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Summary: Dr. Karam is a nationally and internationally respected board-certified radiation safety professional with particular expertise in issues related to radiological terrorism, the safe use of radioactive materials, and practical aspects of managing radioactive materials programs. He has excellent written and verbal communications skills, and significant experience in communicating complex issues to the media and the general public. He is the author of over 20 peer-reviewed papers, three book chapters, and over 200 non-peer-reviewed technical presentations and publications. Other experience includes military radiation safety, radiation safety program management, and occasional work as a consultant to the International Atomic Energy Agency.

Education: Ph.D., Environmental Sciences, The Ohio State University, 2001
Dissertation topic: *Changes in Terrestrial Background Radiation Dose from Cosmic Sources during the History of Life on Earth*
M.S. Geological Sciences, The Ohio State University, 1998
Thesis topic: *The Evolution of Earth's Background Radiation Field over Geologic Time*
B.A. Geological Sciences, The Ohio State University, 1993
Naval Chemistry and Radiological Controls School, 1985
Naval Nuclear Power School, 1982

Experience: **MJW Corporation**, April 2006 – present; Senior Health Physicist; Supervisor, Scott Siebert. Responsibilities include conducting internal and external radiation dose reconstructions to determine the probability of causation of cancer under the Energy Employees Occupational Illness Compensation Program Act of 2000.

Rochester Institute of Technology, Sept 2003-March 2006); Research Assistant Professor; Supervisor, Douglas Merrill (Assistant Dean, College of Science) Responsibilities include teaching, health physics course development, health physics research program development. Current research interests include matters related to radiological and nuclear terrorism, radiation instrument development, and radiological emergency response procedure development and training for various audiences.

The University of Rochester, Radiation Safety Unit, July, 1998-August 2003; Radiation Safety Officer; Supervisor, Mr. Mark Cavanaugh (Director of Environmental Health and Safety). Responsibilities include supervision and administration of a broad-scope license for a major research university and medical center. Supervise and direct a staff of seven in their daily duties. Interact with regulators as well as with users of radioactive materials on a routine basis. Develop and implement radiation safety standards and policies for the medical and research community. Adjunct faculty member, University of Rochester School of Medicine (courses taught are listed below). Specific accomplishments include:

- Completely rewrote radiation safety manual and radiation safety training manual
- Renewal of broad-scope radioactive materials license for 10 years
- Periodic audits of radiation safety practices campus-wide, with particular attention to medical programs, radiation-generating devices such as irradiators and linear accelerators, and the Laboratory for Laser Energetics laser fusion facility
- Revamped LLRW program to come into compliance with good operating practices
- Reduced LLRW disposal costs by 90% in three years
- Revised radiation dosimetry program, resulting in annual savings of over \$50,000

- Instituted total programmatic change in laboratory inspection and survey program to optimize use of existing staff and reduce regulatory violations (non-compliance rate reduced from over 70% to about 10%)
- Instituted completely new budgeting and fee recovery system to increase equity among different categories of users
- Teach School of Medicine and Dentistry and Earth and Environmental Sciences classes

The Ohio State University Office of Radiation Safety, September, 1996-June, 1998; Supervisor, Mr. Robert Peterson (RSO). Responsibilities include oversight of OSU Nuclear Reactor Laboratory, Special Nuclear Materials accountability, computer system administration, training, and procedure development. Past job responsibilities include LLRW program management and radioactive sealed source program administration. Helped to rebuild program after several consecutive poor inspections and violations. Instrumental in helping to correct many regulatory violations and in establishing long-term corrective actions. Assisting University with managing the change in regulators from Federal to State of Ohio. Assist University in providing “talking points” regarding pending legislation. Awarded Quality Peak Team Award for high job performance, beyond normal requirements and expectations. Other special achievements include:

LLRW: Directly responsible for completely restructuring the university LLRW program to address NRC violations and concerns. Established program to implement short- and long-term corrective actions. Developed and implemented new procedures and other administrative tools to ensure continued maintenance of a high-quality program. Presented paper on this program at 1998 HPS Mid-Year meeting (February, 1998).

Environmental Health Physics: Instrumental in the release of two legacy LLRW burial sites located on University land. Supervised invasive and non-invasive sampling and conducted innovative historical records review to support OSU request to release sites for unrestricted use. Developed long-term site environmental monitoring plans. Performed and directed site modeling using NRC screening tools, RESRAD, and GENII to support NRC acceptance of request. Saved University over \$1 million in clean-up costs.

Computer Network Administration: Assumed responsibility for administering a computer network containing two servers and over 20 workstations. Planned, supervised, and directed complete overhaul of office computer systems, including new HP administration software, new operating system, and new network server. Developed long-term computer plan and budget for the Environmental Health and Safety Program.

Training: Taught monthly radiation worker refresher training. Developed lesson plan for nearly two thirds of this course. Currently redesigning radiation worker training program to focus on practical versus administrative topics. Develop and provide training for various university programs, including guest lectures for various classes. Instituted “brown-bag” series of lunch-time seminars on various aspects of Health Physics for Radiation Safety staff to increase awareness of overall field of Health Physics. Instructor for Nuclear Engineering class NE 880.5 (Advanced Topics in Radiation Effects).

Nuclear Reactor Laboratory: Assumed complete authority over health physics programs at OSU research reactor (0.5 MW, 20% enrichment). Responsibilities include regulatory compliance audits, procedural review, periodic inspections, and representing University Management at Reactor Operations Committee meetings. Review all Operating Procedures for compliance with conditions of NRC license and good operating practices. Developing long-term plan to insure continued compliance.

Other: Initiated and administer e-mail group for the dissemination of information among academic and medical RSOs worldwide. Initiated comprehensive study of health physics administrative programs in order to develop more efficient, more accurate, and less repetitive administrative systems and procedures. Responsible for complete overhaul of radioactive sealed source accountability program to achieve regulatory compliance.

Private consulting, 1995 to present: Provide independent consulting services in the areas of regulatory compliance, health and safety assessments, and environmental transport of radioactive materials. Projects include:

- Expert witness, British Dental Council, risks from panoramic x-ray examinations (2007)
- Performed site environmental assessment prior to close-out of a thorium-contaminated site (Bausch & Lomb, 2006-2007)
- Conducted radiological terrorism training for the Canadian Army at the Defense Research and Development Centre, Suffield
- Conducted radiological terrorism training for the Panama Canal Authority
- Provided expert testimony regarding a potentially-leaking hazardous waste site,
- Designed and conducted radiological assessment surveys for 2 Bausch and Lomb facilities
- Developed radiological terrorism fact sheet sets for New York City Department of Health
- Developed radiological terrorism primer for medical professionals for NYC DOH
- Developed radiological health and safety plan for NYC DOH
- Provided radiological emergency response training to the Rochester Fire Department
- Provided expert testimony in a radiation injury case
- Reviewed anomalously high radiation levels in a major hospital, performed regulatory analysis and recommended corrective actions
- Risk, disposal, dose, and regulatory assessments for mineral processing site containing several million cubic feet of NORM-contaminated waste
- Developed procedures for environmental work at department of energy facilities,
- Performed dose and risk assessment for personnel working with thorium compounds.
- Assisted a medical research and an environmental remediation firm with license applications and radiation safety program development.
- Health physics consultation for a major radiopharmaceutical manufacturer
- Providing health physics support services for local colleges and hospitals.

R&R International, Inc., 1993-1995; Supervisor, Mr. Samuel Reed: As the first health physicist to be employed by R&R, built a Radiological Services Program with 11 members in just 2 years. Developed successful long-term marketing and business development plan. Worked as project manager, health physicist, and hydrogeologist on several projects. Projects and responsibilities include the following (additional information about these projects omitted for brevity but available on request except for those projects for which client confidentiality has been requested):

- Ottawa, Illinois Radiation Sites, Project Manager
- NASA Lewis Research Center RI/FS, Task Manager, Radiological Survey
- Paducah Gaseous Diffusion Plant Northwest Plume Remediation Project, Field Hydrogeologist
- Portsmouth Gaseous Diffusion Plant, Technical and Regulatory Support Advisor during 2-year transition from U.S. Department of Energy to private corporation
- Portsmouth Gaseous Diffusion Plant, Nuclear Criticality Safety Program Reviewer
- Aberdeen Proving Grounds, Project Manager
- Ridge Tool Company, Project Manager

Ohio Department of Health (ODH), 1991-1993, Health Physicist; Supervisor, Robert Owen: Represented the State of Ohio during investigation and remediation of radioactively-contaminated sites. Reviewed licensee-submitted documents for technical, regulatory, and scientific accuracy and suitability. Attended public meetings as Department of Health representative. Assisted with negotiating mutually-acceptable remediation solutions between concerned citizens, regulators, and responsible parties. Acted as liaison between State of Ohio and various federal agencies, including the US EPA and Department of Energy. Initiated outreach program to a variety of citizens groups, acting as liaison between the general public and various state and federal agencies. Other projects and responsibilities included (project details have been omitted for brevity and are available upon request):

- DOE site document review (including environmental monitoring reports, remediation plans, and site characterization reports)
- Commercial nuclear reactor emergency response
- Provided training for members of ODH and Ohio EPA as necessary (wrote 70-page training manual and developed eight-hour training course)

U.S. Navy, Naval Nuclear Power Program, various commands and supervisors, 1981-1989 (Naval Reserves 1989-1994): Received over two years of intensive training in all aspects of naval nuclear reactor plant theory, design, and operation. Served over two years as staff instructor at nuclear reactor prototype training unit (offered to the top 2% of each graduating class). Assisted in performance of high- and low-power physics testing, primary and secondary plant maintenance and testing, and operational radiological and radiochemical controls. Served over three years on fast attack submarine (USS Plunger, SSN 595) supervisor of Reactor Laboratories Division. Specific accomplishments include:

- Qualified as Engineering Watch Supervisor (operating) and Engineering Duty Petty Officer (shut down), the senior-most enlisted engineering watches. Qualifications required comprehensive knowledge of reactor plant mechanical, electrical, and electronic systems; operating procedures; and emergency response. Supervised and directed engineering watch section (operating) or duty section (shut down) activities.
- Qualified as Chief of the Watch (at sea) and Duty Chief Petty Officer (in port), the senior-most enlisted non-nuclear watches; the only enlisted man in the Pacific Fleet to qualify both nuclear and non-nuclear senior-most watch stations.
- Stood supervisory watch during submarine and nuclear power plant de-fueling and decommissioning. Supervised and directed efforts of up to 75 people during preparations for reactor fuel removal operations. Assisted with planning division activities during transition from power operations to decommissioning. Maintained perfect record of no reportable incidents while standing supervisory watches.
- Directed operations of Reactor Laboratories Division, including daily planning and preparation for extended operations. Helped to restore division morale and harmony that had vanished under predecessor. Developed and implemented plans to achieve and maintain complete compliance with all Naval Reactors operational requirements.
- Participated in three Reactor Safeguards Examinations with a grade of Excellent
- Awarded Navy Achievement Medal and two letters of commendation for leadership, technical excellence, and sustained high personal achievement
- Developed comprehensive ship's plan for reactor / radiological emergency response
- Authorized to wear two Battle Excellence awards, the Naval Unit Commendation, the Meritorious Unit Commendation, the Expeditionary Award, and other decorations
- Ship's periscope photographer, photographic, and computer systems petty officer

- Chief Petty Officer in charge of classroom training program, Naval Reserve Center, Columbus, Ohio; developed and directed long-term training plan for over 400 personnel as the youngest CPO in five-state Reserves Regional command.

Specific experience: Radiological Terrorism

- Radiological terrorism response document development for New York City
- Radiological Emergency Response training to Rochester Fire Department, Monroe County Hazardous Materials Response Team, and Rochester Bomb Squad
- Radiological Emergency Response training presented to Canadian Army, DRDC Medicine Hat, Alberta
- HPS Board of Directors Liaison to Ad Hoc Committee on Homeland Security
- Charter member of HPS Ad Hoc Committee on Homeland Security (Public Education)
- Helped develop public education pamphlet, describing actions to take in event of RDD attack
- Authored several papers and book chapters on various aspects of radiological terrorism
- Co-authored paper on radiological terrorism for American Journal of Nursing
- Helped lead discussion among NY City emergency response personnel on practical matters pertaining to RDD attack
- Taught 3-day radiological terrorism short course for radiation safety professionals
- Frequently consulted by various media outlets for background information or interviews on radiological and nuclear terrorism
- Conducted radiological materials security review for Cyprus, Uruguay, and Cambodia
- Over 20 presentations on aspects of radiological terrorism to various civic and professional organizations

Specific experience: International health physics

- Natural Radiation Environment Association, Secretary-General (2006 – present)
- **Panama** Canal Authority, Special training on radiological safety (July 2006)
- IAEA Radiation Safety Infrastructure Assessment mission to **Cambodia** (August, 2004)
- IAEA mission to **Uruguay** National Strategies for radioactive materials security (May, 2004)
- International Radiation Protection Association (IRPA) Nominations Committee (2004-2008)
- **Panama** Canal Authority, Special training on radiation instrument use for detecting radioactive contraband on ships (Sept. 2003)
- IAEA Peer Review Mission to the Republic of **Cyprus** for Radiation Safety Regulatory Infrastructure Services (May, 2003)
- Member, OECD Task Group on Recycled Radioactive Materials
- Peer review visit to **Lithuania** to review national health physics regulations and practices
- Radiation Safety Without Borders charter member (and HPS WNY Chapter point of contact)
- Co-author, RSWB Guidance Manual (with Eric Abelquist and Howard Dickson)
- Paper and poster presentations in Europe, Asia, Latin America, and the Middle East

Media Experience

TV

- Fox News, Hazards from WiFi Networks? (April 2007)
- CNN – Paula Zahn Now, polonium poisoning (December, 2006)
- Nuclear Nightmares (BBC, 2006)
- History Channel, Modern Marvels – Submarine Disasters (2004)
- Dirty Bomb (Nova, 2003)
- Radioactive materials security (ABC Sciencentral, 2003)
- Radioactive materials security (NBC Nightly News, 2003)
- Effects of nuclear war in Asia (ABC Sciencentral, 2002)
- CSI (consulted for information about radiation effects for possible show – 2004)

Various local news spots, Rochester and Buffalo (2001-present)
Provided background information for CNN, Good Morning America, and others (2000 – present)

Radio

People of the Abyss, (1/2 hour, BBC Radio Four, March 2006)
National Public Radio, 2-hour seminar on radiological and nuclear terrorism (June 2005)
The Future of Nuclear Energy (1 hr, WXXI 1370 Connection, 2005)
Nuclear proliferation and terrorism (1 hr, WXXI 1370 Connection, 2004)
Dirty bombs (1 hr, WXXI 1370 Connection, 2002)
Radiological terrorism (45 min, NPR, Talk of the Nation, June 2002)
Radiological effects of the Kursk's sinking (30 min, WNYC, December 2000)
Various short interviews for NPR (1999 – present)
Various local spots, Rochester, Buffalo, Seattle, Dallas, etc. (2000 – present)

Press Interviews have occurred regularly from 1999 until the present on topics including radiological and nuclear terrorism, nuclear proliferation, radiation health effects, specific radiological incidents and accidents (e.g. the Tokaimura nuclear criticality accident), food and mail irradiation, and similar topics. A variety of interviews for printed articles have appeared in the following publications:

- New York Times
- Newsday
- Chicago Tribune
- LA Times
- Washington Post
- USA Today (including on-line chat about radiological terrorism)
- Wall Street Journal
- South Asia Times
- Smithsonian Magazine
- UPI wire reports
- Reuters wire reports
- BBC

Other professional activities and recognition

- **National Academy of Sciences**, Report on DU health effects, committee member
- **National Academy of Sciences**, Report on use of KI in event of nuclear emergency, reviewer
- **National Council on Radiation Protection and Measurements**, Science Committee 4-1 (Management of Persons Contaminated with Radionuclides)
- **National Council on Radiation Protection and Measurements**, Science Committee 4-2 (Rapid Assessment and Decontamination of Large Numbers of Persons with Internal Radioactivity)
- **Health Physics Society** ad hoc Committee on Media Relations (Chair), 2004-2005
- **American Council of Science and Health**, Board of Scientific Advisors (2002 – present)
- Associate HPS Web Page Editor (2001 – present)
- **Health Physics Society**, Board of Directors, Director for External Education, 2002-2005
- Member, OECD/NEA Task Force on Recycling and Reuse of Radioactive Materials
- Host country (Lithuania) liaison, Radiation Safety Without Borders program, 2001 – present
- Board of Directors, HPS RSO Section, 2001-2004
- Elda Anderson Award nominee, 2000 and 2001
- Founded the Academic and Medical Radiation Safety Officer electronic list server
- American Institute of Physics Writing Award to a Scientist Committee (2001 – present)

- Editor, Health Physics Society Medical Section electronic newsletter, 1999-2002
- Associate editor, Health Physics Society Newsletter
- Associate editor, Strahlenschutz Praxis
- American Institute of Physics-recommended point of contact for media questions regarding nuclear or radiation safety related issues
- American Board of Health Physics, member of Part II Panel of Examiners (1998-2002)
- Member, Peer Advisory Panel, Ohio Low-Level Radioactive Waste Facility Development Authority (OLLRWFDA), 1995-1997
- Nominee, OLLRWFDA Board of Directors, 1996

Professional Affiliations

- Health Physics Society, Plenary member, member of Medical and RSO sections
- West NY Chapter, HPS, Past President
- American Board of Health Physics, Diplomate
- Radiation Research Society, Member
- Geological Society of America, Member
- Risk Assessment and Policy Organization, Member
- American Nuclear Society, Member
- American Association of Physicists in Medicine
- American Association for the Advancement of Science, Member
- Ohio Radioactive Materials Users Group, former Chair, Governmental Affairs

Training and Certifications

- Dose Reconstructor training, ORAU Team (2006)
- Certified Medical Physicist (Medical Health Physics, License #100), State of NY (2004)
- Certified Radiation Equipment Safety Officer, State of NY (2001)
- Comprehensive certification, American Board of Health Physics (1995, 1999, 2003)
- Troxler Nuclear Gauge Operator's Training (1997)
- OSU 40-hour Continuous Quality Improvement training (1997)
- OSHA 40-hour Hazardous Materials Operator and refresher (1994, 1995, 1996)
- Naval CPO Total Quality Leadership and Management training (1994)
- OSHA Hazardous Materials Supervisor (1994)
- Nuclear Criticality Safety, R.A. Knief (1993)
- Risk Assessment and Dose Reconstruction, Radiological Assessments Corp. (1992)
- Naval Nuclear Power Program Quality Assurance Inspector (1984, 1989)
- Naval Nuclear Power training (1981-1983)

Teaching

- Classes
 - Radiation Physics, Rochester Institute of Technology
 - Environmental Decisions, Earth and Environmental Sciences Department, UR
 - Molecules to Cells and Host Defense, School of Medicine and Dentistry, UR
 - Introduction to Health Physics, Environmental Medicine Department, UR School of Medicine and Dentistry
 - Current issues in Radiation Safety, Nuclear Engineering Department, The Ohio State University
- Student interns:
 - Jennifer Guido, Earth and Environmental Sciences, Undergraduate intern, 1999
 - Curtis Everard, Biomedical Engineering, Undergraduate intern, Autumn, 1999
 - Lisa Brace, Earth Sciences, Undergraduate intern, Summer, 2000

- Abe Fetterman, Minerva High School, summer research intern, Summer, 1999
- Kelly O'Brien, Minerva High School, summer research intern, Summer, 1999
- Master's examination committee member:
 - Martha Raj, 2005
 - Darlene Ace, 2000
 - Jack Mekeel, 2000 (Committee chair)
 - Alicia Welsh, 2000 (Committee chair)
 - Nicholas Harding, 1999
 - Edward Casey, 1998 (Committee chair)

Publications and Presentations

Books and Encyclopedia Articles

1. *Controversies in Science*, contract signed for a series of 8 books that will be published by Facts on File in 2008, 2009, and 2010. Books will cover 6 controversial areas in Biology, Physics, Astronomy, Chemistry, Forensic Science, Earth Science, Atmospheric Science, and Marine Science
2. *Radioactivity* (with Ben Stein). Chelsea House (contract signed, writing in progress, publication expected in 2008)
3. *Planetary Motion* (with Ben Stein). Chelsea House (contract signed, writing in progress, publication expected in 2008)
4. *Radical Radiation: Life in the Atomic Age* (with Ben Stein). Steck Vaughn, 2007
5. *Rig Ship for Ultra Quiet: Life on a nuclear attack submarine during the Cold War*, Sid Harta Publishers, Melbourne, Australia; 2002
6. *Science and its Times* (Gale Publishing Group), author of over 200 bylined articles, and over 500 biographical mentions for a seven volume, award-winning series on the interactions of science and society over human history.
7. *Proceedings of the 1997 Big 10 RSO Meeting*, volume editor

Book chapters and technical documents

8. *Managing a Medical Radiation Safety Program*, in Medical Health Physics, Health Physics Society Summer School, 2006
9. *Radiological Health and Safety Plan*, prepared for the New York City Department of Health and Mental Hygiene, 2005
10. *Radiological Fact Sheets for the General Public, Emergency Responders, and Medical Personnel*, prepared for the New York City Department of Health and Mental Hygiene, 2005
11. *Radiation Primer for Medical Personnel*, prepared for the New York City Department of Health and Mental Hygiene, 2005
12. *Radiological Incidents and Emergencies*, in Disaster Nursing, Veenema, TG (ed), Springer Publishing, 2003 (second edition in preparation for publication in 2007)

13. *Communicating with the Public and the Media*, in Public Protection from Nuclear, Chemical, and Biological Terrorism, Brodsky A, Johnson, RH, Goans, RE (eds); Medical Physics Publishing, 2004
14. *Radioactive Materials Security*, in University Health Physics; Health Physics Society Summer School; 2003
15. *Radiological Incidents and Emergencies*, in Disaster Planning and Emergency Preparedness for Hospitals and Other Health & Human Service Organizations, Veenema, TG (ed), Springer Publishing, 2007 (in preparation)

Peer reviewed Publications; published and in preparation

16. *Changes in rates of DNA damage over the history of life* (with Steven Leslie, in preparation)
17. *K-40 Radiation Levels through Time: Effects on Rates of Evolution* (with Steven Leslie, in preparation)
18. **Karam, P.A.**, *Thinking about Covert Radiological Terrorism and its Effects*. Failsafe: The Electronic Journal Of The Forum For Environmental Law, Science, Engineering And Finance Winter 2006
19. **Karam, P.A.**, *Thinking about Thermonuclear Terrorism and its Effects*. Failsafe: The Electronic Journal Of The Forum For Environmental Law, Science, Engineering And Finance Spring 2006 (<http://www.felsef.org/spring06.htm>)
20. **Karam P.A.**, *Thinking about Nuclear Terrorism and its Effects*. Failsafe: The Electronic Journal Of The Forum For Environmental Law, Science, Engineering And Finance Winter 2005 (<http://www.felsef.org/winter05.htm>)
21. **Karam P.A.**, *Thinking about Radiological Terrorism and its Effects*. Failsafe: The Electronic Journal Of The Forum For Environmental Law, Science, Engineering And Finance Autumn 2005 (<http://www.felsef.org/fall05.htm>)
22. **Karam, P.A.**, *Low-dose radiation effects*, invited review paper for the American Council on Science and Health, 2005
23. **Karam, P.A.**, *Radiological Terrorism*, Human and Ecological Risk Assessment vol 11(3):501-524
24. **Karam, P.A.**, *Radioactive Materials Security in a Research and Medical Environment*, in *University Health Physics*, Papin, P. and Belanger, R., eds., Chapter 16. Medical Physics Publishing, Madison WI, 2003
25. **P. Andrew Karam** and Tener Goodwin Veenema, *Clinical Response to Radiological Incidents and Emergencies*, American Journal of Nursing 103(5):32-40. 2003
26. **Karam, PA.** *Inconstant Sun: How solar evolution has affected cosmic and ultraviolet radiation exposure over the history of life on earth*, Health Physics 84(3):322-333; 2003
27. **Karam, P.A.**, *Introduction and Special Editor*, Special Edition of the Franklin Pierce Law Review devoted to policy implications of resolving the LNT controversy, 1(1/2): 1-4. 2002
28. **Karam, PA.** *Gamma radiation dose from supernova-produced radionuclides* Radiation Physics and Chemistry 64:77-87. 2002

29. M. Ghiassi-nejad, S. M. J. Mortazavi, J. R. Cameron, A. Niroomand-rad, **P.A. Karam** *How should governments address high levels of natural radiation and radon? Lessons from the Chernobyl nuclear accident and Ramsar, Iran.* Risk: Health, Safety, and Environment 2002
30. **Karam, PA.** *Gamma and neutrino radiation dose from gamma ray bursts and nearby supernovae,* Health Physics 82(4):491-499. 2002
31. **Karam, PA** and Pien, G; *Radiation Safety at the University of Rochester's Laser Fusion Research Facility,* Operational Radiation Safety 81(S2):S90-S98 2001
32. M. Ghiassi-nejad, S. M. J. Mortazavi, J. R. Cameron, A. Niroomand-rad, **P.A. Karam,** *Very High Background Radiation Areas of Ramsar, Iran: Preliminary Biological Studies and Possible Implications,* Health Physics 82(1):87-93 2002
33. **Karam, PA;** Leslie, SA; Anbar, A. *Effects of changing atmospheric oxygen levels on radiogenic mutation rates over the history of life on Earth,* Health Physics 81(5):545-553 2001
34. **Karam, PA;** Barlow, A. *Radiation safety practices in large, open-architecture laboratories,* Operational Radiation Safety 81:S18-S20, 2001
35. **Karam, PA.** *Conducting an environmental site assessment at the University of Rochester: An overview and lessons learned* Operational Radiation Safety 81:S36-S43, 2001
36. Rich, T; **Karam, PA.** *University of Rochester Laboratory Inspection Checklist,* Operational Radiation Safety 81:S13-S14, 2001
37. **Karam, PA.** *Methods for calculating fetal dose from diagnostic medical procedures: A summary of resources and techniques from existing literature.* Operational Radiation Safety, 79(5):S85-90 2000
38. **Karam, PA.** *Apparent tritium uptake by a worker at the University of Rochester's Laboratory for Laser Energetics,* Operational Radiation Safety, 78(5):S59-S61, 2000
39. **Karam, PA;** Leslie, SA. *Calculations of background beta-gamma radiation dose through geologic time (with Steven Leslie),* Health Physics 77(6):662-667, 1999

Conference Presentations and Proceedings

40. *Radiation Safety in Lithuania: A Quasi-RSWB trip;* Health Physics Society Annual Meeting, Washington DC, July, 2004
41. *An update on radiological and nuclear terrorism;* Panasonic Users' Group meeting, Big Sky Montana, July 2004
42. *The Health Physics Society Web Site; Suggestions for Developing Nations;* International Radiation Protection Association 11th Congress, Madrid Spain, May 2004
43. *An Overview of US Radiation Safety Programs and the Radiation Safety Without Borders Initiative;* presented to the Lithuanian Radiation Protection Center, October 2002, Vilnius, Lithuania

44. *Dose-Response Relationship: Chromosome Aberrations in Residents at the High Background Radiation Areas in Ramsar, Iran*, (with Javad Mortazavi), International Conference on Non-Linear Relationships in Biology, Toxicology, and Medicine, Amherst MA, June 2002
45. *Preparation of a Concise Pamphlet for Citizen Education and Fear Prevention*, Audeen Fentiman and Andrew Karam, Annual Meeting of the Health Physics Society, Tampa FL, June 2002
46. *Radiological Terrorism: Concerns and Instrumentation Needs*, MGP Users' Group Symposium on Radiation Safety and Instrumentation, Clearwater FL, June 2002
47. *Changes in terrestrial natural radiation levels over the history of life on Earth*, Natural Radiation Environment VII Meeting, Rhodes Greece, May 2002
48. *Apparent lack of radiation susceptibility among residents of the high background radiation area in Ramsar, Iran: Can we relax our standards?* (with Javad Mortazavi), Natural Radiation Environment VII Meeting, Rhodes Greece, May 2002
49. *The High Background Radiation Area in Ramsar, Iran: Geology, Biology, LNT, and Possible Regulatory Fun*, 2002 Waste Management Conference, Tucson AZ, Feb 2002
50. *How NOT to Manage a TENORM-Contaminated Site: A Case Study*, 2002 Waste Management Conference, Tucson AZ, Feb 2002
51. *The effects of changing atmospheric oxygen concentrations and background radiation levels on radiogenic DNA damage rates through geologic time*, 2001 Annual Meeting of the Geological Society of America, Boston MA, November 2001 (with Steven Leslie)
52. *Changes in environmental mutagens from 4 ga until the present*, 2001 Annual Meeting of the Geological Society of America, Boston MA, November 2001 (with Steven Leslie)
53. *ICRP Evolutionary Recommendations and the Reluctance of the Members of the Public to Carry out Remedial Work against Radon in some High Level Natural Radiation Areas*, International Symposium on Radiation and Homeostasis, Kyoto Japan, July 2001 (with Javad Mortazavi)
54. *The Very High Background Radiation Area in Ramsar, Iran: Public Health Risk or Signal for a Regulatory Paradigm Shift?* Values in Decisions on Risk (VALDOR) Conference, Stockholm, Sweden, June 2001 (with Javad Mortazavi)
55. *What winds a molecular clock? An examination of some confounding factors*; North American Paleontological Congress, Berkeley CA, June 2001 (with Stephen Leslie)
56. *ICRP Radiation Remedial Limits are not appropriate in High Level Natural Radiation Areas*, with S. M. J. Mortazavi, M. Ghiassi-nejad ,P.A. Karam, T. Ikushima, J. R. Cameron, A. Niroomand-rad, International Symposium on Radiation and Homeostasis, Kyoto Japan, July, 2001
57. *The Effects of Changing Oxygen Levels on Radiogenic Mutation Rates Over Geologic Time*, with Stephen Leslie and Ariel Anbar, HPS Annual Meeting, Denver, CO, June, 2000
58. *Calculations of gamma radiation exposure from supernovae and gamma ray bursts*, IRPA 10 Congress, Hiroshima, Japan, May, 2000

59. *Radiation safety at the University of Rochester's laser fusion research facility* (with Greg Pien), IRPA 10 Congress, Hiroshima, Japan, May, 2000
60. *To remediate or not: A case study of Co-60 contamination at the Southerly Waste Water Treatment Plant, Cleveland, Ohio, USA*, Values in Decisions on Risk (VALDOR) Conference, Stockholm, Sweden, June 1999
61. *Alternate Methods for Obtaining Information for the Release of Legacy LLRW Burial Sites*, oral presentation at 1997 Big 10 RSO meeting (published in meeting Proceedings)
62. *Restructuring a Troubled Radioactive Waste Program at the Ohio State University*, oral presentation at 1998 Health Physics Society mid-year meeting (published in meeting Proceedings)
63. *Is this Remediation Necessary? Comparing Cost versus Risk Abatement with other Risk Reduction Measures*, poster presentation at 1996 IRPA Congress, Vienna, Austria
64. *The Evolution of Earth's Background Radiation Level over Time* (with Steven Leslie), poster presentation at 1996 IRPA Congress, Vienna, Austria
65. *Use of a Single-Channel Analyzer and Sodium Iodide Detector to Resolve Quantification Difficulties during Remediation of a Radium-Contaminated Site* (with Arthur Lucas and Walter Carey), poster presentation at 1996 IRPA Congress
66. *Is Potassium the Spring for the Molecular Clock?* (with Steven Leslie), poster presentation at 1996 Geological Society of America meeting
67. *Interactions between Uranium Oxides and the Clay Minerals*, oral presentation at 1995 Ohio Academy of Science meeting
68. *An Examination of Risk Reduction in Environmental Restoration Projects: Is this Remediation Necessary?*, poster and oral presentation at 1995 Federal Environmental Restoration Conference
69. *A Comparison of Chemical and Radiological Toxicities of the Actinide Elements*, oral presentation at 1993 Superfund 14 Conference and Exhibition
70. *Interactions between Uranium Oxides and the Clay Minerals*, poster presentation at 1993 Superfund 14 Conference and Exhibition
71. *A Comparison of the Radiological and Non-Radiological Risks Associated with the Actinide Elements*, poster presentation at 1992 Health Physics Society meeting
72. *Local versus Global Properties of Nuclear Starburst Galaxies* (with Richard Pogge), poster presentation at 1991 American Astronomical Society meeting

Invited Papers, Lectures and Presentations

73. *Radiation biology for astrophysicists: Radiation and life in the universe*. American Astronomical Society Annual Meeting, May 2007
74. *The NCRP and Terrorism: A Sneak Peak of Upcoming Reports*. University of Rochester Radiation Oncology Seminar Series, May 2007

75. *The effects of supernova radiation on terrestrial life, and on life in space.* Supernova 1987a: 20 Years After. January 2007
76. *X-ray and mammography risks to patients and staff.* Rochester Mammography Association, Continuing Education lecture series, April, 2005
77. *Responding to radiological incidents and emergencies: Guidance for emergency response and medical personnel.* Champlain Valley Physicians Hospital seminar series, Plattsburgh NY, March 2005
78. *International Health Physics*; presented to the Baltimore/Washington Chapter of the Health Physics Society, January 2005
79. *Managing Academic Radiation Safety Programs*, Continuing Education Lecture, Health Physics Society Annual Meeting, Washington DC, July 2004
80. *Fun Radiation Safety Stuff, Inside and Outside the Operating Room*, American Society of Radiologic Technologists Annual Meeting, Dallas TX, July, 2004
81. *Medical response to radiological incidents and emergencies*, American Society of Radiologic Technologists Annual Meeting, Dallas TX, July 2004
82. *The biological effects of medical radiation exposure*, American Society of Radiologic Technologists (ASRT) annual meeting, Las Vegas NV, June, 2003
83. *Homeland Security: Radiological Problems and Possible Solutions*; Panasonic TLD 2003 Symposium, Couer d'Alene ID; June 2003
84. *Radioactive Materials Security in a Research and Medical Environment*, HPS Summer School, San Diego, CA, July 2003
85. *Communicating with the Media and the Public*, part of AAHP Continuing Education Course, HPS Midyear Topical Meeting on Radiological Terrorism, San Antonio TX, January 2003
86. *Medical Health Physics Programs in the US*, presented to the Kaunas University Medical Hospital, Kaunas, Lithuania; October 2002
87. *Earth's natural background radiation field through time*, presented at the Lithuanian Institute of Physics, Vilnius, Lithuania; October, 2002
88. *The Oklo Natural Nuclear Reactor*, HPS Annual Meeting CEL M-1, Tampa FL, June 2002
89. *Changes in rates of DNA damage through time*, HPS Meeting, PEP W-3, Cleveland OH, June, 2001
90. *The Very High Background Radiation Area in Ramsar, Iran: Geology, Epidemiology, and Policy*; HPS Annual Meeting CEL-2, Cleveland Ohio, June, 2001
91. *Ramsar, Iran: Geology, geochemistry, radiation biology, and policy issues*, Ohio State University Department of Geological Sciences colloquium series, May, 2001

92. *Radiation safety practices aboard naval nuclear vessels*, NMSRT annual meeting, Albuquerque NM, April, 2001
93. *Radiological implications of the sinking of the Russian submarine, Kursk*, NMSRT annual meeting, Albuquerque NM, April, 2001
94. *Implications of changing radiation levels through geologic time*, NMSRT annual meeting, Albuquerque NM, April, 2001
95. *Radiation Exposure from High- and Low-Energy Cosmic Sources*, HPS Midyear Meeting, Anaheim, January, 2001
96. *The radio-biological effects of changes in terrestrial background radiation and oxygen levels through geologic time*, Invited Plenary Speaker at the International Conference on Radiation and its Role in Diagnosis and Treatment; Tehran, Iran; October, 2000
97. *Calculating and Reporting Fetal Radiation Exposure from Diagnostic Medical Procedures*, Annual Meeting of the Health Physics Society, Denver, June, 2000 (presented again in June, 2001)
98. *Back to Nature: Sources of NORM*, Annual Meeting of the Health Physics Society, Denver, June, 2000 (presented again in June, 2001)
99. *Paleo-Health Physics: Changes in Earth's Radiation Environment over Geologic Time*, Annual Meeting of the Health Physics Society, Denver, June, 2000 and HPS Midyear Meeting, Anaheim, January, 2001
100. *Four Billion Years of Natural Radiation*; Strahlenschutz Praxis; Issue 4/98, pp 30-33 (reprinted in the SSI Newsletter (Sweden) and the Newsletter of the Dutch Public Health Council, 1998)

Low-Level Radioactive Waste Fact Sheets

This series of 39 fact sheets was published by the Ohio State University Extension and are available at WWW address <http://www.ag.ohio-state.edu/~rer/>. The nine fact sheets listed were co-authored with Audeen Fentiman and Ronald Meyers.

101. RER 14: Low-Level Radioactive Waste from Decontamination and Decommissioning of Facilities That Use Radioactive Materials
102. RER 32: How does geology affect the disposal of Low Level Radioactive Waste?
103. RER 33: How does hydrogeology affect the disposal of Low Level Radioactive Waste?
104. RER 48: What are the Waste Acceptance Criteria for Ohio's Low-Level Radioactive Waste Disposal Facility?
105. RER 49: Answers to Some Common Questions about the Transportation of Low-Level Radioactive Waste
106. RER 50: What Is Being Done to Reduce the Volume of Low-Level Radioactive Waste?
107. RER 68: What Is Contained in the Midwest Compact Agreement?
108. RER 69: What Is the Ohio Low-Level Radioactive Waste Facility Development Authority?
109. RER 71: What Is an NRC Agreement State?

Non-peer reviewed technical publications

110. *Nuclear Energy*, Encyclopedia of Life Support Systems, chapter in volume on energy, to be published by EOLSS Publishers Co. Ltd for the United Nations
111. *Responding to Radiological Incidents and Emergencies*, AIHA Synergist (2003)
112. *Health and Reproductive Effects of Ionizing Radiation Exposure*, AIHA Synergist, February 2003, pp 31-34
113. *Radiation Safety for Small Licensees*, AIHA Synergist, March 2002, pp 25-28
114. *Waste Management by a One-Man Band: Managing a University and Medical LLRW Program*, Radwaste Magazine, March/April 2000

Short courses

1. Radiation Safety Officer (offered twice annually)
2. Radiological Emergency Response for Emergency Responders (offered on request)
3. Radiation Safety Officer Refresher (offered twice annually)
4. Radiation Detection Instrumentation and Instrument Calibration (offered 1-3 times annually)
5. Radiological Terrorism (offered twice annually)
6. Radiation Safety with Neutron Sources (offered on request)

American Society of Radiologic Technologists-certified continuing education lectures (taped for Oakstone Medical Publishing)

1. Medical organizations' response to radiological terrorism
2. Basic radiation biology
3. Responding to radiological incidents and emergencies
4. Understanding PET/CT
5. How X-ray Machines Work

Nevada Technical Associates Radiation Safety DVD Series

1. Laboratory Radiation Safety
2. Radiological Emergency Response: A guide for emergency responders
3. Radiation and Pregnancy: A guide for medical caregivers
4. Medical Radiation and Your Pregnancy: A guide for expectant mothers
5. Radiation Safety for X-ray machines
6. Radiation Safety for Radioactive Sealed Sources

Editorials and commentaries

Over 50 editorials, commentaries, and other articles as an associate editor of the HPS Newsletter, in Strahlenschutz Praxis, Newsday, and in other publications