

## Invitation for Comment on “Short List” of Potential Panelists for Augmenting the Science Advisory Board (SAB) Radiation Advisory Committee’s (RAC’s) Expertise to Conduct the RadNet Review

---

The EPA Science Advisory Board (SAB) Staff Office is augmenting the expertise of the SAB’s Radiation Advisory Committee (RAC) to conduct a review of the Agency’s RadNet, the Agency’s proposed Air Radiation Network, a Nationwide system to track environmental radiation. Nominations for technical experts to serve on the RAC Review of RadNet were requested in the *Federal Register* (70FR 15083) on March 24, 2005. The notice provided background information on the review, including the proposed charge, the process for submitting nominations, and expertise needed for consideration as a candidate for this review. Pursuant to the *Federal Register* notice, any interested person or organization may nominate qualified individuals for membership on the Panel, and individuals should have expertise in one or more of the following areas:

- (1) **Instrumentation** (especially air monitors and detection equipment involving fixed and deployable monitors, sodium iodide crystals, and gamma exposure instruments);
- (2) **Statistics** (especially involving data interpretation, identification of abnormalities during normal operations, monitor siting plans, baseline data and data trends analysis, data coverage issues, and data interpretation);
- (3) **Modeling** (especially involving validating and refining source terms, dispersion modeling meteorological assumptions and estimates);
- (4) **Risk Assessment** (with particular experience and expertise in population dose reconstruction, health data interpretation, and health effects); and
- (5) **Risk Communication.**

The SAB Staff Office has reviewed the nominations and identified 11 candidates who have the relevant expertise and who are willing and available to serve to supplement the expertise of the RAC for the RadNet review. Brief biographical sketches (“biosketches”) of members of the RAC, as well as on these expert consultant candidates are provided below. We hereby invite comments from members of the public for relevant information, analysis or other documentation that the SAB Staff Office should consider in the selection of experts to augment the RAC’s expertise for this upcoming review of RadNet.

Any information furnished by the public in response to this web posting will be combined with information already provided by the candidates, and gathered independently by

the SAB Staff Office. Prior to final selection of this panel, the combined information will be reviewed and evaluated for any possible financial conflict of interest or a possible appearance of a lack of impartiality, as well as appropriate balance and breadth of expertise. For the SAB, a balanced review panel is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to adequately address the charge. The Staff Office Director makes the final decision concerning who will serve on the SAB/RAC's RadNet Review Panel.

Please e-mail your comments no later than **October 24, 2005** to Dr. K. Jack Kooyoomjian, Designated Federal officer (DFO), SAB/RAC RadNet Review Panel, at [kooyoomjian.jack@epa.gov](mailto:kooyoomjian.jack@epa.gov).

**Dr. Lynn Anspaugh:** Dr. Anspaugh currently is Research Professor of Radiobiology, in the Department of Radiology at the University of Utah, Salt Lake City. He has held a number of teaching and visiting lecturer positions. His principal research interests include trace elements in human metabolism, aeolian resuspension of transuranic radionuclides, public health implications of the use of nuclear energy, environmental effects of utilizing geothermal energy, reconstruction of radiation doses from early and late fallout of nuclear weapons tests, reconstruction of radiation doses from facilities for the production of special nuclear materials, and calculation of radiation doses from the Chernobyl nuclear reactor accident. Dr. Anspaugh has authored or co-authored over 250 publications and 50 abstracts in the above and related topics. Dr. Anspaugh is a former member of the SAB's RAC.

Dr. Anspaugh served as a Biophysicist and Director of the Dose Reconstruction Program, as well as Director of the Risk Sciences Center at the Lawrence Livermore National Laboratory (LLNL); he also served for ten years as the leader of LLNL's Environmental Sciences Division. He is active in a number of national and international professional societies, including the American Association for the Advancement of Science (AAAS), the Health Physics Society (HPS - currently a fellow of the HPS, as well as Past President of the Northern California Chapter and Environmental Radiation Section of the HPS and currently a member of the Board of Directors of the Great Salt Lake Chapter of the HPS), the International Union of Radioecology, the Radiation Research Society, and the Society for Risk Analysis. He was a consultant to the SAB's Subcommittee on Risk Assessment for Radionuclides (1984) and was a member of the SAB's Review Panel on Total Human Exposure (1985). He has served on a number of prestigious national and international working groups, including the U.S. Delegation to the United Nations Scientific Committee on the Effects of Atomic Radiation. He holds a B.A. in Physics, Masters in Bioradiology (Health Physics), and Ph.D. in Biophysics.

Dr. Anspaugh is currently the US Principal Investigator on reconstruction of radiation dose for members of the Extended Techa River Cohort who were exposed to liquid releases from the first Russian facility for the production of plutonium, and he will be the US Principal Investigator on the reconstruction of releases of <sup>131</sup>I and other radionuclides from the same

Russian facility and the resulting dose to the thyroid of children and adults living in the community of Ozersk. These two studies are funded by the Department of Energy with assistance from the Environmental Protection Agency for the first project. As a private consultant, Dr. Anspaugh has been a key participant in the Department of Health and Human Services' reconstruction of radiation dose to the entire country from fallout from Nevada tests and from the large-scale tests that produced global fallout. He and Prof. Straume have a contract from the National Cancer Institute to determine the deposition of  $^{129}\text{I}$  in Belarus as a surrogate for the deposition of  $^{131}\text{I}$ . Dr. Anspaugh is also participating in a dose-reconstruction study for the Idaho Nuclear Engineering Laboratory (with Centers for Disease Control Funding) and in a dose reconstruction for Chernobyl liquidators to support a case-control study of leukemia and thyroid cancer being conducted by the International Agency on Cancer Research.

**Dr. Bruce B. Boecker:** Dr. Boecker is Scientist Emeritus, Lovelace Respiratory Research Institute, Albuquerque, New Mexico. He has been a member of the National Council on Radiation Protection and Measurements (NCRP), served on its Board of Directors, and now has been elevated to Honorary Member. He is a current member of International Commission on Radiological Protection (ICRP) Committee 2 on Doses from Radiation Exposure. Also, he is a Diplomate of the American Board of Health Physics and a Certified Health Physicist. Dr. Boecker is a Fellow of the Health Physics Society (HPS) and has been awarded their Distinguished Scientific Achievement Award. He has served on numerous committees dealing with intake, internal doses, bioassays, epidemiology, radiobiology and risks from internally deposited radionuclides. He was a consultant to develop a Federal Strategy for research into the biological effects of ionizing radiation. Dr. Boecker is a current member of the SAB's RAC.

**Dr. Antone Brooks:** Dr. Brooks is Professor of Radiation Toxicology at Washington State University (WSU) Tricities in Richland, Washington. His research interests include radiation risks, cytogenetics, and radiation health effects. Dr. Brooks has conducted extensive research on health effects of radiation exposure from both external radiation sources and internally deposited radioactive materials. He has done research using a microbeam to compare the influence of alpha particles from radon exposure to alpha particles with defined energy and numbers delivered to specific cellular and sub-cellular locations. The use of biomarkers of exposure, dose, susceptibility, and disease have been a major research effort for Dr. Brooks to better estimate radiation risk. Recent publications deal with the topics of developing a scientific basis for radiation risk estimates in low dose radiation research, liver cancer risk from internally deposited radionuclides, the state of the art of biomarkers of exposure and dose, energy barriers for radiation-induced cellular effects, carcinogenesis, bystander effects and genomic instability, and energy barriers for radiation-induced cellular effects. Dr. Brooks received an associate's degree in Chemistry Education from Dixie Junior College in St. George, Utah, a B.S. in Experimental Biology and an M.S. in Radiation Ecology from the University of Utah in Salt Lake City, and a Ph.D. in Physical Biology from Cornell University in Ithaca, New York. Dr. Brooks is currently funded through a DOE grant to WSU-Tricities to provide scientific expertise for a Web Site at WSU. The focus of this web site is to first, to follow the scientific progress of

the DOE Low Dose Radiation Research Program and second, to help DOE provide outreach to the scientific community and the public that will help them understand the biological changes induced by low doses of ionizing radiation. Dr. Brooks is a current member of the SAB's RAC.

**Dr. Gilles Bussod:** Dr. Bussod is currently Chief Scientist with New England Research, Inc. (NER) in White River Junction, VT. NER is a small 20 year old research company with 19 employees (9 PhD's) located in Vermont, and is affiliated with MIT and specializes in Geophysical Research applications and their commercialization: mostly ultrasonics, EM and other physical properties of rocks, as well as Hydrogeology, flow and transport processes. He had recently served on the Faculty of Science in the International Research Center of the Catholic University of Leuven, Campus Kortrijk in Belgium. Previously he was employed as President of Science Network International, Inc., and had served as Hydrogeologist and Geochemist at Los Alamos National Laboratory (LANL), Los Alamos, N.M. In this later position, he worked on several Environmental Restoration Programs specializing in the design and implementation of field studies on radionuclide transport and the remobilization of "legacy waste" (using chemical analogues) in the environment. He also served from 1994 through 1999 as LANL Project Leader and technical manager for the Yucca Mountain Project, and Principal investigator (PI) for the Underground Unsaturated Zone Transport Test, Busted Butte, Nevada. He also holds an appointment as Professor Candidat aux Universities de France since 1994. As Principal Investigator for the Yucca Mountain project, he was resident expert on the unsaturated zone, and flow and transport phenomena. He holds authorship or co-authorship in over 60 publications involving geochemical flow and transport and related phenomena, as well and over 30 invited oral presentations dealing with unsaturated zone modeling, high pressure and high temperature research in experimental rock physics and petrology, novel drilling methods, rock melting drilling systems, deformation mechanisms, energy extraction techniques, high pressure experimental seismic velocity measurements and related topics. Dr. Bussod is a former member of the SAB's RAC.

Dr. Bussod received funding from the Environmental Restoration Program, and Post Cerro-Grande Fire Monitoring Project, Los Alamos National Laboratory. He also receives funding from Geophysical and Environmental Sciences Consulting, at New England Research, Inc. in Vermont, and was a Consultant and Researcher for the European Conservation Project, and the Catholic University of Leuven, Belgium. Dr. Bussod was a visiting Professor and researcher at the Bayerisches Geoinstitut in Germany, as well as a Professor at the University of Paris, France and in 1998, served as a Delegation Member to the U.S. Secretary of State at the Economic Summit Conference in Doha, Qatar. He is a member of a number of professional societies, including the American Geophysical Union, and has received a number of awards for his research. He also holds a 1998 U. S. patent for a rock-melting tool. Dr. Bussod is a geochemist with a Ph.D. in Geology and Earth and Space Sciences from UCLA and a Ph.D. in Geophysics from the University of Paris, France.

**Dr. Brian Dodd:** Dr. Dodd is a private consultant. He recently completed an assignment with the International Atomic Energy Agency (IAEA) in Vienna, Austria. He has been on the faculty of Oregon State University (OSU) since 1978, having served as a Professor of Nuclear Engineering and Radiation Health Physics at OSU from 1998 to 2002, and with OSU's Radiation Health Physics Program from 1988 to 1994. He served as Adjunct Faculty with the Federal Emergency Management Agency (FEMA) from 1986 to 1992. He has served as a consultant, Lecturer and Senior Lecturer at the Royal Naval College in London, as well as a Post-Doctoral Research Fellow at the Imperial College of London University. His fields of specialization are radiation protection, research reactor health physics, operations and management, transport of radioactive material, education and training, and emergency response and planning. He has consulted broadly and served on a number of distinguished committees, boards and commissions. For instance, he is a Fellow of the Health Physics Society (HPS) and has been active on the HPS Board of Directors on a number of officer and committee positions nationally and locally. He has served on the American Nuclear Society (ANS) ANSI Accredited Consensus Committee on reactors and reactor physics and others, such as Chair of the Nuclear and Safety Sub-Panel on Health Physics Instruments. He has served on Oregon Health Division's Radiation Advisory Committee, and as the U.S. Representative of the Institution of Nuclear Engineers Council Overseas. He also served as the Science Advisor to the London Borough of Hackney (Home Defense). He authored or co-authored a number of IAEA/UN publications on security of radioactive sources, safe transport of radioactive materials, management of radiation protection, quality aspects of research reactor operations and related topics. He has authored or co-authored over 100 publications in technical journals, conference proceedings, reports and others dealing broadly with the above topics. Dr. Dodd has a B.S. in Nuclear Engineering and Ph.D. in Reactor Physics from Queen Mary College, London University. Dr. Dodd is a current member of the SAB's RAC.

**Dr. Shirley A. Fry, M.B., B. Ch., MPH:** Shirley Fry, M.D., M.P.H., was the assistant director of the Medical Sciences Division (MSD) of Oak Ridge Associated Universities (OARU) from 1980 until she retired in 1995. She joined the MSD's Radiation Emergency Assistance Center/Training Site (REAC/TS) in 1978 as a clinician and continued as a member of the REAC/TS teaching faculty and response team through 1995. She was named Director of OARU's Center for Epidemiologic Research (CER) in 1984, after having served as acting director for the program since 1982. In this program she directed a component of DOE's health and mortality study of atomic workers. She also continued as director of CER until 1991. In her capacity as assistant director of MSD, she oversaw the direction of REAC/TS, CER, the Radiation Internal Dose Information Center, the Center for Human Reliability Studies, the Cytogenetics program, and the occupational medicine program. Dr. Fry is the author or co-author of a number of scientific publications on the acute and long-term health effects of radiation. She has served on national and international groups interested in these areas, including the National Academy of Sciences (NAS)/IOM's committee on Battlefield Exposure Criteria, the US/USSR Joint Commission on Chernobyl Nuclear Reactor Safety (JCCNRS) - Health Studies Group and the International Agency for Research on Cancer's (IARC) International Study of Cancer Risk Among Nuclear Workers. She is currently a member of the

Health Physics Society-National Society, the Hoosier Chapter of the Health Physics Society, the Radiation Research Society, and the American College of Occupational and Environmental Medicine. In 1995, Dr. Fry received a Lifetime Achievement Award from the East Tennessee Chapters of the HPS and of the Association for Women in Science for her life-long commitment and contributions to science. Previous to joining OARU, Dr. Fry was a research associate/clinician at the Center for Human Radiobiology at Argonne National Laboratory. She earned her medical degree from the University of Dublin, Ireland, in 1957. In 1984, she received her master's degree in public health from the University of North Carolina's Department of Epidemiology. Dr. Fry is a current member of the SAB's RAC.

**Dr. William C. Griffith:** Dr. Griffith was trained as a biostatistician and has collaborated for over three decades in studies of the dosimetry and health effects of radiation and other toxicants. His work has included the design, data collection and analysis of laboratory and field based studies. In particular, he has extensive experience in estimation of doses from internally-deposited radionuclides and estimation of dose response in terms of age-specific incidence rates and prevalence. He has also been active in translating his experience into models that are useful for health protection through his participation in committees of the National Council for Radiation Protection (NCRP). More recently, he has analyzed how these models are applied in environmental cleanup of the Department of Energy's Hanford site, and he has worked extensively with committees of the Hanford Advisory Board. Most recently, he has been funded as part of the Department of Energy's Low Dose Radiation Program to translate laboratory results into mathematical models that will be useful for future regulation of radiation. Dr. Griffith is a current member of the SAB's RAC.

Dr. Griffith also has experience in the study of non-radioactive toxicants. He was part of the team at the Lovelace Inhalation Toxicology Research Institute that was the first to prove that diesel exhausts are pulmonary carcinogens in laboratory animals. For the last seven years at the University of Washington, he has been director of the Risk Characterization Core for the Child Health Center funded by the Environmental Protection Agency and the National Institute of Environmental Health Science. As director, he has designed and developed statistical methods for analysis of a community-based randomized intervention to test the effectiveness of educating farm workers about how they can decrease the accidental exposures of their children from pesticides they bring home on their clothes. Dr. Griffith has also collaborated with EPA Region 10 by lecturing frequently on how to apply statistical methods to Superfund cleanup decisions. In the recent past, he has organized workshops on the application of new genomic and proteomic methods in collaboration with EPA-ORD for EPA regions, state and tribal environmental offices.

**Dr. Helen Ann Grogan:** Dr. Grogan is employed as an independent consultant who has her own consulting firm, Cascade Scientific, which has been subcontracted by Risk Assessments Corporation (RAC) to work on a variety of projects, including an independent assessment of the risks to the public from the 2002 Cerro Grande Fire for the New Mexico Environment

Department, development of a risk-based screening for historical radionuclide releases to the Columbia River from the Hanford Nuclear Facility in Washington under contract to the Centers for Disease Control and Prevention (CDC), and two dose reconstruction projects (Rocky Flats near Denver, CO and Savannah River in So. Carolina). She has served as a consultant to the SAB's Modeling Subcommittee. Her work has emphasized quantifying cancer risk and its uncertainty following exposure to plutonium from inhalation and ingestion. She has also assisted in the development of an International Features Events and Processes (FEP) database for the Nuclear Energy Agency (NEA) Organization for Economic Cooperation and Development (OECD) in France to be used in the performance assessment of radioactive waste disposal systems. In addition, she was also involved with the Swiss National Cooperative for the Disposal of Radioactive Waste (Nagra), for High Level Waste (HLW) and Low-/Intermediate-Level Waste (L/ILW) specifically in the development of scenario analyses for the Nagra Kristallin I and Wellenberg projects and development of supporting data bases that identify important phenomena (features, events and processes) that need to be accounted for in repository performance assessment and the Biospheric Model Validation Study - Phase II) BIOMOV5 II study, which is an international cooperative effort to test models designed to quantify the transfer and accumulation of radionuclides and other trace substances in the environment. Dr. Grogan is a current member of the SAB's RAC.

Dr. Grogan's doctoral thesis title is "Pathways of radionuclides from soils into crops under British field conditions." She has authored or co-authored several dozen publications, and technical reports dealing with the role of microbiology modeling the geological containment of radioactive wastes, plant uptake of radionuclides, laboratory modeling studies of microbial activity, models for prediction of doses from the ingestion of terrestrial foods (with a focus on radionuclides), long-term radioactive waste disposal assessment, modeling of radionuclides in the biosphere, quantitative modeling of the effects of microorganisms on radionuclide transport from a High Level Waste (HLW) repository and related topics. She is a Botanist with modeling and radionuclide experience. She is a British citizen who received her Bachelor of Science Degree in Botany with honors from the Imperial College of Science and Technology at the University of London, and her Ph.D. from that same university.

**Dr. Richard W. Hornung :** Dr. Hornung recently headed the Statistical Working Group of the Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Review Panel (EPA-SAB-RAC-03-009). He served as a consultant to the RAC (March, 1999), and participated in the SAB's advisory on Radon Risk. He is currently a Senior Research Associate and Director of the Division of Biostatistical Research and Support in the Institute for Health Policy and Health Services Research at the University of Cincinnati Medical Center in Cincinnati, Ohio. He has served since 1996 as a member of the White House Committee on Revisions to the Radiation Exposure Compensation Act. Since 1990, he has served as an advisor on the National Research Council. He received numerous awards, including the U.S. Public Health Service award for "Sustained High Level Performance in the Field of Biostatistics." He was a consultant to the National Academy of Science Committee on the Biological Effects of Ionizing Radiation (BEIR IV). He is a reviewer for a dozen scientific journals. His peer-

reviewed publications deal with exposure assessment methods, lung cancer risk in Uranium miners, dose assessments, dose reconstruction, development of models for use in estimating exposures to a number of pollutants, including diesel exhaust, benzene, ethylene oxide, lung cancer in shipyard workers and other related topics. In the area of radiation research, he is currently funded under contract to the University of Kentucky to serve as the scientific director of an occupational epi study of workers at the Paducah Gaseous Diffusion Plant. He is also funded by NIOSH as the biostatistician on a study of radiation related cancers among residents living near the Fernald plant in Southwestern Ohio. Dr. Hornung is a current member of the SAB's RAC.

Dr. Horning has a B.S. in Mathematics from the University of Dayton, an M.S. in Statistics from the University of Kentucky, and a Ph.D. in Biostatistics from the University of North Carolina.

**Mr. Richard Jaquish:** Mr. Jaquish is currently a part-time (30%) employee of the Washington State Department of Health, Office of Radiation Protection, serving as an environmental radiation advisor on environmental surveillance and Hanford remediation activities. He has a B.S. in civil engineering and an M.S. in engineering and applied physics specializing in radiation protection, public health, and industrial hygiene. His major area of expertise is in environmental surveillance. At the Nevada Test Site and the Hanford Site, he participated in and held management positions in planning, conducting and evaluating environmental surveillance programs. Non-routine monitoring projects included monitoring of Plowshare projects developing techniques for measuring unique radionuclides, monitoring releases from the Hanford Site, and evaluation and recommendations for environmental monitoring of the new Hanford Waste Treatment Plant.

Mr. Jaquish served two terms on the American Public Health Association (APHA) Committee on Laboratory Standards and Practices that prepares the publication, *Standard Methods for the Examination of Water and Wastewater*. He was a member of the National Council on Radiation Protection and Measurements (NCRP) Committee 64 (1994-2000) on Radionuclides in the Environment (now Environmental Radiation and Radioactive Waste Issues), and is currently a member of NCRP Committee 64-22, Design of Effective Effluent Monitoring and Environmental Surveillance Programs. Since 1995, his funding has been entirely from the Washington Department of Health, Office of Radiation Protection. The Office receives grants from the U.S. Environmental Protection Agency, and others.

**Dr. Janet A. Johnson:** Dr. Johnson is currently employed by MFG, Inc. in Fort Collins, CO as a Senior Radiation Scientist with expertise in health physics, chemistry, and environmental health. MFG, Inc., a Tetratech Company, provides environmental engineering consulting services to industry including the mining sector. She was formally employed by Colorado State University as Interim Director of Environmental Health Services in Fort Collins, Colorado. She is a certified industrial hygienist (CIH, radiological aspects) and is also certified in the comprehensive practice of health physics by the American Board of Health Physics. She

is an active member of a number of radiation and health-oriented professional organizations, such as the Health Physics Society (HPS). She is a Fellow of the Health Physics Society (HPS) and a former member of the Board of Directors. She has served on the Governor's (Colorado) Radiation Advisory Committee since 1988 and was a member of the Colorado Hazardous Waste Commission. Dr. Johnson is a former member and Chair of the SAB's RAC.

Dr. Johnson has a number of publications to her credit, as well as broad-based consulting experience dealing with such topics as nuclear safety and radiological site assessments, risk assessment for uranium mill reclamation, risk assessment for uranium in groundwater, radiation monitoring for uranium miners, radiological risk assessment of abandoned mine lands, radium land clean-up standards, uranium mill license renewal application preparation and radiological considerations, radium safety and training, estimating the risk of lung cancer from inhalation of radon daughters indoors, and comparison of radioactivity and silica standards for limiting dust exposures in uranium miners, preparation of NRC license applications for consumer products, pre-operational site surveys, Uranium Mill Tailings Remedial Action (UMTRA) health and safety audits, radon measurement, and other related topics. She chaired the SAB/RAC's Environmental Radiation Ambient Monitoring System (ERAMS II) advisory (EPA-SAB-RAC-ADV-98-001, August 28, 1998), and since 1999 was Chair of the RAC, and chaired the Multi-Agency Radiological Laboratory Analytical Protocols (MARLAP) Review by the MARLAP Review Panel of the RAC (EPA-SAB-RAC-03-009). Her training includes a B.S. in Chemistry from the University of Massachusetts, an M.S. in Health Physics (as an Atomic Energy Commission (AEC) Health Physics Fellow) from the University of Rochester, and a Ph.D. in Microbiology and Environmental Health from Colorado State University.

**Dr. Bernd Kahn:** Dr. Kahn is Professor Emeritus of the Nuclear and Radiological Engineering and Health Physics Programs at Georgia Institute of Technology (GIT). Dr. Kahn has served on a number of distinguished committees, panels and commissions, including the National Research Council (NRC) committees on decontamination and decommissioning of uranium enrichment facilities, buried transuranium waste, single shell tank wastes, and Panel on Sources and Control Technologies, Committee on Nuclear Science, and Center). He has been Head of the Environmental Radiation Branch since 1974 (formerly the Environmental Resources Radioactive Wastes; and a Health Physicist and Radiochemist with Union Carbide Corporation (1951-1954). Dr. Kahn is a former member of the SAB's RAC.

Dr. Kahn was Adjunct Professor of Nuclear Engineering at the University of Cincinnati (1970-1974), Chief of the Radiological & Nuclear Engineering Facility at the U.S. EPA's National Environmental Research Center (1970-1974), undertaking research in environmental, medical, and biological radiological programs, including studies of radioactive fallout in food, radionuclide metabolism in laboratory animals, and SR-90 balances in human infants; an Engineer/Radiochemist with the U.S. Public Health Service (1954-1970), evaluating the treatment of low-and intermediate-level Subcommittee on the Use of Radioactivity Standards. Dr. Kahn served on the U.S. EPA SAB's Radiation Advisory Committee(RAC), having been on the RAC reviews of both Environmental Radiation Ambient Monitoring System (ERAMS I) and ERAMS II, the predecessor systems to RadNet, as well as the Multi-Agency Radiation

Laboratory Analytical Protocols (MARLAP) review on laboratory radiation measurement protocols. He has served on the National Council on Radiation Protection and Measurements (NCRP) Scientific Committees as Chair of the Scientific Committee 64-22 for Effluent and Environmental Monitoring, Chair of the Task Group 5 on Public Exposure from Nuclear Power, member of the Scientific Committee 84 on Radionuclide Contamination, member of the Scientific Committee 64 on Environmental Issues, member of the Scientific Committee 63-1 on Public Knowledge About Radiation Accidents, member of the Scientific Committee 38 on Accident-Generated Waste Water, member of the Scientific Committee 18A on Radioactivity Measurement Procedures, and member of the Scientific Committee 35 on Environmental Radiation Measurements.

Dr. Kahn is widely published with over 160 publications on the topics of radiation measurements, monitoring and protocols, fate of radionuclide discharges, critical pathways for radiation and population exposure, radiochemical analyses for environmental studies, airborne radiation in buildings, emergency response to accidents involving radioactive materials, airborne fallout, sources, fate and occurrences and health effects of radionuclides in the environment, surveillance of radionuclides in the food chain, integrated environmental measurement, germanium detectors and other devices, decommissioning procedures and other radiation-related topics. Dr. Kahn received his B.S. in Chemical Engineering from Newark College of Engineering (Now the New Jersey Institute of Technology), M.S. in Physics from Vanderbilt University and Ph.D. in Chemistry from the Massachusetts Institute of Technology.

**Dr. Jonathan M. Links:** Dr. Links is a medical physicist, with a B.A. in Medical Physics from the University of California, Berkeley (1977), and a Ph.D. in Environmental Health Sciences (with a concentration in Radiation Health Sciences) from Johns Hopkins University (1983). Dr. Links is currently Professor of Environmental Health Sciences in the Johns Hopkins Bloomberg School of Public Health, with a joint appointment in Radiology in the School of Medicine. Dr. Links' expertise is in radiation physics and dosimetry, medical imaging instrumentation, and radiation-based biomarkers. Dr. Links has authored or co-authored over 30 publications dealing with radiation physics, dosimetry, medical imaging instrumentation, radiation-based biomarkers and related topics. Dr. Links is a member of the Editorial Boards of *The Journal of Nuclear Medicine* and *The European Journal of Nuclear Medicine*, and is a member of the Delta Omega National Public Health Honor Society. He is a past president of the Society of Nuclear Medicine, a 13,000 member professional medical society that deals with the use of radioactivity and radiation in medicine. Dr. Links is currently Baltimore City's radiation terror expert, working with the Health, Fire, and Police Departments.

**Dr. Jill A. Lipoti:** Dr. Lipoti was recently appointed as Director of Radiation Protection Programs for the New Jersey (NJ) Department of Environmental Protection (DEP) in Trenton, NJ. She has held the position of Assistant Director of Radiation Protection Programs since 1989. This program administers licensing and inspection of radiation sources, certification of technologists, radon public awareness, certification of radon testing and mitigation firms, low level radioactive waste siting issues, nuclear emergency response, oversight of nuclear power

plant activities for environmental releases, and non-ionizing radiation. She has also held positions of Chief of the NJ DEP Bureau of Hazardous Substances Information (6/88 to 4/89), as well as Supervisor of Communication/ Outreach in the NJ DEP Bureau of Hazardous Substances Information (7/87 to 6/88). Dr. Lipoti served as a Hazardous Materials Specialist with the New York (NY)/New Jersey (NJ) Port Authority (9/84 to 6/87), as an Assistant Instructor in the Department of Environmental Science at Rutgers University in New Brunswick, NJ (6/79 to 9/84), and as an Adjunct Professor of Chemistry at Middlesex County College in Edison, NJ (9/79 to 6/80, and 9/83 to 6/84). Dr. Lipoti's funding comes from the NJ DEP as a State employee. A modest portion of the funding as a state employee is charged to her time spent on and EPA Grant for the NJ Radon Program, as well as for NJ DEP activities related to the four Nuclear Power Plants in the State of New Jersey. Dr. Lipoti is a current member and Chair of the SAB's RAC .

She has publications and proceedings in a broad range of topical areas, such as diagnostic radiology quality assurance, certification of radiation risks from high-dose fluoroscopy, nuclear power plant and X-Ray program redesign, reduced emissions from mammography, public confidence in nuclear regulatory effectiveness, the linear non-threshold regulation, similarities and differences in radiation risk management, partnerships between state regulators and various other organizations, electromagnetic fields from transformers located within buildings, community Right-to-Know, identifying individuals susceptible to noise-induced hearing loss, community noise control, safety for supervisors - an updated manual for training of supervisors at the Port Authority, and a variety of other topics.

Dr. Lipoti holds numerous appointments to boards and councils. For instance, she currently serves as Chair of the Committee on Public Information on Radiation Protection and as Liaison to the American College of Radiology, as well as Liaison to the American Association of Physicists in Medicine. She has served as Chairman of the Conference of Radiation Control Program Directors (1997-98), the Board of Directors and Chair of the Environmental Nuclear Council (1992-95), Chair of the Transportation Committee (1991-93) and is a member of the National Council on Radiation Protection and Measurement (NCRP). She is a member of the Health Physics Society, the American College of Radiology, the Science Advisory Board's Radiation Advisory Committee (she currently is serving as Chair of the SAB's RAC) and other organizations. She is the State of New Jersey Representative to the U.S. Nuclear Regulatory Commission (NRC), the Interagency Steering Committee on Radiation Standards (ISCORS), and served as a member of the Technical Electronic Products Radiation Safety Standards Committee for the U.S. Food and Drug Administration (FDA).

Dr. Lipoti has provided expert testimony on a variety of radiation-related topics. She has provided comments on the revised oversight program for nuclear power plants, and orphan source recovery, and licensee's accountability programs before the U.S. Nuclear Regulatory Commission (NRC). She has also provided comments to various Congressional committees and subcommittees, such as comments on the Radon Disclosure and Awareness Act in a joint hearing before the United States House of Representatives Subcommittee on Transportation and Hazardous Materials and the Subcommittee on Health and the Environment, and comments on

the Indoor Radon Abatement Reauthorization Act of 1993 in a hearing before the U.S. Senate Committee in Environment and Public Works, Subcommittee on Clean Air Nuclear Regulations.

Dr. Lipoti holds a Ph.D and M.S. in Environmental Science from Rutgers University, and a B.S. in Environmental Science from Cook College in New Brunswick, NJ.

**Dr. Esteban D. Picazo:** Mr. Picazo is currently Environmental Monitoring Program Manager at the West Valley Demonstration Project (WVDP) in West Valley, NY and a Principal Health Physicist for URS Group, Inc. Mr. Picazo has more than thirty years experience in the nuclear industry: twenty-four years have been in applied radioactive waste management, environmental monitoring, quality assurance, and wildlife control management. He has an M.S. in Biology from Moorehead State University and untold experience in radiological air monitoring (both ambient and effluent) program design and implementation. A well-respected member of DOE sponsored programs, Mr. Picazo has been a member of both the Health Physics and American Nuclear Societies for many years. He has worked with Dames & Moore/URS Group, Inc. for more than 20 years, for the most part at the WVDP, a DOE sponsored remedial action and technology demonstration project. He has practical program design and operations experience.

**Dr. Gary M. Sandquist:** Dr. Sandquist is currently a Professor and former Director of the Graduate Nuclear Engineering Program in Mechanical Engineering at the University of Utah. Prior to that appointment, he was visiting professor in Physics and Civil and Mechanical Engineering Departments at the U.S. Military Academy at West Point, where he supported and trained Army personnel in Functional Area 52 activities (Nuclear operations and research and U.S. Department of Energy (DOE) Standard “Radiation Protection”). He is a Registered Professional Engineer in Utah and new York (Mechanical) and California (Nuclear), a Board Certified Health Physicist, a Diplomate in Environmental Engineering, a Certified Quality Auditor, and a retired U.S. Naval Reserve Commander-Intelligence Designator. The reactor Supervisor and U.S. Nuclear Regulatory Commission (NRC) Licensed Senior Reactor Operator for a Training, Research, Isotopes, General Atomics (TRIGA) research reactor, he served as a short mission expert in nuclear science and safeguards for the International Atomic Energy Agency (IAEA) and as Technical Training Director for the joint DOE, EPA, Defense Research Institute (DRI) Community Radiation Monitoring Program at the Nevada Test Site.

Dr. Sandquist’s principal scientific interests include risk assessment; radiation transport, analytical detection and measurement; assessment and decontamination of chemical and radioactive hazards; design and execution of characterization and final status surveys using Multi-Agency Site Survey and Investigation Manual (MARSSIM); and design and operation of heating, ventilation and air-conditioning (HVAC) systems. His scientific and technical societies include American Health Physics Society and American Society of Mechanical Engineering (ASME). He has authored or co-authored 500 publications including 5 books and book chapters, 175 refereed papers, 320 technical reports, developed 17 major technical computer codes and participated in nearly 200 technical meetings, conferences, workshops and government hearings.

He holds a B.S. in Mechanical Engineering, M.S. in Engineering Science, Ph.D. in Mechanical and Nuclear Engineering, MBA, was a Post Doctoral Fellow at MIT, and served a Sabbatical at Ben Gurion University in Beer Sheva, Israel.

**Dr. Douglas G. Smith:** Douglas G. Smith, Sc.D. currently serves as Principal Environmental Health Scientist, Risk Assessment, for ENSR International. Dr. Smith has an M.S. Environmental Sciences (Radiological Health) and Sc.D. in Environmental Health (Industrial Hygiene and Air Pollution) from the Harvard University School of Public Health. His early work at the Harvard Air Cleaning Laboratory focused upon high sensitivity detection of radioactive gases and testing of filtration system efficiencies for radioactive aerosols. His ongoing technical specialties include both air pollution transport and exposure and risk assessment for both accidental and normal ambient and occupational exposures to radionuclides and other potentially hazardous chemicals. He has authored over 30 publications and technical reports.

Dr. Smith's interests in transport modeling of air contaminants and radiological health issues have led to his long-term involvement in many projects focused on accident consequence assessment, emergency preparedness planning, health and safety program evaluation, and related training. In the 80's he designed a proposed real-time radiological emergency assessment system (RADMAP<sup>R</sup>) for the nuclear industry (in cooperation with COMSAT), and subsequently adapted the design for use in local warning systems for a variety of chemical industries that use large quantities of hazardous chemicals. With his added industrial hygiene background, he has provided industries with specific consulting advice on effective functional, audit, and training requirements of the Occupational Safety and Health Administration's (OSHA's) Process Safety Management Rule and the U.S. EPA (plus CA and NJ) Risk Management Programs, and, when presentations on chronic and acute exposures and risk assessment, and related risk communication issues; the most recent of these also address emergency planning for "hostile" appropriate, the U.S. Nuclear Regulatory Commission (NRC) and state requirements for radiological safety programs. The most recent of these auditing duties have included government research and private industrial facilities that use accelerators for research or for the manufacture of radiotracer materials and radiopharmaceuticals. Dr. Smith's ability to advise on "balancing risks" has been enhanced by his direct participation on ENSR audit teams that assess compliance and "best management practices" for both chemical and radiological safety programs.

Most recently, Dr. Smith has been serving on two U.S. EPA Science Advisory Board (SAB) Panels concerned with transport and fate modeling and risk assessment. The first has reviewed the EPA's 3MRA Modeling System. The second Panel is reviewing EPA's recommended practices documentation for Regulatory Environmental Models (REM). Both the 3MRA system and the set of tools included in the EPA's REM Models Knowledge Base will help EPA (and others) to evaluate risks and benefits from alternative environmental management practices for many different types of hazardous chemicals.

**Dr. Richard J. Vetter:** Dr. Richard J. Vetter is Director of Safety for Mayo Foundation, Radiation Safety Officer for the Mayo Clinic and Professor of Biophysics of the Mayo Medical School in Rochester, Minnesota. His major areas of interest include biological effects and dosimetry of ionizing and nonionizing radiation, and public policy of radiation applications. Dr. Richard J. Vetter is a current member of the SAB's RAC.

Dr. Vetter is certified by the American Board of Health Physics and the American Board of Medical Physics. He is Former Health Physics Society President and Journal Editor, and has served as Editor-in-Chief of the Health Physics Journal, as well as on the Board of Directors of the Health Physics Society. He is a member of the National Council on Radiation Protection and Measurements (NCRP) Council and Board of Directors, the American Association of Physicists in Medicine, the Society of Nuclear Medicine, the American Academy of Health Physics, and the International Radiation Protection Association. He has served in numerous capacities on the Mayo Clinic and Foundation activities, such as the Ad Hoc Committee on Low Level Radioactive Waste, the Radiation Safety Committee, the Mayo Foundation Radiation Safety Committee, and the Foundation Environmental Health and Safety Committee. He has also participated in a number of professional activities at the state level, such as the Minnesota User's Group on Low Level Radioactive Waste Management. He is or has been a reviewer for the American Council on Science and Health, the Health Physics Journal, Radiation Research and numerous other publications. He is author or co-author of more than 200 publications in health physics and environmental toxicology. He received his B.S. and M.S. in biology from South Dakota State University in Brookings, SD and his Ph.D. in Health Physics from Purdue University in West Lafayette, IN.

**Ms. Susan Wiltshire:** Susan Wiltshire is a former Vice President of the consulting firm JK Research Associates, Inc. Her areas of expertise include radioactive waste management, public involvement in policy and technical decisions, and risk communication. She has planned and facilitated citizen involvement, moderated multi-party discussions and assisted with the peer review of technical projects. Ms. Wiltshire's expertise in these areas results from her extensive experience as an involved citizen, consultant, local official, and member of numerous state and national advisory groups.

Ms. Wiltshire has served on a number of committees of the National Academy of Sciences' (NAS) National Research Council (NRC) including the Board on Radioactive Waste Management, the Committee on Technical Bases for Yucca Mountain Standards, the Committee on Risk Perception and Communication, the Committee to Review Risk Management in the Department of Energy's (DOE's) Environmental Remediation Program, and the Panel on Separations Technology and Transmutation Systems, and NRC Committee on Toxicology Subcommittee on Zinc-Cadmium Sulfide.

Ms. Wiltshire chaired both the Committee to Review New York State's Siting and Methodology Selection for Low Level Radioactive Waste Disposal and the Committee on Optimizing the Characterization and Transportation of Transuranic Waste Destined for the Waste Isolation Pilot Plant. Ms. Wiltshire is a member of the Board and a Scientific Vice

President of the National Council on Radiation Protection and Measurements (NCRP) and serves as Chairman of that organization's Committee on Public Policy and Risk Communication. She is a former member of the U.S. Environmental Protection Agency Advisory Committee on Radiation Site Cleanup Regulation and its committee on the Waste Isolation Pilot Plant (WIPP), which she has chaired.

Ms. Wiltshire wrote the 1993 version of the League of Women Voters' "*A Nuclear Waste Primer*," the 1985 revision of which she coauthored. Her other publications include The Conservation Foundation Report entitled "*Managing the Nation's High-Level Radioactive Waste*." She has been a frequent speaker on the public's role in government policy development.

Ms. Wiltshire served two terms as member and Chairman of the elected Board of Selectmen, the chief executive body of the Town of Hamilton, Massachusetts, and of the Town's appointed Finance Committee. She currently serves on the Zoning Board of Appeals. She is former Chairman of the Board of Northeast Health System, Beverly, Massachusetts and of Beverly Hospital. Ms. Wiltshire was formerly President of the League of Women Voters of Massachusetts and member of the National League of Women Voters Nuclear Waste Education Project Steering Committee.

Ms. Wiltshire graduated Phi Beta Kappa with High Honors from the University of Florida, receiving a BS in mathematics. Her facilitation skills, born from long experience, were honed in training as a discussion leader by the League of Women Voters and as a third party mediator by the American Arbitration Association.

**Dr. C Larrabee (Larry) Winter:** Dr. Winter is currently Deputy Director and Senior Scientist at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. He also holds an appointment as Adjunct Professor in the Department of Hydrology and Water Resources at the University of Arizona in Tucson, Arizona. Dr. Winter received his Ph.D. and M.S. in Applied Mathematics, M.S. in Geoscience, and a B.A. in Philosophy with honors from the University of Arizona. Dr. Winter has served on a number of boards and committees. For instance, he had served as a member of the Editorial Board for the Journal of Neural Network Computing (1989-1990), as a member of the Executive Committee of the National Science Foundation's (NSF) Science and Technology Center for Sustainable Hydrology (SAHRA) at the University of Arizona, a member of the Executive Committee of the Center for Non-Linear Studies at the Los Alamos National Laboratory, Chair of the New Mexico EPSCoR Committee, and Member of the New Mexico State Space Center Commission, as well as Chair of the Advisory Board of the National Ecological Observatory Network of the NSF. From 1990 to 2003, Dr. Winter served as the Governor's Science Advisor in the Office of Governor at the State Capitol in Santa Fe, New Mexico for the Los Alamos National Laboratory (LANL). During that time, he served as Leader of the Computer Research and Applications Group, Leader of the Geoanalysis Group and Leader of the Applied Mathematics and Statistics Team for the LANL. Dr. Winter has authored or co-authored over 50 refereed journal articles and reports, organized over 10 workshops and sessions, and given over 16 invited talks related to his research

interests, which are focused on groundwater hydrology, geophysics, mathematical modeling and numerical solutions, steady-state unsaturated flow in heterogenous media, prediction of steady-state flow in nonuniform geologic media, neural networks, random flow, and related topics.