical and Pu production cohorts.
- Regina Winkelmann (IARC, France): Establishing uniform death registries for Techa river, Ozyorsk, and Altai regions.
- Peter Jacob (GSF): Comparisons of film, EPR and FISH dosimetry in certain MPA, Ozyorsk, and Techa river cohorts. Expect to have a ISTC proposal funded 1/99 to continue some of the dosimetric comparisons.
- Scott Miller (Univ. of Utah). Overview of dosimetry project 2.4 for Mayak workers.
- Valentin Khorkhriakov (FIB-1). Overview of internal dosimetry of plutonium.

- Werner (GSF): Human biokinetics of Strontium-90.
- Ron Filipy (Washington State University): Overview of Project 2.1.

A.2. Mayak worker studies: Issues

- Improvement of databases: The issues discussed were common identifiers and transportability of files and data between the different databases. The suggestion was made to make a "master" file, with a unique identifier, with cross-coding to all other databases. The Russians were aware of these problems and agreed to have a meeting among the investigators in December to address these issues.

- When to "freeze" databases: The issue was the preservation of the database at the time that a manuscript was produced. The discussion of archiving the database for the specific publication was discussed.

- Integration of information of death registries: The epidemiologists were concerned about the integration of the evolving death registry database with the other databases.

- EPR and FISH comparisons, external dosimetry: The early film badge dosimetry may have overestimated the absorbed dose (perhaps by about 30%), while the shielded film badge dosimetry may have overestimated the absorbed dose by as little as about 15%. The FISH comparisons have been less reliable, in general, than EPR. The Europeans were concerned about the lack of an EPR program from the U.S. side.

- External dosimetry overlap: The possible overlap between the DOE and GSF supported projects was reviewed. It was felt that the respective studies were very complementary.

- Worker history overlap: The possible overlap between the DOE and ISTC worker history projects was reviewed. It was felt that there is no current overlap in these projects.

- Uncertainties: Issues, types and formats of uncertainty calculations were discussed. The formats and types desired among the epidemiologists differed. Group uncertainties were adequate for most, individual uncertainties were desired by some, but considered excessive by others.

- Integration of Epidemiology and Dosimetry: The issue of better communication between the epidemiologists and dosimetrists was discussed. Elaine Ron suggested that her organization (NCI) act as a "clearing house" for references, publications and progress reports. Most of the participants were not aware that the DOE International Office Web Site has a bibliography (with abstracts) of many relevant publications. The information on this Web Site will be provided to all participants along with the recently updated JCCRER brochure.

- Preparation of a manuscript summarizing the work to date: A committee to be headed by M. Kreisheimer would initiate a draft manuscript describing the Mayak worker studies conducted to date.

- Annual meeting: It was agreed that this same group of scientists should meet again in October of 1999. A 3 day meeting was suggested to permit more time for individual interactions.

B.1. Techa River Population studies: Presentations

The following scientists presented overviews of their projects. The overview session was chaired by Dr. Elaine Ron (NCI) and Dr. Michael Kreishiemer (GSF). The session on integration of epidemiology and dosimetry was chaired by Dr. Terry Thomas and Dr. Lynn Anspaugh.

- Dale Preston (RERF). Presented some preliminary data on the incidence of leukemia and solid tumors in the Techa River cohort.
- Margot Tirmarche (IPSN, France). Nested case control studies on leukemias. Is presently working on a manuscript to describe about 14 cases of skeletal cancers.
- Nick Startsev (URCRM): Overview of vital statistics, with some emphasis on the original cohort of the population from 1950-1952 in 39 villages.
- Dan Hoffman (George Washington University). Overview of Project 1.2.
- Dieter Regulla (GSF). Presented some of the historical aspects of the Techa River studies.

B.1. Techa River Population studies: Issues

- Integration of epidemiology and dosimetry: Terry Thomas and Lynn Anspaugh agreed that a short working document will be prepared that will list all dosimetry endpoints. This will be distributed to all working on the epidemiology.

- Uncertainties: Some individual uncertainties will be provided, but for some epidemiologists, aggregate or group uncertainties will be suitable. Some suggested that EPR might be more useful to reduce the dose uncertainties in these populations.

- Iodine-131 and thyroid cancers for upper Techa river populations. This issue was raised and possible new funding sources were suggested. There was apparently some Russian work being done in this area with some dosimetry. There was some debate on how to approach this issue. It was mentioned that some new data from the Hanford exposures (considered lower than populations near Mayak) will be coming out in the Spring or Summer of 1999.

- S.U.R.F.: Some felt that a "Research Foundation" should be established for the Mayak and Techa river studies. The "Southern Urals Research Foundation" (SURF). No specific plans were discussed or presented for such a foundation.

- Preparation of a manuscript summarizing the work to date: A committee to be headed by Terry Thomas would initiate a draft manuscript describing the Techa river population studies conducted to date.

- Annual meeting: This group also agreed that an annual meeting, likely combined with the EC meeting would be appropriate (October, 1999).

C.1. Appendix: List of meeting participants:

C.2. Appendix: D/GUS Scientific-Technical Co-operation (STC) Projects 1996-2000 within the Treaty Paragraph 7: Radiation Protection Research.

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Appendix C.1. List of Participants

Albrecht M. Kellerer
Munich, Germany

Michael Kreisheimer
Munich, Germany

B. Grosche
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D. Regulla
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Fredrick Granath
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Margot Tirmarche
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Alexander Akleyev
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Nick Startsev
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Dale Preston
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Charles Land
Bethesda, MD

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Appendix C.2.

D/GUS Scientific-Technical Co-operation (STC) Projects 1996-2000 within the Treaty Paragraph 7: Radiation Protection Research.

Re: Bilateral Treaty on the Scientific-Technical Co-operation for the Peaceful Use of the Nuclear Energy between the Federal Ministry for Research and Technology of the Federal Republic of Germany and the Ministry of Atomic Energy of the Russian Federation. Moscow, 22 April 1987.

D/GUS Scientific-Technical Co-operation (STC) Projects 1996-2000 within the Treaty Paragraph 7: Radiation Protection Research.

Mathematical modelling of radiation risks (Prof. Kellerer, GSF/ Prof. Lyubchansky, FIB1)
Mathematical modelling of radiation risk of occupationally exposed persons (lung cancer, leukemia, cataraкts).

Reconstruction of individual doses (Dr. Jacob, GSF / Dr. Vasilenko, Mayak)
Comparing analysis of the radiation exposure of Mayak nuclear workers as achieved from EPR studies of teeth and retrospective calibration of individual dosimeters.

Biokinetics of ^{90}Sr (Dr. Werner, GSF / Dr. S. Romanov, FIB1, Dr. Vasilenko, Mayak)
Comparing analysis of the biokinetic behaviour of ^{90}Sr concerning individuals in the South Ural region with different models, respectively incorporation measurements.

Migration of ^{90}Sr in soil (Dr. Bunzl, GSF / Prof. G. Romanov, Dr. Spirin, Mayak)
Evaluation of depth profiles of ^{90}Sr in soil to quantitatively determine the long-term residence periods of this radionuclide in different soil horizons.

Radiation exposure and stability of soil bound microflora (Prof. Munch, GSF / Dr. Drozhko, Prof. Romanov, Mayak)
Comparing investigations on the long-term impact of radiation exposure on the stability and functional diversity of the microflora in soil.

Impact of radionuclides in the ground water of rivers (Prof. Seiler, Dr. Lang / Dr. Drozhko, Prof. G. Romanov, Dr. Vasilenko, Mayak)
Mobility of radionuclides in crystalline rocks of Mayak and the environmental consequences for rivers.

Co-operation and co-ordination *(Dr. Panfilov, MinAtom / Dr. Regulla, GSF)*
Establishment and expansion of the D/RUS scientific-technical co-operation programme in radiation protection research and its international co-ordination along with other bilateral projects of corresponding structure, and agencies.

Harmonization of follow-up studies to assess radiation induced health effects *(Prof. Burkart, BfS / Prof. Tsyb, Obninsk)*

Patient exposure and protection in medical radiation diagnostics *(Dr. Regulla, GSF / Dr. Guskova, Dr. Okladnikova, Dr. S. Romanov, FIB1, Dr. Vasilenko, Mayak)*

High energy neutrons in radiation protection *(Dr. Siebert, PTB; Prof. V. Lebedev, IHEP Protvino)*
Transport calculations for high-energy neutrons and protons in the energy range between 20 MeV and 500 MeV for practical application in radiation protection.

Radiation monitoring in the impact area of Mayak *(Dr. Müller, GSF / Dr. Spirin, Mayak)*
Retrospective evaluation of the dynamics of the radioactive contamination in the impact area of Mayak and evaluation of the exposure through radioactive biocomponents in the environment and of internal doses of the population by the long-lived radionuclides ^{90}Sr und ^{137}Cs.

Risk communication (Fr. Wiedemann, Hr. Haury, GSF / Dr. Kaurov, MinAtom)
Discussion on risk terms and pathways of public communication. Acceptance of different risks and technologies by the population.

Under consideration.

Status: 20 August 1998

Co-ordinators: Dr. Panfilov, MinAtom, Russia / Dr. Regulla, GSF, Germany