Alexander Brandl, PhD
(alexander.brandl@colostate.edu)

Statement of Motivation

I believe that there is an important role for the International Radiation Protection Association (IRPA) in advancing the collective knowledge of IRPA's members and in supporting the translation and dissemination of this knowledge to the benefit of workers and the general public worldwide. As the association of and for radiological protection professionals, IRPA occupies a unique position in our international field by facilitating the transfer of scientific results to the operational profession, and by promoting professional competence, radiation protection culture, professional conduct, skills and knowledge, and best-practices in radiological protection.

For two decades, I have been an active radiological protection professional, working both in operations as well as in science in the field. I believe that my professional perspective renders me ideally suited to successfully support the work and responsibilities of IRPA, as I have had the opportunity to learn where practitioners and scientists may have different conceptions about the scientific basis for and the system of radiological protection and their application and implementation.

For sixteen years, I have been serving with distinction and success as an officer and Secretary of the Austrian Radiation Protection Association, where I was able to utilize and hone my technical expertise and management and personal and organizational skills in my work and interaction with our members and national and international partner societies. I would bring this experience with me to the IRPA Executive Council to support IRPA's mission and initiatives. In particular, my more recent studies of professional ethics and communication will help further IRPA's outreach and education goals and projects.

For the past ten years, I have been working, almost simultaneously, in two of the IRPA regions, Europe and North America. I have been actively involved also with the Health Physics Society (HPS), whose International Collaboration Committee I have been chairing for the past two years. I have made it one of my main goals during my tenure as Chair of that Committee to support the exchange between IRPA and their international member societies and HPS. My experience in working on two continents and various international environments has allowed me to recognize the importance of cultural sensitivity and understanding for the work of an international organization. I would be happy to provide my support to IRPA, the organization, and its international member societies to further the international network of radiological protection professionals and strengthen international harmonization and communication in our field.

BIOGRAPHICAL SKETCH
DO NOT EXCEED FIVE PAGES.

NAME: Brandl, Alexander

eRA COMMONS USER NAME (credential, e.g., agency login): ABrandl

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
University of New Mexico	B.S.	12/1996	Physics, Mathematics
University of New Mexico	M.S.	05/1999	Physics
University of New Mexico	Ph.D.	12/2002	Physics

A. Personal Statement

For almost twenty years, I have been concerned with radiation dosimetry in general, and internal dosimetry in particular. As scientific staff at an Austrian National Laboratory I was responsible for the internal dosimetry group, providing internal dose assessment for several hundred occupationally exposed laboratory staff, and for internal dosimetry services for external customers, biotechnology researchers and medical staff in several area hospitals. This internal dosimetry service was accredited according to ISO 17025. I have served as member and chair of the internal dosimetry group at the Austrian Institute of Standards, and I am a delegate to the corresponding group at the International Standards Organization (ISO.) I have chaired and co-chaired sessions on external and internal dosimetry at national and international conferences. In our more recent research efforts, I have conducted and supervised dosimetry assessments for non-human biota, including livestock and, most recently, in canines. We have developed a toolset for internal dosimetry in a variety of animals for pre-clinical research into novel radiopharmaceuticals for targeted cancer therapy. The corresponding manuscripts for publication in the peer-reviewed literature are currently in preparation.

As department head, I have managed up to fifteen scientific and technical staff and annual budgets of $ 2-3 million. In my academic positions, I have successfully conducted externally funded research for the U.S. Department of Homeland Security and have recently been awarded research funding through the U.S. Department of Defense.

I am currently teaching such classes as Radiological Physics and Dosimetry and Radiation Public Health. These classes introduce students to the concepts of the interaction of ionizing radiation with matter and dosimetry. I have advised and mentored students in the field of health physics and at the boundary to medical physics and have successfully guided them through their graduate or post-graduate research work.

From July to October 2019, I served as Interim Head of Department for a university department comprised of about forty faculty and ten to fifteen staff.

I have served as an elected officer and Secretary of the Austrian Radiation Protection Society for sixteen years, four consecutive four-year terms. In this position, I had the opportunity to support the strategic evolution of the Society; I was responsible for the adoption of the IRPA Code of Ethics to the Society, and for negotiating a major structural alignment in the Society's Executive Council to reflect a modern, streamlined managerial approach to Society governance.

B. Positions and Honors

Positions and Employment

2000-2004 Scientific Staff, Health Physics Division, Radiation Protection, Austrian Research Centers Seibersdorf, Austria
2002-2004 Radiation Safety Officer, Austrian Research Centers Seibersdorf, Austria
2004-2010 Head, Operational Safety Department, Nuclear Engineering Seibersdorf, Seibersdorf, Austria
2010-2016 Assistant Professor, Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO
2016- Associate Professor, Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO
2016- Director, Irradiation Services Laboratory, Colorado State University, Fort Collins, CO
2018-2020 Head of Section, Radiation Protection and Measurement, Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO
2019 Interim Head of Department, Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO
2020- Associate Department Head for Operations and Research, Environmental and Radiological Health Sciences, Colorado State University, Fort Collins, CO

Other Experience and Professional Memberships

1997- Member, American Physical Society
2001-2010 Member, Council for Ionizing Radiation Measurements and Standards
2002- Member, Austrian Radiation Protection Association (elected Officer of the Society since 2004)
2004- Plenary Member, Health Physics Society

2003-2010 Project leader, Project to assist Federal Ministry of Environment and Agriculture, Forestry and Water Management in drafting Austrian federal radiation safety laws and regulations: Radiation Protection Act 2004, General Decree on Radiation Protection 2006, Decree on Radiation Protection in Interventions and Radiological Emergencies 2007, Decree on Radiation Protection for Works Involving Naturally Occurring Radioactive Materials 2008
2003 IAEA Mission to assess incident at PAKS nuclear power plant, PAKS, HUNGARY
2005- Secretary, Austrian Radiation Protection Association, Delegate to the International Radiation Protection Association (IRPA)
2004-2010 Member of the Advisory Group to the European Commission, Article 31 of the Euratom Treaty
2008 IAEA Mission to assess equipment and documentation at the Iranian Nuclear Regulatory Authority, TEHRAN, IRAN
2010- CBRN Officer, Headquarters 3rd (Armored) Infantry Brigade, Austrian Armed Forces

Honors

2006 Honor Needle in Bronze, Austrian Standards Institute, Vienna, Austria
2017 Pro Merito (For the Service) in Silver, Austrian Armed Forces / Seibersdorf Laboratories, Seibersdorf, Austria

C. Contribution to Science

1) I started my research work in external and internal dosimetry at a European National Laboratory:
   a) Andrasi, A., Bouvier, C., Brandl, A., de Carlan, L., Fischer, H., Franck, D., Höllriegl, V., Li, W. B., Oeh, U., Ritt, J., Roth, P., Schlagbauer, M., Schmitzer, C., Wahl, W., Zombori, P. *Practical Implications of Procedures Developed in IDEA Project – Comparison with Traditional Methods*, Radiation Protection Dosimetry, 125(1-4), 456-459 (2007).
   b) Schlagbauer, M., Hrnecek, E., Rollet, S., Fischer, H., Brandl. A., Kindl, P. *Uncertainty Budget for a Whole Body Counter in the Scan Geometry and Computer Simulation of the Calibration Phantoms*. Radiat. Prot. Dosim., 125(1-4), 149-152 (2007).
   c) Schmitzer, C., Brandl, A. *Internal Dosimetry: Enhancements in Application, Update on the IDEA Project*, Radiation Protection Dosimetry, 105(1-4), 649-652 (2003).
   d) Schmitzer, C., Brandl, A., Wahl, W., Roth, P., Franck, D., de Carlan, L., Andrasi, A. *Developments in Internal Monitoring Techniques*. Radiat. Prot. Dosim. 105(1-4), 451-456 (2003).

2) I continued external and internal dosimetry research with an emphasis on emergency and animal and livestock dosimetry at Colorado State University:
   a) Mann, J. E., Zoeger, N., Koppitsch, R., Brandl, A. *Investigation of Dose Rates Exterior to an Above-Ground Waste Storage Facility Using Radiation Transport Models*, Health Physics, 115(4), 539-544 (2018).
   b) Owens, A., Bertelli, L., Brandl, A. *Gamma and Beta Absorbed Dose Conversion Coefficients in the Range from* $\mathbf{10}\ keV$ *to* $\mathbf{10}\ MeV$ *for Accidental Exposures from Point Sources Placed in Clothing in Proximity to the Body*. Health Phys., 115(2), 281-294 (2018).
   c) Brandl, A. *An Analytical Approach to Calculating the Dose to Animals Due to External Exposure.* Health Phys. 102(6), 687-695 (2012).
   d) McMillan D., Johnson T. E., Guo Y., Brandl A. *A Plan for the Handling of Externally Contaminated Livestock*. Health Phys. 101(5), S164-S169 (2011).
3) At the same time, I also conducted work in environmental health physics, and nuclear instrumentation and detection:
   a) Wang, J., Brandl, A. *Tritium Atom Exchange May Be Responsible for Activity Decrease in Plastic Liquid Scintillation Vials.* Health Physics 119(3), 375-380 (2020).
   b) Fabian, R., Bell, J., Brandl, A. *A Radon Background-subtraction Algorithm for Electronic Personal Dosimeters.* Health Physics 119(2), 216-221 (2020).
   c) Martinez, S., Brandl, A., Leary, D. *Monte Carlo Evaluation of Dose Enhancement Due to CuATSM or GNP Uptake in Hypoxic Environments with External Beam Radiation.* International Journal of Nanomedicine 15, 3719-3727 (2020).
   d) Brogan, J., *Brandl, A. Developing Detection Decisions on the Absence or Presence of a Radiological Source Using a Bayesian Interaction Model*. Health Physics 117(6), 637-647 (2019).
   e) Meengs, M., Brogan, J., Brandl, A. *Optimization of Spectral String Data Analysis Using a Binomial Discriminator for Weak-source Detection Decisions*. Health Physics 117(1), 28-35 (2019).
   f) Lindsay, J., Meengs, M., Fischer, J. C., Brogan, J., Brandl, A. *Low-Fidelity Spectral Analysis Utilizing a Binomial Discriminator for Weak-Source Detection Decisions*. Health Physics 116(5), 727-735 (2019).
   g) Brogan, J., Brandl, A. *Enhancing Test Statistics by Utilizing Data Patterns in Sequential Measurement Strings in Radiation Detection*. Health Physics 115(6), 698-704 (2018).
   h) Rosenberg, B. L., Ball, J. E., Shozugawa, K., Korschinek, G., Hori, M., Nanba, K., Johnson, T. E., Brandl, A., Steinhauser, G. *Radionuclide Pollution inside the Fukushima Daiichi Exclusion Zone, Part 1: Depth Profiles of Radiocesium and Strontium-90 in Soil*, Applied Geochemistry 85: 201-208 (2017).
   i) Shozugawa, K., Riebe, B., Walther, C., Brandl, A., Steinhauser, G. *Fukushima-derived Radionuclides in Sediments of the Japanese Pacific Ocean Coast and Various Japanese Water Samples (Seawater, Tap Water, and Coolant Water of Fukushima Daiichi Reactor Unit 5)*, Journal of Radioanalytical and Nuclear Chemistry, 307: 1787-1793 (2016).
   j) Klumpp, J., Brandl, A. *Simultaneous Source Detection and Analysis Using a Zero-inflated Count Rate Model*, Health Physics, 109(1), 35-53 (2015).
   k) Klumpp, J., Brandl, A. *Bayesian Analysis of Energy and Count Rate Data for Detection of Low Count Rate Radioactive Sources*, Health Physics, 108(3), 364-370 (2015).
   l) Mannis, D., Brandl, A. *Efficacy of Common Decontamination Methods for Cleaning Contaminated Wounds*, Health Physics, 108(2), S5-S12 (2015).
   m) Atkinson, R., Eddy, T., Kuhne, W., Jannik, T, Brandl, A. *Measurement of the Tritium Concentration in the Fractionated Distillate from Environmental Water Samples*, Journal of Environmental Radioactivity, 135, 113-119 (2014).
   n) Steinhauser, G., Brandl, A., Johnson, T. *Comparison of the Chernobyl and Fukushima Nuclear Accidents: A Review of the Environmental Impacts*, Science of the Total Environment, 470-471, 800-817 (2014).
   o) Brandl, A. *Statistical Considerations for Improved Signal Identification from Repeated Measurements at Low Signal-to-background Ratios*. Health Physics 104(3), 256-263 (2013).
   p) Valentin, C. P., Kratky, J., Brandl, A. *Investigation of Alpha and Beta Self-Absorption Factors in the Calibration of Water Sample Measurements.* Health Phys. 103(2), S124-S130 (2012).
   q) Brandl, A., and A. D. Herrera Jimenez, *Statistical Criteria to Set Alarm Levels for Continuous Measurements of Ground Contamination*. Health Phys. 95(2), S128-S132 (2008).
4) Most recently, I have also been concerned with the challenges of ethics and communication with the general public in radiological protection

a) Brandl, A., Tschurlovits, M. *"Why" Transforms Information Transfer into Effective Communication in Radiological Protection.* Journal of Radiological Protection 40, 327-336 (2020).
b) Brandl, A., Tschurlovits, M. *Professional Ethics in Radiological Protection.* Journal of Radiological Protection 38, 1524-1534 (2018).

Complete list of published work in MyBibliography:
http://www.ncbi.nlm.nih.gov/sites/myncbi/alexander.brandl.1/bibliography/50578172/public/?sort=date&direction=ascending