CURRICULUM VITAE

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EDUCATION
2016-2019	Environmental Health	Postdoc	Harvard University
2012-2016	Medical Physics	Ph.D.	Purdue University
2008-2012	Physics	B.S.	Purdue University

RESEARCH EXPERIENCE

- Studies of occupational and environmental heavy metal exposures in community and large-scale cohort studies. Research Associate, Environmental Health Harvard T.H. Chan School of Public Health, Boston, MA — 2019-2021
- Novel applications of nuclear instrumentation as exposure assessment in health studies Postdoctoral Research Fellow, Environmental Health, Harvard T.H. Chan School of Public Health, Boston, MA — 2016-2019
- X-ray Fluorescence for quantification of lead and strontium in bone *in vivo* Medical Physics, Purdue University, West Lafayette, IN — 2012-2016
- Monte Carlo Simulations of radiation dose of CT scan Medical Physics, Purdue University, West Lafayette, IN — 2011-2012
- Semiconductor detector stability for measurement of nuclear decay rates Physics, Purdue University, West Lafayette, IN — 2009-2011

MAJOR RESEARCH INTERESTS:
- Development of novel nuclear technologies for occupational and environmental exposure assessment. Development of x-ray fluorescence technology for *in vivo* and *in situ* measurements of biomarkers of metal exposure. Novel calibration methods that allow for non-destructive methods for exposure assessment. Method development for on-site/in-field measurements of metal exposure.
- Toxicokinetics of metal exposures and impact on biomarkers in human and animals. Identification of the biokinetics surrounding typical biomarkers of exposure to better indicate the implications of health associations.

- Application of x-ray fluorescence technology in novel animal and environmental health studies. Many animal species suffer from human environment interaction and metal exposure assessment allows us to identify both environmental and human health concerns from human intervention in the environment.
- The One Health perspective in the legacy and ongoing exposures of lead in wildlife and human populations and the substitution of current uses of lead leading to these novel exposures.
- Community engagement in research and health disparities. Many of the devices created in my lab fit a specific niche within increasing accessibility to exposure assessment in places unable to included previously. Working with communities to help fulfill their needs in environmental monitoring and ultimate interventions to reduce exposures.

ACADEMIC APPOINTMENTS
2022-Present	Harvard T.H. Chan JPB Environmental Health Fellow
2021-Present	Assistant Professor, Health Sciences, Purdue University
2021-Present	Visiting Scientist, Harvard T.H. Chan School of Public Health
2019-2021	Research Associate, Harvard T.H. Chan School of Public Health
2019-Present	Council Member, International Society of Trace Elements in Humans
2018-Present	Research Collaborator- Beth Israel Deaconess Medical Center
2018-2021	Research Scientist- Edith Nourse Rogers Memorial Veterans Hospital
2018-Present	Director, XRF Trace Metals Laboratory, Harvard T.H. Chan School of Public Health NIEHS Center for Environmental Health
2018	Chairman, Harvard T.H. Chan School of Public Health NIEHS Center for Environmental Health Metals Core Symposium 2018
2016-2019	Postdoctoral Fellow, Harvard T.H. Chan School of Public Health
2012-2016	Graduate Research Assistant- Medical Physics Purdue University
2010-2012	Research Assistant- Medical Physics Purdue University
2009-2011	Research Assistant- High Energy Physics Purdue University

HONORS AND AWARDS
2022	JPB Fellow – Cohort III
2015	Society of Toxicology (SOT) Graduate Student Travel Award
2014	Purdue Research Foundation (PRF) research grant
2014	International Society of Exposure Sciences (ISES) Poster Award
2013	Purdue Doctoral Fellowship
2012	Ross Fellowship
2011	Spira Undergraduate Research Award
2008	Gianni Ascarelli Student Award Physics Research Fellowship

PROFESSIONAL AND SCHOLARLY ASSOCIATIONS
2019-Present	International Society of Trace Element Research in Humans
2018-Present	International Society of Environmental Epidemiology (ISEE)
2014-Present	International Society of Exposure Sciences (ISES)
2013-Present	Society of Toxicology (SOT)

2013-Present   Health Physics Society (HPS)
2009-2012   American Physical Society (APS)

AGENCY ASSESSMENTS
Reviewer for the Environmental Protection Agency Integrated Science Assessment of Lead 2022.

GRANT REVIEW
AUS Faculty Research Grant Review. January 2020. (ad hoc)

PEER REVIEWER
New England Journal of Medicine
Journal of the American Medical Association
Physics in Medicine and Biology
Science of the Total Environment
Biomarkers
Physiological Measurement
PLOS One
Journal of Physics D
Northeast Naturalist
Toxicology Letters
X-ray Spectrometry
Applied Radiation and Isotopes
Environmental Health Perspectives
Current Environmental Health Reports
Analytical Methods
Environmental Health
Environmental Research
Journal of Exposure Science and Environmental Epidemiology
Environment International
International Journal of Environmental Research and Public Health
Frontiers in Public Health
Health Physics
Environmental Science and Technology
Environmental Research and Public Health

SESSION CHAIR AND EXPERT
Novel measurements of exposure to metals and health in environmental studies, ISTERH 2022
Metal measurements via XRF Session Chair, NIEHS Metals Core Symposium 2018

EDITORIAL POSITIONS AND BOARDS
2020   Environmental Research and Public Health
2021 – Present   PLOS One

OTHER TRAINING AND CERTIFICATIONS

2018	HSPH, EPI 204 Analysis in Case Control Cohort Epi Data
2018	HSPH, EPI 203 Study Design in Epidemiologic Research
2017	HSPH, EH 262 Introduction to the Work Environment
2017	HSPH, BST 201 Introduction to Statistical Methods
2017	HSPH, BST 210 Applied Regression Analysis
2017	HSPH, ID 215 Environmental and Occupational Epidemiology
2016	HSPH, EPI 202 Elements of Epidemiological Research
2016	HSPH, EPI 201 Introduction to Epidemiology
2013	American Board of Radiology, Certification in Therapeutic Medical Physics

PEER REVIEWED PUBLICATIONS

1. JE Celis, W Espejo, IY Montes, M Sandoval, **AJ Specht**, A Banegas-Medina. First report of some rare earth elements and trace elements in sands from different islands located in the Marine Natural monument Archipelago Cayos Cochinos, Caribbean Sea. Marine Pollution Bulletin. Volume 196, Nov 2023. 115648.

2. J Peng, Z Gao, J Xu, Y Lin, **AJ Specht,** S Chen, LH Nie, L Huang, C Yan. Concurrent Assessment on Blood Lead in Young Children and Toy Lead in Shanghai. Exposure and Health. Nov. 2023. 2451-9685.

3. JO Hampton, MY Loht, **AJ Specht,** D Nzabanita, J Hufschmid, L Berger, K McGinnis, J Melville, E Bennett, JM Pay. Lead exposure of mainland Australia's top avian predator. Environmental Pollution. 2023. (332), 122004.

4. **AJ Specht***, DW Steadman, M Davis, SM Bartell, MG Weisskopf. Bone lead variability in bone repository skeletal samples measured with portable x-ray fluorescence. Science of the Total Environment. Science of the Total Environment. 2023 Jul 1:880:163197.

5. CG Hoover, AS Dickerson, **AJ Specht**, GG Hoover. Firearm-related lead exposure and pediatric lead levels in Massachusetts: A decade of evidence (2010–2019). Environmental Research. 2023 227(115719).

6. D Sowers, J Frandsen, E Caffrey, **AJ Specht,** JT Harris, T Dant, B Hamrick. The United States Navy and Employees with Cancer: The Time for Change is Now. Health Physics. Aug 2023 125(2):147-151.

7. D Nzabanita, JO Hampton, D Nugegoda, J Hufschmid, SD Toop, J Flesch, H Dunstan, AJ Bengsen, **AJ Specht**. Expanding the use of portable XRF to monitor lead exposure in Australian waterbirds two decades after a ban on lead shot. Science of the Total Environment. 2023 Jan 25;869:161803.

8. C Hoover, **AJ Specht,** D Hemenway. Firearm Licensure, Lead Levels and Suicide in Massachusetts. Preventative Medicine. 2023 Jan;166:107377.

9. S Paudel, **AJ Specht,** H Hu, J Danziger. Association of environmental lead toxicity and hematologic outcomes in patients with advanced kidney disease. Nephrology Dialysis and Transplantation. 2022 Dec 22;gfac336.

10. X Zhang, **AJ Specht,** EM Wells, MG Weisskopf, J Weuve, LH Nie. In vivo quantification of strontium in bone among adults using portable x-ray fluorescence. Journal of Trace Elements and Minerals. 2022 Dec;74:127077.

11. SS Wise, H Lu, RM Speer, JP Wise Jr, J Young, JH Toyoda, I Meaza, TJ Croom-Perez, JC Kouokam, **AJ Specht**, KJ Liu, GW Hoyle, JP Wise Sr. Chromium

distribution in oropharyngeal aspiration model for hexavalent chromium in rats. Toxicology and Applied Pharmacology. 2022; 457:116294.

12. K Ahmid, **AJ Specht,** L Morikawa, G Poudrier, D Ceballos, S Wylie. Lead and other toxic metals in plastic play foods: Results from testing citizen science, lead detection tools in childcare settings. Journal of Environmental Management. 321(115904). 2022

13. CD Golden, J Ayroles, JG Eurich, JA Gephart, KL Seto, MK Sharp, P Balcom, HM Barravecchia, KK Bell, KD Gorospe, J Kim, WH Koh, J Zamorain-Mason, DJ McCauley, H Murdoch, N Nair, K Neeti, S Passarelli, **AJ Specht,** EM Sunderland, A Tekaieti, A Tekiau, R Tekoaua, E Timeon. Study Protocol: Interactive Dynamics of Coral Reef Fisheries and the Nutrition Transition in Kiribati. Frontiers in Public Health. June 2022.

14. **AJ Specht*,** X Zhang, A Young, VT Nguyen, DC Christiani, DM Ceballos, JG Allen, J Weueve, LH Nie, MG Weisskopf. Validation of in vivo toenail measurements of manganese and mercury using a portable x-ray fluorescence device. Journal of Exposure Science and Environmental Epidemiology. 2022.

15. Johnson KM, **Specht AJ,** Hart JM, Salahuddin S, Erlinger AL, Hacker MR, Woolf AD, Hauptman M, Karumanchi SA, O'Brien K, Wylie BJ. Risk-factor Based Lead Screening and Correlation with Blood Lead Levels in Pregnancy. Maternal and Child Health Journal. 2022. 2022 Jan;26(1):185-192.

16. Bhatia M, **Specht AJ*,** Ramya V, Sulaiman D, Konda M, Balcom P, Sunderland E, Qureshi A. Portable XRF as a rapid determination tool to detect mg/kg (ppm) levels of heavy metals (Ni, Zn, As, Se and Pb) in human nails: a case study from South India. Environmental Science and Technology. 2021, 55, 19, 13113–13121

17. C Hoover, GG Hoover, **AJ Specht*.** Firearm Licenses Associated with Elevated Pediatric Blood Lead Levels in Massachusetts. Environmental Research. 2021; 202:11642.

18. JO Hampton, **AJ Specht,** JM Pay, MA Pokras, AJ Bengsen. Portable X-ray fluorescence for bone lead measurements of Australian eagles. Science of the Total Environment. 2021 Oct 1;789:147998.

19. **AJ Specht*,** JF Obrycki, Maitreyi Mazumdar, MG Weisskopf. Feasibility of lead exposure assessment in blood spots using energy dispersive x-ray fluorescence. Environmental Science & Technology. 2021, 55, 8, 5050–5055.

20. DM Ceballos, AS Young, JG Allen, **AJ Specht**, VT Nguyen, J Craig, M Miller, T Webster. Nail salon technician exposure to metal impurities from nail products. International Journal of Hygiene and Health. 2021 Mar;232:113687.

21. AS Young, R Hauser, TJ Todd, BA Coull, H Zhu, K Kannan, **AJ Specht**, MS Bliss, JG Allen. Impact of "healthier" materials interventions on dust concentrations of per- and polyfluoroalkyl substances, polybrominated diphenyl ethers, and organophosphate esters. Environment International. 2021 May;150:106151.

22. Zhang X, **Specht AJ**, Nie LH. Evaluation of a portable XRF device for in vivo quantification of lead in bone among a US population. Science of the Total Environment. 2021; 753;142351.

23. Johnson KM, **Specht AJ,** Hart J, Salahuddin S, Erlinger AP, Hacker MR, Woolf A, Hauptman M, Karumanchi A, Wylie B, O'Brien K. Lead exposure and association with angiogenic factors and hypertensive disorders of pregnancy. Pregnancy Hypertension. 2020. 22:93-98.

24. JC Nwanaji-Enwerem, E Colicino, **AJ Specht**, X Gao, C Wang, P Vokonas, MG Weisskopf, EW Boyer, AA Baccarelli, J Schwartz. Individual species and cumulative mixture relationships of 24-hour urine T metal concentrations with DNA methylation age variables in older men. Environmental Research. 2020; 186:109573.

25. Johnson KM, **Specht AJ,** Hart J, Salahuddin S, Erlinger AP, Hacker MR, Woolf A, Hauptman M, Karumanchi A, Wylie B, O'Brien K. Risk-factor based lead screening and correlation with blood and bone lead levels in pregnancy. Obstetrics and Gynecology. 2020; 135:120s-121s.

26. **Specht AJ***, Dickerson AS, Kponee K, Kpobari N, Weisskopf MG. Toenail metal exposures in fishermen from Bodo City, Nigeria. Bulletin of Environmental Contamination and Toxicology. 2020; 104:90-95.

27. **Specht AJ*,** Zhang X, Goodman B, Maher E, Nie LH, Weisskopf MG. Radiation dose assessments for *in vivo* measurements using a portable x-ray fluorescence device. Health Physics. 2019; 116(5):590-598.

28. **Specht AJ***, Dickerson AS, Weisskopf MG. Comparison of bone lead measured via portable x-ray fluorescence across and within bones. Environmental Research. 2019; 172:273-278.

29. Dickerson AS, Hansen J, **Specht AJ**, Gredal O, Weisskopf MG. Population-based study of amyotrophic lateral sclerosis and occupational lead exposure in Denmark. Occupational and Environmental Medicine. 2019; 76:208-214.

30. Lin Y, **Specht AJ**, Xu J, Yan C, Geng H, Shen X, Nie LH, Hu H. Blood lead, bone lead and child attention-deficit-hyperactivity-disorder-like behavior. Science of the Total Environment. 2019; 659:161-167.

31. **Specht AJ***, Kirchner KE, Weisskopf MG, Pokras MA. Lead exposure biomarkers in the Common Loon. Science of the Total Environment. 2019; 647:639-644.

32. **Specht AJ*,** Kponee K, Kpobari N, Balcom PH, Weuve J, Nie LH, Weisskopf MG. Validation of x-ray fluorescence measurements of metals in toenail clippings against inductively coupled plasma mass spectrometry in a Nigerian population. Physiological Measurement. 2018; 39(8).

33. Dickerson AS, Hansen J, Kioumourtzoglou MA, **Specht AJ,** Gredal O, Weisskopf MG. Study of occupation and amyotrophic lateral sclerosis in a Danish cohort. Occupational and Environmental Medicine. 2018; 75(9):630-638.

34. **Specht AJ***, Weisskopf M, Nie LH. Childhood lead biokinetics and associations with age among a group of lead poisoned children in China. Journal of Exposure Science and Environmental Epidemiology. 2018; 1559-064X.

35. **Specht AJ***, Parish CN, Wallens EK, Watson RT, Nie LH, Weisskopf MG. Feasibility of a portable x-ray fluorescence device for bone lead measurements of condor bones. The Science of the Total Environment. 2018; 615:398-403.

36. **Specht AJ***, Lin Y, Weisskopf M, Xu J, Nie LH. Bone lead levels in an environmentally exposed elderly population in shanghai, China. The Science of the Total Environment. 2018; 626:96-98.

37. Dickerson AS, Rotem R, Christian MA, Nguyen VT, **Specht AJ**. Potential sex differences relative to autism spectrum disorder and metals. Current environmental health reports. 2017; 4(4):405-414.

38. Zhang X, **Specht AJ**, Nie LH. Feasibility of quantifying manganese and mercury in toenail *in vivo* with portable x-ray fluorescence technology. Biomarkers: biochemical

indicators of exposure, response, and susceptibility to chemicals. 2017; 23(2):154-160.

39. **Specht AJ***, Mostafaei F, Lin Y, Xu J, Nie LH. Measurements of Strontium Levels in Human Bone *In Vivo* Using Portable X-ray Fluorescence (XRF). Applied spectroscopy. 2017; 71(8):1962-1968.

40. **Specht AJ**, Weisskopf MG, Nie LH. Theoretical modeling of a portable x-ray tube based KXRF system to measure lead in bone. Physiological measurement. 2017; 38(3):575-585.

41. Wang Y, **Specht A**, Liu Y, Finney L, Maxey E, Zheng W, Weisskopf M, Nie L. Microdistribution of lead in human teeth using microbeam synchrotron radiation X-ray fluorescence (µ-SRXRF). X-ray spectrometry: XRS. 2017; 46(1):19-26.

42. **Specht AJ**, Lin Y, Weisskopf M, Yan C, Hu H, Xu J, Nie LH. XRF-measured bone lead (Pb) as a biomarker for Pb exposure and toxicity among children diagnosed with Pb poisoning. Biomarkers: biochemical indicators of exposure, response, and susceptibility to chemicals. 2016; 21(4):347-52.

43. **Specht AJ**, Weisskopf M, Nie LH. Portable XRF Technology to Quantify Pb in Bone *In Vivo*. Journal of biomarkers. 2014; 2014:398032.

PUBLISHED ABSTRACTS, CONFERENCES, AND PRESENTATIONS

1. C Hoover, **AJ Specht,** D Hemenway. Firearm Licensure, Lead Levels and Suicide in Massachusetts. National Research Conference on Firearm Injury Prevention. November 30, 2022. Washington D.C.

2. C Hoover, **AJ Specht**. Firearm-Related Pediatric Lead Exposure and Mental Health: An Overview of the Firearm Exposure Research Team. HSCI Research Seminar. November 22, 2022. Purdue University. West Lafayette, IN.

3. **Specht AJ.** 2-Dimensional Benchtop X-ray Fluorescence Approaches to Exposure Assessment. International Society of Exposure Science. September 27, 2022. Lisbon, Portugal.

4. **Specht AJ.** 2-Dimensional Benchtop X-ray Fluorescence Approaches to Exposure Assessment. International Society of Environmental Epidemiology. September 19, 2022. Athens, Greece.

5. **Specht AJ*.** Introduction to X-ray Fluorescence for Community Health Applications. Argonne National Lab Community Outreach. December 21, 2021. Lemont, IL.

6. **Specht AJ*.** Introduction to X-ray Fluorescence Applications. University of Louisville Neurotoxicology Group. October 27, 2021. Louisville, KY.

7. **Specht AJ*.** Portable x-ray fluorescence bone lead measurements of live condors in field to assess cumulative lead exposure. Raptor Research Foundation Conference. October 10, 2021. Boise, Idaho.

8. **Specht AJ*.** Desktop XRF as a novel tool for exposure assessment. MEMCARE Series, Harvard T.H. Chan School of Public Health. Oct. 4, 2021. Boston, MA

9. **Specht AJ*.** Cumulative Lead Exposure Resulting from Coal Power Plants in India. International Society of Environmental Epidemiology. August 18, 2021. New York, NY.

10. X Zhang, **AJ Specht**, EM Wells, MG Weisskopf, J Weuve, LH Nie. In vivo Quantification of Bone Lead and Strontium using Portable X-ray Fluorescence (XRF). International Society of Environmental Epidemiology. August 18, 2021. New York, NY.

11. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. Purdue, School of Health Sciences. April 19, 2021. West Lafayette, Indiana.

12. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. Wayne State University, Environmental Health and Justice. March 2, 2021. Detroit, Michigan.

13. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. Brown University, Epidemiology. February 11, 2021. Providence, Rhode Island.

14. **Specht AJ***, et al. Mixed metal exposures measured from toenail in relation to mini-mental state examination scores in the Normative Aging Study. International Society of Environmental Epidemiology. Aug. 26, 2020. Baltimore, MD (virtual).

15. VT Nguyen, **AJ Specht**, F Bidlack, T Punshon, BP Jackson, MG Weisskopf. Reliability and Variability of Metal Measurements in Permanent Tooth Enamel. International Society of Environmental Epidemiology. Aug. 26, 2020. Baltimore, MD (virtual).

16. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. University of Arizona, Environmental Health Sciences. May 19, 2020. Tucson, Arizona.

17. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. University of Illinois - Chicago, Environmental and Occupational Health Sciences. March 25, 2020. Chicago, Illinois.

18. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. The George Washington University, Environmental and Occupational Health. March 11, 2020. Washington, DC.

19. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. University of Michigan, Environmental Health Sciences. February 11, 2020. Ann Arbor, Michigan.

20. **Specht AJ*,** Nie LH. Bone Pb, Blood Pb, Biokinetics, and Chelation Therapy Efficacy in a Group of Lead Poisoned Children in China. Montefiore Lead Poisoning Prevention and Treatment Program. November 1, 2019. Bronx, New York.

21. **Specht AJ***. Novel x-ray fluorescence approaches to ease trace metal biomarker measurements in field and low- and middle-income countries. ISTERH. September 23, 2019. Bali, Indonesia.

22. Nie LH, **Specht AJ**, Lin Yanfen, Weisskopf M, Yan C, Hu H, Xu J*. Bone Lead (Pb), Blood Pb, and Pb Biokinetics in Pb- poisoned Children. Abstract published and work presented in the 13th International Society on Trace Element Research in Humans (ISTERH) meeting, Sep. 22-26, 2019, Bali, Indonesia

23. **Specht AJ***. Mixed Metal Exposures and Cognition in the Normative Aging Study. Seminar in Occupational and Environmental Health Research. September 6, 2019. Boston, MA.

24. **Specht AJ*,** Weisskopf MG. Feasibility of lead exposure assessment in blood spots using x-ray fluorescence. August 26, 2019. Utrecht, The Netherlands.

25. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. Boston University, Environmental Health. July 8, 2019. Boston, MA.

26. **Specht AJ***. Applying Novel Exposure Assessment Tools in Health Studies. University of Alabama, Environmental Health Sciences. March 1, 2019. Birmingham, Alabama.

27. **Specht AJ*,** Lin Y, Nie LH, Xu J, Weisskopf MG. Children's lead biokinetics and chelation efficacy. Harvard Seminar in Occupational and Environmental Health Research. October 12, 2018. Boston, MA.

28. **Specht AJ***, et al. Calibration and validation of x-ray fluorescence measurements for non-destructive metal exposure assessment of toenail clippings from Nigeria. International Society of Environmental Epidemiology. Aug. 26-30, 2018. Ottawa, Ontario, Canada.

29. AS Dickerson, **AJ Specht**, J Hansen, O Gredal, M Weisskopf. Amyotrophic Lateral Sclerosis and Exposure to Lead in a Danish Cohort. International Society of Environmental Epidemiology. Aug. 26-30, 2018. Ottawa, Ontario, Canada.

30. **Specht AJ***. X-ray Fluorescence Applications in Biological Metal Exposure Assessment. Harvard School of Public Health NIEHS Center for Environmental Health Metals Core Symposium. June 14-15, 2018. Boston, MA.

31. Zhang X, **Specht AJ,** Weisskopf MG, Weuve J, Nie LH. Quantification of bone lead and toenail manganese and mercury *in vivo* with x-ray fluorescence technology. Harvard School of Public Health NIEHS Center for Environmental Health Metals Core Symposium. June 14-15, 2018. Boston, MA.

32. **Specht AJ***, Weisskopf MG. Desktop X-ray Fluorescence for Metal Exposure Assessment. Harvard John A. Paulson School of Engineering and Applied Sciences Seminar. Feb. 1, 2017. Cambridge, MA.

33. Zhang X, **Specht AJ,** Weisskopf MG, Weuve J, Nie LH. Quantification of manganese and mercury in toenail *in vivo* using portable x-ray fluorescence. American Association of Physicists in Medicine Annual Meeting. July 29-August 2, 2017 Indianapolis, IN.

34. **Specht AJ***, Zhang X, Weuve J, Nie LH, and Weisskopf MG. *In vivo* x-ray fluorescence measured toenail manganese as a biomarker of exposure among welders, abstract accepted at the 2017 Annual International Society of Exposure Science meeting Oct. 15-19, 2017. Durham, North Carolina.

35. Zhang X, **Specht AJ,** Weuve J, Weisskopf MG, and Nie LH. Feasibility of quantifying manganese and mercury in toenail *in vivo* with portable x-ray fluorescence technology, abstract presented at the 2017 Annual Health Physics Society meeting July 9-13, 2017. Raleigh, North Carolina.

36. **Specht AJ,** Lin Y, Weisskopf M, Yan CH, Hu H, Xu J, Nie LH. KXRF-measured Bone Lead (Pb) As A Biomarker for Pb Exposure and Toxicity Among Children Diagnosed with Pb Poisoning, abstract accepted for presentation at the 2016 Annual SOT meeting Mar. 13-17, 2016. New Orleans, LA.

37. **Specht AJ**. XRF technology to quantify lead in bone *in vivo*, Purdue University Seminar School of Health Sciences, Nov. 3, 2015. West Lafayette, Indiana.

38. **Specht AJ**, Weisskopf MG, and Nie LH. Calibration and improvements of a portable XRF technology to quantify lead in bone *in vivo*, College of Health and Human Sciences Research Day, 2015. West Lafayette, Indiana.
39. **Specht AJ**. Portable XRF technology to quantify lead in bone in vivo. Hoosier Health Physics Society Spring Meeting. 2014. Lafayette, IN.
40. **Specht AJ.** Calibration and improvements of a portable XRF technology to quantify lead in bone *in vivo*, Purdue University Seminar in School of Health Sciences, Jan. 28, 2014. West Lafayette, Indiana.
41. **Specht AJ**, Weisskopf MG, and Nie LH. Calibration and improvements of a portable XRF technology to quantify lead in bone *in vivo*, abstract published and project presented at the 2014 Annual International Society of Exposure Science meeting Oct. 12-16, 2014. Cincinnati, Ohio.
42. **Specht AJ**, Weisskopf MG, and Nie LH. Calibration and improvements of a portable XRF technology to quantify lead in bone *in vivo*, College of Health and Human Sciences Research Day, 2014. West Lafayette, Indiana.
43. **Specht AJ**, Weisskopf MG, and Nie LH. Calibration and improvements of a portable XRF technology to quantify lead in bone *in vivo*, abstract Published in "The Toxicologist" (2014) and project presented at the the 2014 Annual Society of Toxicology meeting Mar. 23-27, 2014. Phoenix, Arizona
44. **Specht AJ**, Weisskopf MG, and Nie LH. Improvements in portable XRF technology to quantify lead in bone *in vivo*, abstract published and podium presentation for the 2014 Lead Collaborative Consortium June 5-7, 2014. Hamilton, ON, Canada
45. **Specht AJ**, Weisskopf MG, and Nie LH. Portable XRF Technology to Quantify Lead and Strontium in Bone *in vivo* – Calibration and Validation, abstract Published in "The Toxicologist" (2013) and project presented at the 2013 Annual Society of Toxicology meeting Mar. 10-14, 2013. San Antonio, Texas

GRANTS
Current Grants

NIA U01AG009740-Supplement (Co-PI) $977,000   09/2022-04/2024
Heavy Metals Exposure Supplement: Health and Retirement Study
To utilize x-ray fluorescence measurements of existing blood spots in the Health and Retirement Study to investigate environmental determinants of Alzheimer's and Dementia.

Harvard Catalyst Grant (Co-I) $75,000   10/2022-9/2024
Examination of the Role of Metal Exposure in Psychopathology of Veterans and Active Duty Servicemembers
Identifying novel exposure sources to veterans through firearms and that influence on clinical evaluations of PTSD and mental health symptomology.

JPB Fellowship Program Cohort III (PI) $125,000   10/2022-9/2025
The JPB Environmental Health Fellows Program sponsors junior faculty focused on developing community-based research initiatives to identify social and physical determinants of health inequities.

NIA R01AG032282-Supplement (Co-I) $100,000   4/2021-3/2026
Aging in 1000 healthy young adults, bone metals supplement.
We will measure bone and nail metals in the Dunedin cohort of 1000 healthy individuals for recruitment in 2024.

Medical University of South Carolina Pilot Grant (Co-I) $50,000   10/2022-8/2023
National Crime Victims Research & Treatment Center
Funds to purchase an XRF device for bone lead investigations in firearm victims.

1K01OH011648-01 (PI) $311,234   09/2019-08/2023
A novel portable KXRF measurement system for in vivo metal measurements
To test the viability of an x-ray tube based portable KXRF device and relation of cumulative lead exposure and motor function.

DoD CRMP 12971061 (Co-PI) $982,325   09/2020-02/2024
Combat-Ready Exposure Device (CRED): Validation of a Portable Exposure Biomarker Device for Lead and Other Heavy Metal Exposures
Develop a novel XRF device and biomarkers for exposure assessment of metals typical in military settings.

Pending Grants (Purdue Direct Costs)

NIH STTR (Site PI) ($67,000)   01/2022-01/2023
Point of Care Zinc Nutritional Status Meter.

DoD, No Award Number (Sub-contract)   09/2021-08/2024
Association of Metal Exposures with Health Risk Markers, Mood and Cognitive Functioning in Military Veterans

NIH/NIEHS-R01, Co-I ($407,783)   09/01/2022-08/31/2027
Low-level exposure to toxic metals and metal kinetics in children's bodies

NIH/NIEHS-Ones-R01, Co-I ($185,996)   09/01/2022-08/31/2027
Cr(VI)-Induced DNA Damage Contributes to Brain Aging

NIH/NIEHS-R01, Co-I ($381,918)   09/01/2022-08/31/2027
Child and adult Metal exposures, gene expression and neuropathologically confirmed Alzheimer's Disease.

NIH/NIEHS-R01, Co-I ($268,526)   09/01/2022-08/31/2027
Life course exposure to metal mixtures and nutritional interactions in the development of dementia

NIH/NIEHS-R21, Co-I ($82,000)   09/01/2023-08/31/2025
The CLUC Study: Children's lead exposure from backyard chickens

Completed Grants

NIEHS P30ES000002 Center Pilot Funding (Co-PI) $25,000   8/2020-8/2021
Validation of desktop X-ray fluorescence in exposure assessment of nasal fluid
To determine ability of desktop XRF in quantification of metals in nasal fluid in comparison to ICP-MS approaches.

NIEHS P30ES000002 Center Pilot Funding (Co-PI) $25,000   11/2018-6/2020
Impact of healthy material interventions in offices on reductions in fluorinated chemicals and endocrine-disrupting potency of indoor dust
To determine the contamination of fluorinated chemicals of indoor dust in renovated office spaces and identify novel XRF approaches to measurements of fluorine.

CDC/NIOSH T42/OH008416 ERC Pilot Grant (Co-PI) $5,550   11/2018-6/2019
Examine the exposure window of the bone lead biomarker measured by a portable x-ray fluorescence device
We aim to identify the half-life of bone lead and strontium assessed by portable x-ray fluorescence and blood strontium to better identify exposure windows in studies.

GUP-51952 Argonne National Lab Beamline Access Request   05/2017-09/2017
Early childhood exposure assessment in deciduous teeth using microfluorescence
Determine the epidemiological application of synchrotron micro-XRF for exposure assessment using teeth as a biomarker

NIEHS P30ES000002 Facility Access Funds (Co-PI) $2200   07/2017-10/2017
Feasibility of micro x-ray fluorescence for measurement of pre- and post-natal metal exposures in teeth
To determine the feasibility of micro fluorescence for assessment of critical time windows of exposure in comparison to LA-ICP-MS measurements on teeth

NIEHS P30ES000002 Facility Access Funds (Co-PI) $2600   09/2016-01/2017
Portable x-ray fluorescence (XRF) for in vivo exposure assessment
To obtain a portable XRF device for *in vivo* metal exposure assessment in a group of welders and nail salon workers and future work of the NIEHS center

CDC/NIOSH T42/OH008416 ERC Pilot Grant (Co-PI) $25,000   09/2016-05/2017
Cardiopulmonary responses to occupational particulate exposures
To test feasibility of portable XRF for manganese quantification in toenail and assess neurologic outcomes in relation to manganese exposure in a group of welders.

NIEHS P30ES000002 (Co-PI) Pilot Grant $25,000   09/2016-05/2017
Identifying Sources of Exposure in Nail Salon Workers to Inform Targeted Interventions
To test viability of using portable XRF to quantify metal exposures in toenails comparatively measured with ICP-MS

TEACHING EXPERIENCE
2022 Primary Instructor, HSCI 540, Radiation Biology, Purdue University
2019 Teaching Assistant/Lecturer, ID 263 Practice of Occupational Health, Harvard University
2018 Guest Lecturer, ES 6 Intro. Env. Science and Engineering, Harvard University
2014 Teaching Assistant, HSCI 514 Radiation Instrumentation Lab, Purdue University
2014 Guest Lecturer, Phys 235 Careers in Physics, Purdue University
2013 Teaching Assistant, HSCI 574 Medical Health Physics, Purdue University