

March 15, 2006

Office of Compensation Analysis and Support
National Institute for Occupational Safety and Health
SEC Petition
4676 Columbia Parkway, MS-C-47
Cincinnati, Ohio 45226

Supplements to: SEC 00050,
Response to NIOSH letter of March 2nd, 2006 Special Exposure
Cohort

Petitioner: Authorized Representative for Claimants
on Record with Original Petition

See Point F.2 below explaining why NIOSH and ORAUT are incorrect in believing that CEDR has stored examples of records of personal monitoring records of Hanford Dupont workers.

In addition to CEDR's Data File Set HFC78A01 of the *Hanford Cohort Study, 1989 and the Hanford Cohort Study, 1993, Data File Set HFI89A01*, where both studies specified that Pacific Northwest Laboratories (PNL) was the source of their external and internal dosimetry data, and knowing that PNL has gone on record as **not** being able to obtain any DuPont Hanford worker dosimetry, there is **yet another** study in CEDR's database that makes the same point.

See PNL-8449, "***Description of Process Used to Create 1992 Hanford Mortality Study Database***," E. S. Gilbert, 1992.

"These records belonged to employees who left Hanford with Du Pont when General Electric replaced Du Pont as the major contractor. Because Du Pont had taken exposure records of these persons with them, a decision was made that these dose records were the responsibility of Du Pont rather than the Hanford Radiological Records program." See footnote on pg. 2.2.

In other words, the **Du Pont Hanford worker dose records are not a part of the Hanford Radiological Records program.** This would appear to be the definitive word on the subject.

Accordingly, in regard to point F.2, The extensive documentary evidence continues to confirm there are no individual dosimetry or bio-assay records available for Du Pont workers at Hanford, and Petitioner would respectfully **again** suggest that CEDR and ORAUT make that point clear in their reports.

To understand the impact of the documents and expert reports that Petitioner is submitting have upon **"the limitations of existing DOE or AWE records in radiation exposures at"** Hanford, a review of the errors or deficiencies in the steps or stages of the underlying basis of ORAUT's dose reconstruction demonstrate the **limitations** of existing records.

Supplement of Klementiev's Qualifications

In regard to these errors, Petitioner had attached the expert report of A. A. Klementiev in his Response of questions raised in the phone conference with NIOSH and ORAUT representatives. To supplement his report please **see attached Klementiev's CV** of his enormous academic training in physics, mathematics and in the mathematical modeling of complex systems, and publications.

Supplement to Studies demonstrating invalidity of Napier's reliance upon atmospheric air monitoring.

HEDR' chief author, Napier, made a critique of Heeb's work which supported some of the same points made by Petitioner's experts and the EPRP. But Napier depended also upon the atmospheric air monitoring

data for validation of his use of questionable stack release data despite three separate previous studies finding such data to be unreliable and inadequate for any use.

In addition to Exh. #8: Memo from Sandra Cannon to Dill Shipler: *Hanford's Air Monitoring Program from 1945-1955*, June 17, 1993, and following Memo: *Hanford's Air Monitoring Program from 1945 To 1955 - A Compilation of Notes*, E. I. Mart, February 10, 1988, there is also:

Exh. #9: PNWD-2226, Thiede, 1994.

"Therefore the historical air monitoring data were not used by the HEDR project because the data were **not satisfactory in quality or number for dose calculation or validation of models.**" Pg. 4.1.

Exh. #10: PNWD-2234, R. W. Hanf, 1994.

"The result was that air monitoring data are insufficient for use in the HEDR project." Pg. 1.

In other words, not only are Heeb's release fractions inaccurate, but Napier's effort to correct HEDR is also deficient. HEDR cannot be used with any scientific plausibility as a source for release fractions, or releases, for any time period.

Yours truly,

Public Reading Room

PNL-8449
UC-605

Description of the Process Used to Create 1992 Hanford Mortality Study Database

E. S. Gilbert
J. A. Buchanan
N. A. Holter

December 1992

Prepared for the U.S. Department of Energy
under Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute



PNL-8449

Health Issues

1. Data on OHH OP (This meant that according to HEHF records in 1988, the worker had been employed in operations work prior to 1979.) A total of 44,407 workers qualified by meeting this criterion.
2. OHH79 data on MST79 (This meant that according to HEHF records in 1979 the worker had been employed in operations work prior to 1979.) An additional 104 workers, who had not qualified under criterion 1, met criterion 2. It is noted that there were 3 workers with OHH79 data on MST79 where data on more recent OHH88 files indicated that initial employment was after 1978; these 3 workers were not considered to be eligible for the study population.
3. Current records (other than OHH OP) at HEHF indicating the worker was a part of the operations worker cohort. To ascertain this, staff at HEHF searched for records of workers who were on MST79, but not on OHH OP. Many of these workers had only dosimetry data, and had not previously had data on the OHH79 file. These searches were primarily conducted in 1989.

An additional 36 workers, who had not qualified under criteria 1 or 2, qualified under criterion 3. Thus, a total of 44,547 workers met at least one of the three criteria.

Because it is known that the OHH files sometimes erroneously included workers who reported for initial physical examinations, but never actually started work, it was also required that in addition workers meet at least one of the three criteria listed below. The first two criteria involve use of dosimetry records from both ORE and MST79. The use of MST79 was necessary, because the ORE system no longer includes the records of over 10,000 early workers, for whom external dosimetry data were available in 1979 when MST79 was created.¹

- A. Workers had to have at least one year of onsite operations dosimetry on the ORE file prior to 1979. 26,375 workers qualified by meeting this criterion. Dosimetry data for these workers were taken from ORE.
- B. Workers had to have dosimetry data on MST79. An additional 10,305 workers, who did not meet criterion A, qualified under criterion B. For these workers, dosimetry data were taken from MST79. In some cases, workers had dosimetry on MST79, had a Social Security number match with ORE but no onsite operations dosimetry on ORE (offsite or construction

¹These records belonged to employees who left Hanford with DuPont when General Electric replaced DuPont as the major contractor. Because DuPont had taken exposure records of these persons with them, a decision was made that these dose records were the responsibility of DuPont rather than the Hanford Radiological Records program.

ALEXANDRE A. KLEMENTIEV, Ph.D.

Present Address

5023 N. Mildred Street
Tacoma, WA 98407

Phone: (253) 798-3528
Fax: (253) 798-2947

- OBJECTIVE** N/A
- EDUCATION** Mathematical Epidemiology (Ph.D.), Institute of Cybernetics, Kiev, Ukraine, 1991.
Applied Mathematics in Automation and Remote Control (Ph.D.), Moscow
Institute for Physics and Technology, Dolgoproudniy, Russia, 1971.
Electrical Engineering (M.S.), Moscow Institute for Physics and Technology,
Dolgoproudniy, Russia, 1966.
- AWARDS** Malcolm L. Peterson Award (1994, Washington Physicians for Social
Responsibility).
Best Diploma Research Award (1966, Moscow Institute for Physics and
Technology, Dolgoproudniy, Russia,).
- PROFESSIONAL EXPERIENCE** **Tacoma-Pierce County Health Department, Tacoma, WA.** Epidemiologist II
(Dec.1996- Present). Computer modeling for Public Health related projects:
· Establishing Health Intervention Priorities;
· Designing databases, such as "*Mother and Child Health*", "*Domestic Violence*";
· Conducting projects on epidemiology.
- CDC/WHO, Training Course Evidence-Based Noncommunicable
Diseases Prevention, Moscow, Russia.** Instructor, (Apr.2003). Taught
course "*Introduction to the Behavioral Risk Factor Surveillance System*".
Chelyabinsk-McGill Project in Population Child Health, Chelyabinsk, Russia.
Instructor, (Jan.2000 - Feb.2000). Taught courses *Biostatistics* and *Epidemiology*.
- Tacoma Community College, Tacoma, WA.** Instructor (Jan.1996-Dec.1996).
Teaching course *Business Data Processing*, Lab assisting for the course
Programming Visual Basic.
- Tom H. Foulds and Associated Counsel: Hanford Litigation Office, Seattle,
WA.** Consultant, Expert witness (1994 - Present).
· Developed computer model for estimation of radioactive Iodine-131 releases into
the atmosphere from Hanford Site in 1944 - 1948;
· Estimated of Pu-239 releases into the atmosphere from Hanford Site;
· Developed computer model for prevalence estimation of degenerative type
diseases.
- NeuroRobotics, Inc., Puyallup, WA.** Senior Research Scientist (1992-1994).
· Provided professional analysis for airborne radionuclide releases including
estimates for population health impacts;
· Constructed and supplemented GIS representations of radionuclide
contamination for Eastern Washington;
· Served as scientific and technical translator for Russian scientific articles,
research papers, and texts;
· Established NeuroRobotics support groups in Moscow, Kiev, and Vladivostok and
facilitated communication with these groups via E-mail.
- Institute of Control Sciences (Russian Academy of Sciences), Moscow, Russia.**

Engineer, Senior Research Scientist, Leading Research Scientist (1966-1971, 1973-1975, 1978-1992).

Developed mathematical and computer models for the epidemiological studies (1972 - 1992).

- Developed software for prevalence estimation for different types of cancer;
- Developed computer programs for public health assessment for the populations residing in the areas contaminated due to Chernobyl accident;
- Developed computer programs for evaluating the effectiveness for health program interventions;
- Developed computer models which are used in the Russian Health Ministry Computing Research Centers for population survival analysis;
- Developed mathematical models for the estimation of sexually transmitted diseases prevalence;
- Developed various computer models for health resources allocation.

International Institute for Applied Systems Analysis / Bio-Medical Project, Vienna, Austria. Research Scholar (1975 - 1978).

- Developed a new approach to prevalence estimation for degenerative type diseases based on the use of mortality data;
- Developed the computer model for estimating health resources requirements.

Moscow City Council Research Computing Center, Moscow, Russia. Head, Laboratory for Systems Analysis (1971 - 1973).

- Provided technical support for the Moscow city planning committee.

TEACHING
EXPERIENCE

Courses taught :

- *Business Data Processing*, Tacoma Community College (1996 - Present);
- *Programming-Visual Basic* (Lab assisting), Tacoma Community College (1996 - Present);
- *Computer Modeling in Health Field*, Moscow Institute of Physics and Technology (1984 - 1992);
- *Systems Modeling*, Moscow Power Institute, (1981-1982);
- *Automation and Remote Control*, Moscow Institute for Automation and Computer Technology, (1980 - 1981).
- *Biostatistics and Epidemiology*, Chelyabinsk-McGill Project in Population Child Health, Chelyabinsk, Russia, (2000).

CONSULTING

Consulted the regional Health Ministry Computer Centers in the former USSR on applications of mathematical modeling for epidemiological studies (Stavropol, Moscow, Novosibirsk, Tbilishi).

COMPUTER
SKILLS

Languages: *FORTRAN, Pascal, C, Extend, Visual Basic*;
Software: Variety of MS DOS and Windows software - *MS Office, GIS (IDRISI), SPSS, STATA, SAS, Crystal Ball*, etc.

PUBLICATIONS

2 monographs and over 50 articles and papers in Russian and English on mathematical modeling in public health related fields

Klementiev A.A.

A.A.Klementiev: List of main publications

1. A.A.Klementiev
Optimal process with random termination. N.Y. Consultants Bureau. Automation and remote control, 6, 1970.
2. A.A.Klementiev, A.I.Yashin
On the problems of estimation and control in health system. In: Control problems in technology, economy and biology. M., Nauka, 1974, (RUSSIAN).
3. A.M.Petrovsky, A.A.Klementiev, A.I.Yashin
On the use of the method of control with incomplete data in certain public health management problems. Proc. Vth Congr. IFAC. Boston, Cambridge. 1975.
4. A.A.Klementiev
Mathematical approach to developing a simulation model of health care system. Laxenburg, Austria, 1976, 28p. IIASA; RM-76-65.
5. A.A.Klementiev
A computer method for projecting a population age-sex structure. Laxenburg, Austria, 1976, 26p. IIASA; RM-76-36.
6. A.M.Petrovsky, A.A.Klementiev, A.I.Yashin
Use of the control theory methods for the solving of the health management problems. In: Biologic aspects of the control theory. M. Institute for Control Sci., 1976, (Russian)
7. A.A.Klementiev
On the estimation of morbidity. Laxenburg, Austria, 1977, 19p. IIASA; RM-77-43.
8. P.Fleissner, A.A.Klementiev
Health care system models: a review. Laxenburg, Austria, 1977, 76p. IIASA; RM-77-49.
9. K.Atsumi, A.Fujimasa, S.Kaihara, A.Klementiev
An approach to building a universal health care model: morbidity model for degenerative diseases. Laxenburg, Austria, 1978, 28p. IIASA; RM-77-06.
10. A.A.Klementiev
Health care modelling: morbidity estimation for degenerative diseases. Proc. of Intern. Symp. "Simulation-77". Zurich, Acta press, 1977.
11. A.A.Klementiev, E.N.Shigan
Aggregate model for estimating health care system resources requirements. Laxenburg, Austria, 1978, 28p. IIASA; RM-78-21.
12. L.I.Borodkin, A.A.Klementiev, A.M.Petrovsky, A.I.Yashin
Problems in public health. N.Y., Consultants Bureau, Automation and remote control, 6, 1979.
13. A.A.Klementiev
Modelling of health resources allocation. N.Y., Consultants Bureau, Automation and Remote Control, 10, 1980
14. A.A.Klementiev
Aggregate model of health resources allocation. Proc. of All-Union Conf "Systems analysis and modelling in health field", Novokuznetsk, 1980. (RUSSIAN)
15. A.A.Klementiev
Modelling of the restricted health resources: The RASPR model. Proc. of All-Union Conf. "System modelling of socio-economic processes". Voronezh, 1980. (RUSSIAN)
16. A.A.Klementiev
Degenerative-type diseases prevalence estimation. In: Applied system analysis methods in health management. M., Institute for Control Sci., 1981. (RUSSIAN).
17. A.A.Klementiev

- Modelling of the health resources allocation: Case of multidimensional health resource. Ibid. (RUSSIAN).
18. A.M.Petrovsky, A.A.Klementiev, O.N.Pyatigorskaya
On the control of epidemics in venerology. In: Mathematical modelling in immunology and medicine. Proc. IFIP Working conf. - Amsterdam, North-Holland, 1983.
19. A.A.Klementiev, A.B.Stupin
On investigation of prevalence to a certain disease. Ibid.
20. A.A.Klementiev
Resources allocation modelling in the health system. M., Inst. for Control Sci., 1983. (RUSSIAN)
21. A.A.Klementiev, A.B.Stupin
Properties of the model of an epidemic for a certain infectious disease, N.Y., Consultants Bureau, Automation and remote control, 11, 1984.
22. A.A.Klementiev
Modelling of some venereal disease prevalence. Proc. of 3-rd Internat. Conference "Systems science in health care". Munchen, FRG, 1984.
23. A.A.Klementiev, L.V.German
The model of health resources reallocation. In: Data analysis and expert systems. M., Institute for Control Sci., 1985. (RUSSIAN).
24. A.A.Klementiev
Quantitative models development for solving of the health control problems. M., Nauka, 1985. 209p. (RUSSIAN).
25. A.A.Klementiev
On the control of infectious disease prevalence. 5-th World Congress on medical informatics MEDINFO. Washington, DC, 1986.
26. A.A.Klementiev, A.B.Stupin
Analysis of the deterministic and simulation models of an infectious disease prevalence. Proc. of 5-th Prague Internat. Symposium "Simulation of systems in biology and medicine", Praha, CSSR, 1986.
27. L.M.Manoukyan, A.M.Petrovsky, V.K.Olshansky, A.A.Klementiev, R.R.Moshashvili
Dispenserization: management and control. Proc. of All-Union Conf. "Informatics and computer technology in health care". M., 1986. (RUSSIAN)
28. A.A.Klementiev, A.B.Stupin
Simulation of epidemics with the use of deterministic and Monte-Carlo approaches. In: Proc. of 1-st World Congr. of the Bernoulli Society, M., vol.1, 1986.
29. A.A.Klementiev, G.L.Strongin, I.S.Tomarchenko
On the use of demographic modelling for the estimation of the pilots professional lifespan. In: Quantitative models in medicine and health care. M., Institute for Control Sci., 1987. (RUSSIAN).
30. A.A.Klementiev, A.M.Petrovsky
On the optimal control of migration. In: Quantitative models in medicine and health care. M., Institute for Control Sci., 1987. (RUSSIAN).
31. A.A.Klementiev
Modelling in medicine and biology for population health estimation. In: Proc. of Prague Internat. Symposium "Simulation of systems in biology and medicine" Praha, CSSR, 1988.
32. A.A.Klementiev
An epidemiological model of degenerative-type disease: tool for morbidity estimation. Proc. of 4th Internat. Conference "Systems Sci. in Health Care", Lyon, France, 1988.
33. A.A.Klementiev

- DEMO: Software for quantitative study of population survival and demographic growth. Proc. of IFIP/TC9 Conf. "Information systems, work and organization design", Berlin, Humboldt Univ., GDR, 1989.
34. A.A.Klementiev
Optimal control of an infectious disease epidemics. In: Proc. of XI All-Union Congress "Problems of control". Tashkent, 1989. (RUSSIAN).
35. A.A.Klementiev, E.G.Shekhter
Aggregate estimate of pilots' professional health. In: Proc. of Prague Internat. Symposium "Simulation of systems in biology and medicine" Prague, CSSR, 1990. (RUSSIAN)
36. A.A.Klementiev
Model for analysis of mortality data in follow-up studies. In: Methods of data gathering and their analysis. M., Institute for Control Sci., 1991. (RUSSIAN).
37. A.A.Klementiev
Health Program Effectiveness Measurement: A Case of Degenerative Diseases. Methods of Information in Medicine. 1992; 31: 298-302.
38. A.A.Klementiev
Modeling the impact of radioactive environment contamination on population health: an applied semiotic approach. In: Intelligent systems: a semiotic perspective. Proceedings of the 1996 International Multidisciplinary Conference, 20-23 October 1996, Gaithersburg, Maryland.
39. A.A.Klementiev
Establishing health intervention priorities for local public health agencies. APHA 126th Annual Meeting "Public Health and Managed Care". November 15-19, 1998, Washington DC.
40. Paddee Buzzard, Rebecca Casey, Alexandre Klementiev, Tery Murray
We knew you could do it! Protective factors for pregnant and parenting teenagers. Washington State 6th Annual Joint Conference on Health. October 4-6, 1999, Spokane, WA.
41. A.A. Klementiev.
Washington State population life tables. Eliminating certain causes of death, 1989 – 1999. Western Regional Epidemiology Network (WREN 2000). May 18–21, 2000, Ashland, OR.
42. A.A. Klementiev
Establishing health intervention priorities for local public health agencies. The 7th International Conference on System Science in Health Care. May 29 – June 2, 2000, Budapest, Hungary.
43. Rebecca Casey, Alex Klementiev, Dorothy Wharton
Mother and Child Health integrated database: structure and usage. Washington State 7th Annual Joint Conference on Health. October 2 – 4, 2000, Tacoma, Washington.
44. Omelyanets N.I., Klementiev A.A.
Analysis of mortality and duration of life of Ukrainian population after the Chernobyl catastrophe. International Conference Health effects of the Chernobyl accident: Results of 15-years' follow-up studies, June 4 - 8, 2001, Kyiv, Ukraine.
45. A.A.Klementiev
Measuring health expectancy based on BRFS data. 8th Annual Joint Conference on Health. October 8-10, 2001, Yakima, Washington.
46. A.A.Klementiev
Measuring years of healthy life: Washington State adults 1993-2000. 19th Annual BRFS Conference March 11-14, 2002, Atlanta, Georgia.
47. D.Moriarty, M.Zack, R.Kobau, Z.Gizlice, A.Klementiev
Socio-Economic Determinants in Life and Health Expectancies. REVES-2003, Guadalajara, Mexico, May 5-7, 2003.
48. A.A.Klementiev
Alternative measure of years of healthy life. REVES 2003, Brugge, Belgium, May 17-19, 2004.

Welcome to MIPT Home Page

I have great pleasure in presenting Russia's most famous science and technology educational establishment -- the Moscow Institute of Physics and Technology from which I graduated in 1952 and of which I am now the rector.

The MIPT is the first Russian University of Physics and Technology and was founded in 1951 from the physics and technology department of Moscow State University by the Nobel Prize winners P.L.Kapitza, N.N.Semenov, L.D.Landau et al. Our 1,000 staff members are working diligently with 5,000 students and postgraduates to train the best researchers in solid state physics, chemistry, biology, high energy physics, space research, computer science etc.

The majority of the staff work here part-time, being well-known scientists of the following research centers cooperating with MIPT:

- *P.N.Lebedev* Physical Institute of the Russian Academy of Sciences
 - *P.L.Kapitza* Institute for Physical Problems of the Russian Academy of Sciences
 - *General Physics Institute of the Russian Academy of Sciences*
 - *L.D.Landau* Institute of Theoretical Physics of the Russian Academy of Sciences
 - Russian Research Center "*Kurchatov Institute*"
 - *N.N.Semenov* Institute of Chemical Physics of the Russian Academy of Sciences
 - Institute of Physics and Technology of the Russian Academy of Sciences
 - High Energy Institute
 - General Aerohydrodynamic Institute
-

During the first 3 years students receive a fundamental university training in physics and mathematics after which they continue their education for another 3 years specialising in research at the Institutes mentioned above and some others. They carry out their research together with the best scientists, and the best students continue their research work as postgraduates for their Ph.D.

For over 40 years about 17,000 researchers and 7,000 Ph.D's. have graduated from the MIPT and some of them are now very well known, such as:

- prof. *A.F.Andreev* (*P.L.Kapitza* Institute for Physical Problems, Moscow)
- prof. *S.T.Belyaev* (Russian Research Center "*Kurchatov Institute*", Moscow)
- prof. *O.M.Belotserkovsky* (Institute of Computer Aided Design, Moscow)
- prof. *L.M.Barkov* (Institute of Nuclear Research, Moscow)
- prof. *V.E.Fortov* (*N.N.Semenov* Institute of Chemical Physics, Moscow)
- prof. *L.P.Gor'kov* (*L.D.Landau* Institute of Theoretical Physics, Moscow)
- prof. *Yu.V.Gulyaev* (Institute of Radiotechnics and Electronics, Moscow)
- prof. *Yu.A.Ryzhov* (Russian Ambassdor, Paris)
- prof. *V.I.Ryzhii* (Institute of Physics and Technology, Moscow)

МОСКОВСКИЙ ОРДЕНА ТРУДОВОГО КРАСНОГО ЗНАМЕНИ

ФИЗИКО-ТЕХНИЧЕСКИЙ ИНСТИТУТ

11700, Дзержинский, Моск. обл.

Тел. 408-42-64

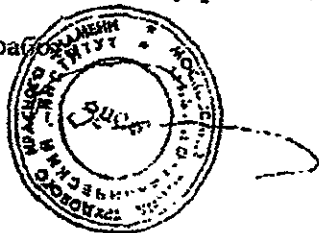
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№ _____

Выписка из учебного плана выпускника МФТИ 1966 года
Клементьева Александра Александровича

наименование курсов	часы
Математический анализ	380
Аналитическая геометрия	132
Дифференциальные уравнения	132
Вычислительная математика	99
Теория функций комплексных переменных	85
Уравнения математической физики	149
Теоретическая механика	132
Общая физика	760
Теоретическая физика	149
Общая химия	102
Иностранный язык	520
Основы инженерного проектирования	34
Основы программирования	66
Введение в экологию	32
Безопасность жизнедеятельности	36
Естественно-научные курсы по выбору	58
Общетеоретическая подготовка	34
Электрические цепи	132
Электронные приборы	134
Радиотехника	326
Импульсные и цифровые приборы	66
Факультетская лаборатория	224
Основы обработки сигналов	66
Основы теории автоматического управления	66
Теория управления в социально-экономических системах	66
Теория стохастических систем	98
Оптимальное управление в динамических системах	99
ЭВМ и основы программирования	99
Случайные процессы в системах управления	54
Алгоритмические модели в процессах управления	51
Охрана труда	16
Практика и дипломная работа	3028

Декан факультета



Moscow Order Of The Red Flag Institute Of Physics and Technology

141700 Dolgoprudniy, Moscow region

Phone 408-42-54

**Excerpt from the curriculum of Klementiev Alexander Alexandrovich,
graduated from M.I.Ph.T. in 1966**

Course title	Hours Total
Calculus	380
Analytical geometry	132
Differential equations	132
Computational mathematics	99
Functions of a complex variable	85
Equations of mathematical physics	149
Theoretical mechanics	132
General physics	760
Theoretical physics	149
General chemistry	102
Foreign language	520
Basics of draughting	34
Basics of computer programming	66
Introduction to ecology	32
Life safety	36
Natural science course	58
General engineering	34
Electrical circuits	132
Electronic devices	134
Telecommunications theory and devices	326
Pulse and digital devices	66
Lab for telecommunications devices	224
Signal processing	66
Basics of automatic control theory	66
Control theory in social-economic systems	66
Theory of stochastic systems	98
Optimal control in dynamic systems	99
Computers and principles of computer programming	99
Stochastic processes in control systems	54
Simulation in control systems	51
Occupational safety	16
Master's thesis work	3,028

Dean

(signature)

The International Institute for Applied Systems Analysis (IIASA)

Membership: IIASA is supported by National Member Organizations (NMO's) in 17 countries: the United States, Russia, Japan, Canada, Austria, Bulgaria, the Czech Republic, Finland, Germany, Hungary, Khazakstan, the Netherlands, Norway, Poland, Slovakia, Sweden, and Ukraine. NMO's are non-governmental scientific organizations. The American NMO is the American Academy of Arts and Sciences. The Russian NMO is the Russian Academy of Sciences.

Location: The Institute is located in Laxenburg, Austria, outside Vienna, in a former Hapsburg summer palace provided by the Austrian government for a token annual rent payment.

Staff: Of a total staff of 220 people, IIASA has approximately 100 full-time senior research scholars. The staff is recruited primarily from NMO countries. There are no quotas. The Director has full authority for all hiring and, if need be, firing. Scientists are on fixed-term contracts from a few months to several years. The in-house research staff is supplemented by an active network of 1,700 alumni and extensive additional collaboration with individuals and organizations throughout the world. The Institute also conducts a summer combined work and study program for a select group of sixty young international scientists. The program's objective is to expose particularly promising young researches early in their careers to IIASA's international, interdisciplinary setting and research approaches.

Research Agenda: The Institute conducts policy research centered on the theme of global change. Projects address environmental issues (e.g., agricultural impacts of possible climatic changes), technological issues (e.g., the diffusion of increasingly efficient energy technologies), and economic issues (e.g., transitions to market economies in the former Soviet Union and Eastern Europe). The research agenda emphasizes connections between regional policies and global considerations.

History: In 1966 President Johnson proposed to the Soviets an institution to build a bridge between East and West through joint research on common problems. After six years of negotiation IIASA was founded in 1972 with 12 original members. For two decades it maintained a broad research portfolio bringing researchers from East and West together for joint studies of environmental, management, and policy issues. The end of the Cold War in 1989 defined a new era for IIASA. In 1990, members negotiated a new Strategic Plan focused on environmental, technological, and economic issues of global change. In 1994, ministers from NMO-country governments, meeting for the first time since IIASA's founding, reviewed, endorsed, and pledged their support for the Institute's new direction.

Finance and Governance: IIASA's annual budget is about \$13 million. 80% of the budget comes from core contributions by NMO's. Contracts and grants from government ministries, private foundations, and industry make up the balance. NMO's contribute according to a three-tier schedule, with Americans and Russians contributing the most. Payments are in Austrian schillings. The CEO of the Institute is the Director, currently Gordon J. MacDonald of the United States. There is a

International Institute for Applied Systems Analysis (IIASA)

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POSITION ANNOUNCEMENT

Senior Research Scholar

Environmentally Compatible Energy Strategies Project (ECS)

The Environmentally Compatible Energy Strategies (ECS) Project at the International Institute for Applied Systems Analysis (IIASA) is one of the leading research groups worldwide in the analysis of long-term interactions between energy, development, and the environment. IIASA is an interdisciplinary, non-governmental, independent international research organization, located in Laxenburg, Austria.

Current ECS research focuses on:

1. Contributions to the Third Assessment Report (TAR) of the Intergovernmental Panel on Climate Change (IPCC) on long-term emissions scenarios (ECS project members served as convening and lead authors in the Second Assessment Report of the IPCC and will continue this function during the preparation of the Third Assessment Report).
2. Integrated assessment modeling of energy and environmental interactions with focus on climate change and regional acidification (research activities in this domain are mostly externally sponsored).
3. Methodological and model development for endogenizing technological change.

All research activities involve the development and use of formal modeling techniques of different mathematical (simulation, optimization) as well as disciplinary (macroeconomic, engineering, ecological) orientation. Research activities are supported through extensive networking activities (coordination of international research networks, organization of workshops, participation in international research consortia for contracted research) and documented in an extensive publication record both in peer-reviewed academic journals and reports to external sponsors.

In order to enhance the project's human resources, we are seeking candidates for the position of:

Senior Research Scholar

Example:

Usually
Required
Skills



Tasks

Assumes responsibility for the advancement of the ECS set of mathematical analysis tools. Works independently on all aspects of model development, model application, result interpretation, and report preparation for externally funded research contracts.

Profile

typical requirements
Ph.D. in mathematics, energy-economics, operations research, environmental sciences or similar discipline. Demonstrated accomplishments in the field of mathematical modeling. Modeling-related programming and computer skills (PC and UNIX environment). Good peer-reviewed publication record. Ability to work independently in an interdisciplinary and international team. At least ten years of experience in the relevant research areas.

Appointment Terms

The successful candidate will be offered a one-year, fixed-term contract, beginning as soon as possible. The salary is competitive and commensurate with experience. It is exempt from taxation in Austria, but subject to the principle of income aggregation. The appointment includes moving and settlement allowances. An exceptionally beautiful working environment with a true international and interdisciplinary institute are added rewards for those seeking association with a highly motivated and productive research team.

Applications

To apply send a cover letter, resume, plus names, addresses, telephone and fax numbers of three work-related references, as well as copies of two recent publications/papers (articles, research papers, model documentation, proposals, minutes of meetings, etc.) to:

Walter Foith, Personnel Administrator
International Institute for Applied Systems Analysis (IIASA)
Schlossplatz 1, A-2361 Laxenburg, Austria
Fax: (+43) 2236-713-13
E-mail: foithw@iiasa.ac.at

Review of applications will begin immediately.

For further information about the post, please contact:

Dr. Nebojsa Nakicenovic
Project Leader
Environmentally Compatible Energy Strategies Project
Tel: (+43) 2236-807-411
E-mail: naki@iiasa.ac.at

For general information about our institute, please visit our [IIASA web site](#) or go right to the [ECS homepage](#).

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Exhibit 9

PNWD-2226 HEDR
LC-000
DRAFT

A Guide to Environmental Monitoring Data, 1945-1972

Hanford Environmental Dose Reconstruction Project

M. E. Thiede
D. J. Bates
E. I. Mart
R. W. Hanf
March 1994

Prepared for review and approval by
the Technical Steering Panel and
the Centers for Disease Control and Prevention
under Contract 200-92-0503(CDC)/18620(BNW)

Battelle,
Pacific Northwest Laboratories
Richland, Washington 99352

4.0 Overview of Previously Published Data

Radioactive emissions from the Hanford activities were released to three general pathways: the air pathway, the Columbia River pathway, and the ground-water pathway. Historical data for the air pathway are described in previously published HEDR documents listed in Sections 4.1 and 4.2. Previously reported information concerning the Columbia River pathway is in Section 4.3. Environmental data on the ground-water pathway are addressed in Section 4.4.

4.1 Air Measurements

Historical documents concerning air monitoring data for 1945 through 1957 were searched for, inventoried (Huesties 1992, 1993), and reviewed (Hanf and Thiede 1994). Historical sampling devices are described in Hanf and Thiede (1994), along with a brief statement about the problems associated with using historical air monitoring data collected with each device.

In general, historical measurements of air contamination cannot be used because the historical air sampling devices did not provide accurate measurements. The air sampling devices were difficult to maintain and calibrate, did not exclusively monitor the radionuclide found to be the major contributor of dose, iodine-131 (Napier 1992), and were used in only a few offsite locations. Therefore, the historical air monitoring data were not used by the HEDR Project because the data were not satisfactory in quality or number for dose calculations or validation of models.

4.2 Vegetation Measurements

Historical data (1945-1947) of iodine-131 (as total beta activity in 1-gram pellets) in vegetation are summarized in Denham et al. (1993a). Reconstructed conversion and correction factors for these pellets to correct the 1945-1947 vegetation data to today's best estimates of iodine-131 activity are described in Mart et al. (1993). Uncertainty and sensitivity of the conversion and correction factors for the 1945-1947 vegetation data are discussed in Gilbert et al. (1994). Historical vegetation data (1948-1951) are summarized in Hanf et al. (1993), and the conversion and correction factors for best estimates of activity for the 1948-1951 vegetation data are described in Denham et al. (1993b). A year-by-year overview (1952-1983) of historical documents available concerning vegetation and foods sampled near Hanford is in Duncan (1994). Databases of historical vegetation data have not been compiled beyond 1951 for the HEDR Project. Hanford's Surface Environmental Surveillance Project has compiled environmental media (including vegetation and foods) after 1971.^(a)

4.3 River Measurements

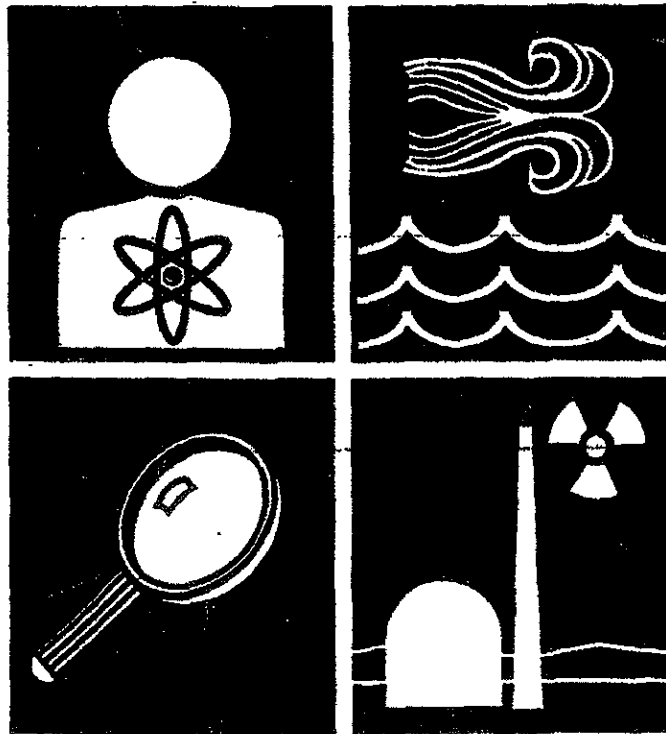
(a) Unpublished report (project no. SESP-PDMS-001). *Project and Data Management System (PDMS) Users Guide Surface Environmental Surveillance Project*, by L. E. Bisping, 1990. Unpublished report (project no. SESP-PDMS-002). *Project and Data Management System (PDMS) Database Steward's Handbook*, by L. E. Bisping, 1990.

Exhibit 10

**Environmental Radiological Monitoring
of Air, Rain, and Snow on and near
the Hanford Site, 1945 - 1957**

**R. W. Hanf
M. E. Thiede**

March 1994



**Prepared for the Technical Steering Panel
and the Centers for Disease Control and Prevention
under Contract 200-92-0503(CDC)/18620(BNW)**

 **Battelle**
Pacific Northwest Laboratories

Introduction

To support the Hanford Environmental Dose Reconstruction (HEDR) Project's objective of estimating the radiation dose that individuals could have received as a result of emissions from the Hanford Site, HEDR Project staff developed a database of historical environmental measurements. The data from these measurements are made available to the applicable HEDR tasks and the public.

Environmental sampling for radiological contaminants has been conducted at and around the Hanford Site since operations began in the mid-1940s. This report provides information on the measurement of ambient environmental radiation levels in the air and on the collection of air, rain, and snow samples for radiological analysis from 1945 through 1957. The information in this document was compiled to assess the type and amount of data collected during these years. No databases of historical air, rain, and snow concentration and/or measurement data have been created. During the 1940s and early 1950s, the equipment and techniques used for collecting radiological samples and monitoring radiation levels were often inaccurate. This was due to the newness of the nuclear industry and the haste with which the industry (including the facilities and monitoring equipment at the Hanford Site) was developed. The result was that the air monitoring data are insufficient for use in the HEDR Project. Because access to these data may be of interest to the public, however, an overview of the available air monitoring data for 1945-1957 is being published.

Data Quality Objectives

The information in this report has been compiled without analysis. The original purpose was to provide an overview of the data available. Because it was determined that the air monitoring data would not be used in the HEDR Project, no data quality objectives were established nor were the data submitted to a rigorous data quality review. The information presented in this report should only be used as a guide to the original documents. The original documents need to be consulted directly prior to use of any of the data presented in this report.

General Information

For the most part, the data are reported here in the units provided in the original documents. No attempt was made to quantitatively convert the data to currently used units. Radiation exposure was reported in units of milliroentgen (mr) and milliroentgen-equivalent-physical (mrep) through the third quarter of 1953. The roentgen (abbreviated r for old or R for new) is a unit for defining exposure in the air to x- or gamma radiation (ionizing