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## BIOGRAPHICAL SKETCH

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NAME: R. William Field

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

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POSITION TITLE: Professor

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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.*)

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INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Millersville University of Pennsylvania Department of Biology, Millersville, PA	B.S.	05/77	Biology
Millersville University of Pennsylvania, Department of Biology, Millersville, PA	M.S.	05/85	Biology
University of Iowa, College of Medicine, Department of Preventive Medicine, Iowa City, IA	Ph.D.	05/94	Preventive Medicine

### A. Personal Statement

Dr. Field is Professor in the Department of Occupational and Environmental Health and Department of Epidemiology in the College of Public Health at the University of Iowa with secondary appointments in the Departments of Toxicology and Bioinformatics within the Graduate College at the University of Iowa. Primary areas of interest are cancer, occupational, environmental, and radiation epidemiology related to environmental and occupational exposures.

### B. Positions and Honors

#### Most Recent Positions and Employment

2003-2007	Associate Professor, College of Public Health, Department of Occupational and Environmental Health, Department of Epidemiology, University of Iowa, Iowa City, IA
2005-Present	Director, Occupational Epidemiology Training Program, NIOSH Heartland Center for Occupational Health and Safety, University of Iowa, Iowa City, IA
2007-Present	Professor, College of Public Health, Department of Occupational and Environmental Health, University of Iowa, Iowa City, IA
2007-Present	Professor, College of Public Health, Department of Epidemiology, University of Iowa, Iowa City, IA
2007-Present	Professor, Human Toxicology Biosciences Program, Graduate College, University of Iowa, Iowa City, IA
2007-Present	Director-Environmental Lung Disease Research Cluster, National Institute of Environmental Health Sciences Research Center, University of Iowa, Iowa City, IA
2010-Present	Professor, Bioinformatics, Graduate College, University of Iowa, Iowa City, IA

## **Other Experience**

2004-2009	World Health Organization, International Radon Project (Workgroup Chair, Co-editor)
2005-2006	National Academy of Sciences Committee, Review of Worker and Public Health Activities Program Administered by the DOE and the DHHS
2007-Present	Delta Omega, Public Health Honorary Society (Chapter President 2009-2010)
2008-Present	International Commission on Occupational Health (ICOH)
2008-Present	American College of Epidemiology, Fellow
2009-Present	Presidential Appointee – CDC/NIOSH, Advisory Board on Radiation and Worker Health
2009-2014	U.S. EPA, Science Advisory Board, Radiation Advisory Committee (RAC)
2010-2012	National Academy of Sciences Committee, Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects
2012-Present	Technical Advisor for Radiation – National Environmental Health Association
2012-2018	U.S. EPA, Science Advisory Board
2013-2014	U.S. EPA, Science Advisory Board, Radiation Advisory Committee Chair
2013-2014	National Academy of Science Committee, Analysis of Cancer Risks in Populations near Nuclear Facilities, Phase 2

## **Honors**

2001	Staff Research Award, College of Public Health, University of Iowa
2002	Scientific Research Award, American Association of Radon Scientist and Technologist
2005	United States Environmental Protection Agency/National Environmental Health Association, Individual Achievement Award for Excellence in Radon Risk Reduction
2005	Faculty Research Award, College of Public Health, University of Iowa
2005	United States Environmental Protection Agency, Children's Environmental Health Recognition Award
2010-Present	Council of Radiation Control Program Directors (CRCPD) - Honorary Member
2011	Distinguished Alumni Award, Millersville University of Pennsylvania
2012	Faculty Outreach Award, College of Public Health, University of Iowa
2012	Michael J. Brody Award for Faculty Excellence in Service to the University and the State of Iowa, University of Iowa

## **C. Selected Contribution to Science**

### **Pioneered enhanced exposure assessment methods for epidemiologic studies**

The main methodologic problem in environmental epidemiology is exposure assessment that has been described as a towering obstacle in environmental epidemiology preventing identification of causal association between environmental risk factors and health effects. Non-differential exposure misclassification usually biases the measures of association towards the null. In an effort to reduce this misclassification, we pioneered enhanced methods to reconstruct retrospective radon exposure assessment for case-control studies examining the association between protracted radon exposure and lung cancer. Prior to performing a large-scale case-control epidemiologic radon and lung cancer study, we published a methods review (Field et al. 1996) describing existing methodological dosimetry problems and addressed how to minimize them in case control radon and lung cancer studies. In a subsequent radon and lung cancer case control study, the advancement of linking

multiple radon measurements per home with individual retrospective mobility for a minimum of 20 years provided a comprehensive assessment of radon exposure, which was found empirically to improve retrospective exposure assessment (Field et al. 2002). The research team also developed a novel retrospective radon detector that could reconstruct radon decay product exposure in a particular home from measurements of embedded radon decay products in glass items within the home. After the publication of the case-controls study, Dr. Michael Alavanja, a Senior Investigator at the National Cancer Institute wrote, "I believe the methods you used to reduce the inherent random error associated with ascertaining long-term residential radon exposure are critical to validly assessing the lung cancer risk from this source."

- Field RW, Steck DJ, Lynch CF, Brus CP, Neuberger JS, Kross BC, Residential radon-222 exposure and lung cancer: exposure assessment methodology, *Journal of Exposure Analysis Environmental Epidemiology*. 6(2):181-95, 1996. PMID: 8792296.
- Field RW, Steck DJ, Parhurst MA, Mahaffey JA, Alavanja MC. Intercomparison of retrospective radon detectors, *Environmental Health Perspectives*. 107(11):905-10, 1999. PMID: 10545336.
- Steck DJ, Field RW, and Lynch CF, Exposure to atmospheric radon, *Environmental Health Perspectives*. 107(2): 123–127, 1999. PMID: PMC1566320
- Field RW, Smith BJ, Steck DJ, Lynch CF. Residential radon exposure and lung cancer: variation in risk estimates using alternative exposure scenarios, *Journal of Exposure Analysis Environmental Epidemiology* 2(3):197-203, 2002. PMID: 12032816

### **Discovery of a new source of radon exposure from water distribution systems**

Collaborative studies performed in the 1990s identified a new source of waterborne radon in the water distribution-systems originating from radium-226 (<sup>226</sup>Ra) adsorbed internal pipe scale deposits. Because the proposed national drinking water regulations for radon require sampling at the origin of the distribution system rather than at the point of use, the proposed scheme for collection of water samples may not represent actual consumer waterborne radon exposure in all cases. The findings have major implications for setting future waterborne radon collection methods and standards.

- Field RW, Fisher EL, Valentine RL, Kross BC. Radium-bearing pipe scale deposits: implications for national waterborne radon sampling methods. *American Journal of Public Health* 85(4):567-570, 1995.

### **Assessed the lung cancer risk associated with protracted residential radon exposure and communicated the risk globally**

The Iowa Radon Lung Cancer Study (Field et al. 2000) revealed that a protracted radon exposure even below the U.S. EPA's Action Level of 4 pCi/L increased lung cancer risk by 50%. The Iowa Study is considered the most scientifically rigorous radon epidemiologic study performed. Pooled analysis of North American residential radon studies (Krewski et al. 2005) provided further support of the risk posed by radon. Following publication of the radon pooling efforts, the World Health Organization concluded: "Recent findings from case-control studies on lung cancer and exposure to radon in homes completed in many countries allow for substantial improvement in risk estimates and for further consolidation of knowledge by pooling data from these studies. The consistency of the findings from the latest pooled analyses of case-control studies from Europe and North America as well as China provides a strong argument for an international initiative to reduce indoor radon risks." I served as working group chair and one of the editors for the WHO Radon Handbook (2009), which provides guidance for WHO member countries planning to develop their national radon programs or extend such activities and establishes a global radon action level of 100 Bq/m<sup>3</sup> for radon. Follow-up communication efforts include over 25 keynote addresses, a presentation to the President's Cancer Panel, development of a health care practitioners' guide on radon, and an educational website for

healthcare providers (See <http://www.epa.gov/radon/>) that highlights the fact that radon is the leading environmental cause of cancer mortality and one of the top 10 causes of cancer mortality in the U.S.

- Field RW, Steck DJ, Smith BJ, Brus CP, Fisher EL, Neuberger JS, Platz CE, Robinson RA, Woolson RF, Lynch CF. Residential radon gas exposure and lung cancer the Iowa radon lung cancer study, *American Journal of Epidemiology* 151(11):1091-1102, 2000.
- Krewski D, Lubin JH, Zielinski JM, Alavanja M, Field RW, Klotz JB, Létourneau E, Lynch CF, Lyon JI, Sandler DL, Schoenberg JB, Steck DJ, Stolwijk JA, Weinberg C, Wilcox HB. Residential radon and risk of lung cancer: a combined analysis of 7 North American case-control studies, *Epidemiology*, 16(2):137-145, 2005.
- World Health Organization Handbook on Indoor Radon: A Public Health Perspective, 2009, Publisher, WHO Press, Geneva, Switzerland.

### **Identification of risks and assessment of adverse health outcomes related to munitions works**

A detailed retrospective mortality and cancer incidence study was performed for over 13,000 Department of Defense contract workers employed at a Midwest ammunitions plant (IAAAP) between 1948 and 2007. This is the first large-scale retrospective cohort study performed on a large cohort of munitions workers. Identification of the causes of potentially increased risk estimates can provide important information on previously unrecognized hazards so work place interventions to reduce exposure can occur. In addition, if cause-specific mortality or cancer incidence is linked to work-related exposures, medical screening may be increased to identify preclinical and treatable stages of the disease. Analyses have been completed and preparation of manuscripts for submission is underway.