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Baylor College of Medicine, Department of Radiology
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EDUCATION

Ph. D. (Nuclear Engineering), Texas A&M University
M. S. (Health Physics), Texas A&M University
B. S. (Biology with Nuclear Engineering minor), SUNY – Albany

CERTIFICATIONS & LICENSES

American Board of Health Physics (ABHP) Certified Health Physicist (CHP)
Senior Reactor Operator License – AGN-201 Reactor, US Nuclear Regulatory Commission

APPOINTMENTS

Appointed by President Bush (then Governor) as the health physicist for the Texas Radiation Advisory Board (TRAB). Elected Vice Chair, 11-03; Re-elected 11-04

(1998 – Present) Appointed as an adjunct member of the National Council on Radiation Protection and Measurement (NCRP), as a member of Scientific Committee 46-14 to investigate/define radiation protection issues related to terrorist activities that result in the dispersal of radioactive material (NCRP Report No. 138). Since selected (fall 2004) to Chair the instrumentation and dosimetry subcommittee of SC 2-1 for the promulgation of an NCRP Commentary on preparation of first responders for terrorist events involving radioactive materials (national-level appointment)

(2003 – Present) Subject Matter Expert, Department of Homeland Security, National Center for Emergency Preparedness at Vanderbilt University Medical Center, Scientific Technical Analysis and Response Teams (START) Program (national-level appointment)

(2001 – Present) Member, Health Physics Society Academic Education Committee (national-level appointment)

(2001 – 2004) Member, Health Physics Society *ad hoc* Committee for Homeland Security and Chair, Subcommittee on Publications

(2001 – 2002) Chair, Science Teacher Workshop Committee, South Texas Chapter – HPS

(1999 – 2002) President-Elect, President, and then Past-President, South Texas Chapter of the Health Physics Society

(1999 – 2000) Chair, Health Physics Society Public Education Committee (national-level appointment)

(1995 – 2005) Faculty Advisor, Texas A&M University Health Physics Society Student Branch

CURRENT EMPLOYMENT

Associate Professor of Radiological Science, Department of Radiology, Baylor College of Medicine, January 2005 – Present

Responsibilities much the same as for assistant professor position (below), but emphasis is on health and medical physics, and radiological health engineering, and students include medical school residents, as well as ASRT program students for Houston Community College System.

Assistant Professor and Health Physics Program Director, Department of Nuclear Engineering, Texas A&M University, September 1999 – May 2005

Responsibilities as assistant professor include:

- Performing research on applied and theoretical aspects of health physics,
- Instructing undergraduate and graduate health physics, industrial hygiene, and safety and nuclear engineering majors in the principles of radiation safety and radiological health engineering, and
- Performing professional and public service.

Research interests include internal dose assessment, external dosimetry, radiological assessment (dose reconstruction or projection), especially for transuranics and naturally occurring radionuclides (incl. radon in air and water), radiological health engineering design projects, and radiation detection and measurement as it applies to the previous subjects.

Recent projects include: the directorship of a 30+ professor environmental, agricultural and societal impact project for a proposed plutonium processing facility; development of a new TLD reader for trace environmental radiation studies; and characterization of environmental radiation doses to a population near a Type-1 landfill. Current research includes assessment of the environmental impact for long-term storage of low-level radioactive waste in Texas and the potential for a radiological assessment based on the food webs of the Aleutian Islands (Amchitka).

Teaching responsibilities specifically include Radiation Detection and Isotope Technology Laboratory (NUEN 402 - spring), Radiological Safety (NUEN 409 – fall), and development and instruction of two new courses: a one-hour multidisciplinary course on technical communication of nuclear issues; and, a three-hour (one-hour per week lecture and six-hours per week lab) environmental radiation measurements course. Additional responsibilities include coordination and supervision of, and participation in the teaching of all radiation

safety-related short courses for industry and government, e.g., the five-week Principles of Health Physics: Theory to Practice course (annual) and the one-week Radiation Safety Officer course.

Responsibilities as Health Physics Program Director include curriculum development and revision, recruitment of undergraduate and graduate students, and acquisition of programmatic funding and internship opportunities. Responsible to the Department Head to steer the HP faculty as to the scope and vision of the program, which includes working with representatives from the various radiation protection industries.

President and CEO, Foxfire Scientific, Inc., outside consulting as a forensic health physicist and radiological health engineer, 1999 – Present

Recent litigation support and radiological engineering projects include:

Aguirre et al. v. BFI et al. – preparation of expert report, deposition and trial testimony
Bulot et al. v. ITCO et al. – preparation of expert report, deposition and trial testimony
Cano et al. v. Everest Minerals et al. – preparation of expert report, deposition and affidavits
Ramon Gauna, Jr. v. Bruce L. Jameson et al. – preparation of expert report, deposition

Perform radiation dose assessments and retrospective radiation dose reconstructions in support of litigation. Responsibilities include reconstructing time and motion studies of potentially exposed individuals; determination and reconstruction of source terms for various internal and external exposure pathways; calculation of doses from inhalation, ingestion, external exposure, and radon inhalation for specific commitment period and specific affected organs; communication of results of studies in both written reports and oral deposition/testimony as required.

Evaluation of radiation shielding requirements as specified in a barrier criteria by Southwest Research Institute to MD Anderson Cancer Center for an accelerator-based radiation oncology suite consisting of eight 20 MeV Clinacs in separate, shielded vaults

Radiation safety plans for R.P. Kincheloe and NeoServe/Syntier Solutions

Consulting Radiation Safety Officer to NeoServe/Syntier Solutions, (2001 – 2002)

PREVIOUS WORK EXPERIENCE

Focus Group Leader, Health and Safety Focus Group of the Amarillo National Resource Center for Plutonium (ANRCP), March 1998 to May 2000.

Responsibilities included oversight, as academic liaison, between the ANRCP Environment, Health and Safety Focus Area, and various academe of the consortium, for all health and safety facets of the research program. Specific tasks included identification of health and safety research needs within the weapons complex, identification of consortium members

whose backgrounds fit specific, proposed research, and coordination between focus group investigators to ensure complementary effort.

Laboratory Manager and Lecturer, Department of Nuclear Engineering, Texas A&M University, College Station, TX 77843, November 1990 – August 1999 (Laboratory Manager); August 1995 – August 1999 (Lecturer).

Leading First Class Petty Officer, USS Henry Clay (SSBN 625), Electrical Division of the Nuclear Engineering Department, November 1987 - November 1990.

Electrical Division Materials Leading Petty Officer Assistant, S7G Naval Reactor Facility, Ballston Spa, NY, August 1986 - December 1986.

Operator/Instructor, S7G Naval Reactor Facility, Ballston, NY, August 1983 - December 1986.

PROFESSIONAL AFFILIATIONS

American Association of Physicists in Medicine – National and Local
American College of Radiology – National and Local
American Nuclear Society – National
American Society of Engineering Educators
Health Physics Society – National, State and Local
Sigma Xi – the Scientific Research Society - National

SPECIAL TRAINING

2004 Emerging Topics in Radiation Protection and Risk Assessment, Risk Assessment Corporation, Kiawah Island, SC, March 16-18, 2004
2003 Radiation Safety Officer 3-day Short Course for Uranium Mining and Milling Safety Officers, MFG Inc., Fort Collins, CO, May 14-16, 2003
2002 Nuclear Emergency Planning: The Changing Role of Emergency Planning Following September 11, a Harvard School of Public Health Workshop
1999 Monte Carlo Neutral Particle Transport Codes for Radiological Health Engineers, Medical Physicists, and Health Physicists
1998 Health Physics Society Summer School (Radiation Safety Program Admin.)
1997 Health Physics Society Summer School (Non-ionizing Radiation)
1997 Calculating Risk from Radionuclides Workshop
1996 Transmission Electron Microscopy Operation Workshop
1996 Mammalian Cell Culture Laboratory Workshop
1995 NSF Engineering Education Scholars Workshop
1995 Health Physics Society Summer School (Reactor Health Physics)
1994 Health Physics Society Summer School (Internal Dosimetry)
1994 OSHA "Hazwoper" 78 hour short-course – certified Hazardous Materials Spill On-scene Responder
1988 Submarine Electrical Distribution and Control Systems

1987 Electrician's Advanced Electronics School (C-7)
1985 Crew Quality Inspector (QA/QC) School
1984 Naval Instructor Training School
1983 Naval Nuclear Power School, and Prototype Training Unit S7G
1982 Electrician's Mate 'A' School

PUBLICATIONS

Hamilton IS, Arno MG, Rock JC, Berry RO, Poston JW, Cezeaux JR, Park JM.,
“Radiological assessment of petroleum pipe scale and pipe rattling operations,” in Health
Phys 87(4): 382-396, October 2004.

Hamilton, I.S., Poston, J.W., Sr., “History and introduction to terrorism,” Chapter 1 in
Protecting the Public from Nuclear, Chemical, and Biological Terrorism, Allen Brodsky
editor, Medical Physics Publishing, 2004.

Poston, J.W., Sr., Hamilton, I.S., “An Overview of NCRP Report No. 138 on Terrorist
Activities,” Chapter 2 in Protecting the Public from Nuclear, Chemical, and Biological
Terrorism, Allen Brodsky editor, Medical Physics Publishing, 2004.

Arno, M.G., Hamilton, I.S., “Radiation streaming and skyshine evaluation for a proposed
low-level radioactive waste assured isolation facility,” in Health Phys. 85(4): 494-503,
October 2003.

Hamilton, I.S., “Dose Limitation and Guidance,” Ch. 8 of NCRP Report No. 138 –
Management of Terrorist Events Involving the Use of Radioactive Materials, October, 2001.

Krieger, K.V., Hamilton, I.S., “Analysis of Small Sample Geometry for Concurrent
Identification and Quantification of Mixed-Nuclide Samples,” in “Instrumentation,
Measurements and Dosimetry,” Medical Physics Publishing, pp. 23-31, 2000.

Thompson, J.M., Thompson, E.A., Hamilton, I.S., “An Approach to Evaluating the Societal
Risks and Agricultural Impacts from a Proposed Plutonium Processing Facility.” in Health
Phys. 77(2): S32-39, August 1999.

Thompson, E.A., Thompson, J.M., Hamilton, I.S., “Potential agricultural impacts of
accidents at a proposed plutonium processing facility at the Pantex Plant.” in Creation and
Future Legacy of Stockpile Stewardship; and Isotope Production, Applications, and
Consumption, J.M. Hylko and R.L. Salyer editors, Medical Physics Publishing, pp. 229-234,
1999.

Thompson, J.M., Thompson, E.A., Hamilton, I.S., “Independent assessment of the hazards of
proposed plutonium processing facilities at the Pantex Plant.” in Creation and Future Legacy
of Stockpile Stewardship; and Isotope Production, Applications, and Consumption, J.M.
Hylko and R.L. Salyer editors, Medical Physics Publishing, pp. 25-28, 1999.

Comfort, C.M., Hamilton, I.S., "Health physics concerns during delayed neutron measurements for actinide waste isotopes." Addendum to Creation and Future Legacy of Stockpile Stewardship; and Isotope Production, Applications, and Consumption, J.M. Hylko and R.L. Salyer editors, Medical Physics Publishing, 1999.

Hearne, D.D., Hamilton, I.S., "Feasibility study of ^{99m}Tc production by neutron capture and solvent extraction at a 1-MW TRIGA facility." Addendum to Creation and Future Legacy of Stockpile Stewardship; and Isotope Production, Applications, and Consumption, J.M. Hylko and R.L. Salyer editors, Medical Physics Publishing, 1999.

Freeman, B. L., Faleski, T. J., Hamilton, I. S., Parish, T., and Rock, J. C., "Conventional and explosive pulsed power development at Texas A&M University," in 8th International Conference on Megagauss Magnetic Field Generation and Related Topics, Tallahassee, Florida, October 19-23, 1998.

Hamilton, I.S., Thompson, E.A., Thompson, J.M., "Environmental and agricultural impacts of accidents postulated for missions proposed for the USDOE Pantex Plant." in "International Radiological Post-Emergency Response Issues Conference – Meeting Proceedings," USEPA, pp. 18-21, 1998.

Hamilton, I.S., Thompson, J.M., Thompson, E.A., Krieger, K.V., Charbeneau, R.J., Landsberger, S., Maidment, D., Hay-Wilson, L., Barnes, D., Beard, C.A., Hartley, R., Sweeten, J., "Preliminary assessment of relative societal risk for missions proposed for the U.S. Department of Energy Pantex Plant" October 1998.

"Independent safety and risk assessment for a proposed plutonium conversion facility in the Texas Panhandle," in Amarillo National Resource Center's "1998 Researchers' Conference Proceedings," pp. 93-96, 1998.

Hamilton, I.S., Charbeneau, R.J., Barnes, D.L., "Characterization of the risks associated with producing mixed-oxide fuel at Pantex." in "ANS Transactions," TANSO Vol. 78, pp. 201, 1998.

Hamilton, I.S., Emery, R.J., "The A&M – UT health protection engineering student pipeline: an assessment of the experience during the first two years," in Good Practices in Health Physics, G.R. Komp and M.A. Thompson editors, Medical Physics Publishing, pp. 113-120, 1998.

Hamilton, I.S., Thompson, J.M., Thompson, E.A., "A preliminary assessment of relative societal risk for missions proposed for the USDOE Pantex Plant." Draft report for the Amarillo National Resource Center for Plutonium (ANRCP); November 1997.

Hamilton, I.S., Cloud, M.A., Emery, R.J., Mullani, N., "A computer-based radiation safety records management system for positron-emission tomography dose calibrators." Rad. Saf. Off. 2(3): 32-37; June 1997.

Hamilton, I.S., Barnes, D.L., Charbeneau, R.J., "Screening level risk characterization for a plutonium conversion and mixed-oxide fuel facility at the Pantex Plant: I & II. Societal and Agricultural Impacts," in preparation for the Health Physics Journal.

Barnes, D.L., Hamilton, I.S., Charbeneau, R.J., "Screening level risk characterization for a plutonium conversion and mixed-oxide fuel facility at the Pantex Plant: III. Environmental Impact," in preparation for the Health Physics Journal.

Hamilton, I.S.; McLain, M.E.; Fulmer, P.C.; Poston, J.W.; Bolch, W.E., "A light-sensitive semiconductor-based detector for cellulose nitrate thickness measurements in LR-115 alpha track detectors," Nuclear Tracks and Measurements, under review.

Hamilton, I.S.; McLain, M.E.; Poston, J.W.; Bolch, W.E.; Fulmer, P.C., "A method for correcting LR-115 alpha-track detector calibration-factor errors caused by variations in cellulose nitrate emulsion thickness," Health Physics Journal, under review.

Hamilton, I.S.; Poston, J.W.; Bolch, W.E.; Fulmer, P.C.; "A spectrometer for producing real-time three-dimensional thermoluminescence glow curves," Review of Scientific Instruments, under review.

OUTSIDE LECTURING AND PROFESSIONAL WRITING

"Radiation: Quantities, Units, and Definitions for the Radiologic Technologist," invited lecture, Southwest Imaging Council (SWIC) Quarterly Meeting, Houston, TX, Sept. 08, 2005.

"Management of Terrorist Events Involving Radioactive Material," invited lecture, as visiting faculty, for the Harvard School of Public Health, Nuclear Emergency Planning Summer School, Cambridge, MA, August 10, 2005.

"Management of Terrorist Events Involving Radioactive Materials: a Perspective for the Radiology Department," invited lecture, Southwest Imaging Council (SWIC) Semi-Annual Meeting, Houston, TX, July 30, 2005.

"Management of Terrorist Events Involving Radioactive Material – Hospital Preparedness and Consequence Management," invited lecture for radiology (imaging) and emergency medicine departments, St. Luke's Episcopal Hospital, The Woodlands, TX, May 12, 2005.

"Management of Terrorist Events Involving Radioactive Materials: a Perspective for the Radiology Department," invited lecture, Radiological Society of North America (RSNA) Annual Meeting, Chicago, IL, November 29, 2004.

"Management of Terrorist Events Involving Radioactive Material," invited lecture, as visiting faculty, for the Harvard School of Public Health, Nuclear Emergency Planning Summer School, Cambridge, MA, August 11, 2004.

“An Overview of NCRP Report No. 138 on Terrorist Activities,” invited lecture, 2004 Summer School of the Health Physics Society – Public Protection from Nuclear, Chemical, and Biological Terrorism, National Institute of Standards and Technology (NIST), Gaithersburg, MD, July 06, 2004

“History and Introduction to Terrorism,” invited (lead-off) lecture, 2004 Summer School of the Health Physics Society – Public Protection from Nuclear, Chemical, and Biological Terrorism, National Institute of Standards and Technology (NIST), Gaithersburg, MD, July 06, 2004

“Management of Terrorist Events Involving Radioactive Material – Hospital Preparedness and Consequence Management,” invited lecture for radiology (imaging) and emergency medicine departments, Houston Northwest Medical Center, June 23, 2004.

“Measurement Implications of NCRP Report 138,” invited lecture, 2003 Annual Meeting of the Council on Ionizing Radiation Measurements and Standards (CIRMS), National Institute of Standards and Technology (NIST), Gaithersburg, MD, October 29, 2003

“Management of Terrorist Events Involving Radioactive Material,” invited lecture, as visiting faculty, for the Harvard School of Public Health, Nuclear Emergency Planning Summer School, Cambridge, MA, August 13, 2003.

“Emergency Planning for Terrorist Events Involving Radioactive Material,” invited lecture, MFG Inc, Radiation Safety Officer Summer School, Fort Collins, CO, May 16, 2003.

“Management of Terrorist Events Involving Radioactive Material,” invited lecture for the Waste Management and Homeland Security Session of the Waste Management '03 International Symposium, Tucson, AZ, February 26, 2003.

“Public Communication and Response Recommendations of NCRP Report 138,” invited lecture for “Materials and Methods for Informing the Public of Simple Protective Actions in Radiation Emergencies,” a one-day Homeland Security short course for Certified Health Physicists sponsored by the American Academy of Health Physics at the Health Physics Society Midyear Meeting in San Antonio, January 25, 2003.

“Potential for, and Emergency Planning for Terrorist Events Involving Sources of Radioactive Material,” invited lecture for Radiological and Medical Physics Society of New York (RAMPS), Department of Medical Physics, Memorial Sloan Kettering Cancer Center, Manhattan, NY, October 22, 2002.

“Health Physics Symposium on Management of Terrorism Involving Radioactivity,” invited lecture for a combined meeting of the New Jersey-, Greater New York-, and Baltimore-Washington Chapters of the Health Physics Society, Albany, NY, October 8, 2002.

“Emergency Planning for Terrorist Events Involving Radioactive Material,” invited lecture, as visiting faculty, for the Harvard School of Public Health, Emergency Response Summer School, Cambridge, MA, August 15, 2002.

“NCRP Report #138: Overview and Potential Impact on Nuclear Utility Emergency Planning,” invited lecture for the Nuclear Energy Institute meeting in Clearwater Beach, FL, July 15, 2002.

“Adapting NCRP Report #138 Recommendations to the Training of First Responders,” invited lecture for the HPS Annual Radiation Safety Conference and Exhibition, June 14-18, 2002.

“Teaching the teachers: a workshop on how to present HPS Science Teacher Workshops the South Texas Way,” presented by invitation to sixty health physicists at the 2001 Annual Meeting of the Canadian Radiation Protection Association, Halifax N.S., May 14th, 2001.

“Teaching the teachers: a workshop on how to present HPS Science Teacher Workshops the South Texas Way,” presented to sixty health physicists at the 44th Annual Radiation Safety Conference and Exposition, Denver, June 28th, 2000.

“Operational Thermoluminescence Dosimetry,” Health Phys. 78(5): 569-569, May 2000.

“Computer Applications in Health Physics,” article in the March 2000 issue of the Health Physics Society Newsletter.

“Prospects for Radiological Terrorism in the US,” presented at the Texas A&M University, Department of Nuclear Engineering graduate seminar, February 7th, 2000.

“*Your* Public Education Committee in the Year 2000,” article in the February 2000 issue of the Health Physics Society Newsletter.

“Thermoluminescence in the Third Dimension: From the Need for Imperfection to Useful Application,” presented at the Texas A&M University, Department of Nuclear Engineering graduate seminar, March 1st, 1999.

“Team assesses risks of proposed plutonium processing facilities at the Pantex Plant;” article in the October 1998 issue of the Health Physics Society Newsletter.

“Results of the on-going risk assessment for missions proposed by the USDOE for the Pantex Plant;” public address presented in Amarillo, TX, at the USDOE Public Hearing for comments concerning the Surplus Plutonium Disposition Environmental Impact Statement Preliminary Draft, August 11th, 1998.

“Global status of nuclear weapons;” lecture presented at the Annual Meeting of the South Texas Chapter of the Health Physics Society, May 2nd, 1998.

“Preliminary risk assessment for missions proposed by the USDOE for the Pantex Plant;”
lecture, presented to the Pantex Plant Citizen’s Advisory Board, January 27th, 1998.

“Preliminary risk assessment for missions proposed by the USDOE for the Pantex Plant;”
lecture presented at the capital building annex in Austin, followed by a press conference and
town hall meeting in Amarillo, the following day (11-12/13-1997).

SECURITY CLEARANCE

Department of Defense SECRET based on Entrance National Agency Check (ENTNAC),
May 1982 – November 1990.