Rudolph C. Johnson, PhD

Curriculum Vitae

Contact Information

Office Address:	Madison, Wisconsin
E-mail:	Rudolph@ChemWitness.com
Webpage:	ChemWitness.com
Cell Phone:	470/865-9123

Formal Education

Undergraduate:

1994 Bachelor of Science in Chemistry
Virginia Military Institute
Lexington, VA 24450
Thesis: High-Throughput Robotics for Wastewater Testing Using Good Automated Laboratory Practices (GALP)

Graduate:

1999 Doctor of Philosophy in Analytical Chemistry
Purdue University
West Lafayette, IN 47906
Thesis: Online Monitoring Using Ion Trap Mass Spectrometry

2025 Master of Science in Pharmaceutical Sciences
University of Florida
Gainesville, FL 32611
Emphasis: Clinical Toxicology

Current Positions

2026 US Department of Veterans Affairs
Research scientist (WOC)

Re-hired by the VA as a research toxicologist, without compensation. This provides opportunities to further spread the Wisconsin Idea to state Veterans, and influence research across the United States at 102 VA medical centers. The position is translational in nature and includes pre-clinical, epidemiological and clinical treatment research. My primary focus is on rural health because many Veterans retire to rural communities.

2025 Director
Wisconsin State Laboratory of Hygiene

Provides strategic and technical leadership at the States laboratory supporting the Department of Health Services and Department of Natural Resources. The $65M budget and 370 staff support clinical, toxicology, forensic, environmental and occupational analytical and consulting services. WSLH is active in all 50 states, and is recognized nationally and internationally. The WSLH is a state laboratory that is directed by the Dean of the UW Madison School of Medicine and Public Health.

Joint appointment: UW Madison School of Medicine and Public Health, Department of Pathology and Laboratory Medicine.

Past Positions

2023 Director
Military Exposures Research Program (2 years)
US Department of Veterans Affairs

Directed a broad military exposure portfolio of $79M with technical oversight of the Office of Research and Development Toxic Exposure Fund (Promise to Address Chemical Toxicants, PACT ACT). Led three expert consortia providing world-class support for research at 102 VA Medical Centers. These included an Administrative and Regulatory Core, a Database and Biorepository Core and an Exposure Assessment Core.

Developed training and career development programs for field investigators, including mentorship initiatives for new scientists and physicians.
Responsible official for establishing the Air Force Ranch Hand Study at the West Los Angeles Medical Center, and the Warren Streptococcal collection. Provided high profile briefings to the Air Force and Veteran Service Organizations.

FACA Training: Trained as a federal advisory committee chairman to provide briefings for the VA Secretary.

2013 Chief
Emergency Response Branch (10 years)
National Center for Environmental Health
US Centers for Disease Control and Prevention

Managed an internally and externally funded clinical testing research and development program, performed case consulting, state public health department training, directed proficiency testing, safety, logistics and staffing. Consisted of 40+ staff and an annual budget of $9M internal funding and $10M external funding.

Directed the national laboratory response network for chemical threats (LRN-C) which consisted of 54 state laboratories. Supported 13 diagnostic tests included materials, training, proficiency testing, security clearance, and funding ($18M) for all state laboratories.

Completed several detail assignments (*see Service Activities*) in support of public health. Provided strategic briefings to Admirals and the President's National Security Council as part of the CDC's Public Health Epidemiologic Intelligence Group. Served as the CDC chemistry technical expert for strategic communications.

2009 Chief
Emergency Response Laboratory (4 years)
National Center for Environmental Health
US Centers for Disease Control and Prevention

Directed the Emergency Response Laboratory responding to urgent toxicological emergencies nationally and internationally.

Developed the World's first international biomedical proficiency testing program for chemical agent exposure. This was a joint effort with the United Nations and Organisation for the Prohibition of Chemical Weapons. Developed the reference standards in clinical matrices, proficiency testing metrics and reviewed reports from 30 countries. Developed the first agent-agnostic nerve agent test. The test was based on immune-magnetic separations, and was later applied for all suspected nerve agent exposures from 2012 to current day.

2003 Research Team Leader
Emergency Response and Air Toxicants Branch (6 years)
National Center for Environmental Health
US Centers for Disease Control and Prevention

Developed innovative clinical diagnostic tests to support the mission of the CDC. Successes includes developing tests for ricin biomarkers, paralytic shellfish toxins, amatoxins, nerve agents, sulfur mustards, nitrogen mustards, oxygen mustards, fentanyl compounds, drugs of abuse and other public health related classified compounds.

Invited to the Department of Homeland Security Integrated Consortium of Laboratory Networks. The ICLN included all Federal Laboratory Networks, and I represented toxicological testing. The ICLN was overseen by the undersecretaries of all agencies.

Developed an external funded group of 12, with an annual funding of $2M from the EPA, DoD, and HHS.

1999 BASF Corporation
Professional Development Program (4 years)

Expertly managed the end-to-end development of high-margin, value-added products tailored for the pharmaceutical, transportation, and industrial coatings sectors. I completed competitive analysis and was responsible for product lifecycles. As a key success, I bridged the gap between R&D and manufacturing by successfully orchestrating the industrial scale-up of complex synthetic and formulated products, translating laboratory innovations into robust, large-scale production assets.

Provided national engineering support, customer engagement and market strategic planning. Served at three key locations in Michigan, Massachusetts and North Carolina.

Honors and Awards

2022 Recognition for participation in the CDC Electronic Vaping and Lung injury (EVALI) task force.

2019 Laboratory Support for the Opioid Epidemic – Development of the Traceable Opioid Metabolite Kits (TOM KITS) that were distributed to all 50 states

2018 Recognition for participation in International Public Health Investigations (President's Executive Office)

Professional Society Memberships

(Membership requires a nomination)*

2025-pres American Thoracic Society
2024, 2026-pres American Society of Microbiology
2024-pres * Society of Toxicology
2022-pres * Society of Forensic Toxicology
2021-pres * The International Association of Forensic Toxicology
2018-2020 American Association for Clinical Chemistry

Publications

(*) 5 most noteworthy scholarly contributions to the discipline (3 from the last 6 years and 2 prior to that)

Peer-Reviewed Publications

1. (*) Lindheimer JB, PhD, Peters S, Ramkissoon J, Abdullah L, Bogle H, Wright R, Thompson D, Lallier A, BhavsarS, Desrochers R, Christie I, Sims KJ, Gaitens J, McDiarmid M, **Johnson RC**, Helmer D. "An Assessment of Repositories for Researching Military Exposures and Veterans Health" *Military Medicine,* usag026 (2026) Feb 12. PMID: 41672748 DOI: 10.1093/milmed/usag026
   Co-author role: I was a contributor on the team of authors who published this article

2. Hettick BE, Saddy A, Krajewski LC, **Johnson RC**, Hamelin EI. "Method for detection of naturally occurring toxins in human urine using liquid chromatography-high-resolution mass spectrometry" *J. Anal. Toxicol.* (2025) Jan 20; 49(1):36-42. PMID: 39484869 DOI: 10.1093/jat/bkae086
   Co-author role: I was a contributor to the concept and design of the experiments, and editing drafts of the manuscript.

3. Cunningham BR, Wharton RE, Lee C, Mojica MA, Krajewski LC, Gordon SC, Schaefer AM, **Johnson RC**, Hamelin EI. "Measurement of Microcystin Activity in Human Plasma

Using Immunocapture and Protein Phosphatase Inhibition Assay" *Toxins (Basel)* (2022) Nov 21; 14(11): 813. PMID: 36422987 PMCID: PMC9697287 DOI: 10.3390/toxins14110813

Co-author role: I was a contributor to the concept and design of the experiments and editing draft of the manuscript.

4. Swanson KD, Shaner RL, Krajewski LC, Bragg WA, **Johnson RC**, Hamelin EI. "Use of Diagnostic Ions for the Detection of Fentanyl Analogs in Human Matrices by LC-QTOF" *J. Am. Soc. Mass. Spectrom.* (2021) Dec 1; 32(12): 2852-2859. PMCID: PMC10955423, NIHMSID: NIHMS1973693 PMID: 34793156

   Co-author role: I was a contributor to the concept and design, and editing drafts of the manuscript.

5. (*) Pantazides BG, Crow BS, Quinones-Gonzalez J, Perez JW, Harvilchuck JA, Wallery JJ, Hu TX, Thomas JD, **Johnson RC**, Blake, TA "Development of a clinical assay to measure chlorinated tyrosine in hair and tissue samples using a mouse chlorine inhalation exposure model" *Anal. Bioanal. Chem.* (2021) Mar; 413(6): 1765-1776. PMID: 33511457, PMCID: PMC8042785 , DOI: 10.1007/s00216-020-03146-x

   Co-author role: I was the senior scientist for this project.

6. (*) Wharton RE, Casbohm J, Hoffmaster R, Brewer BN, Finn MG, **Johnson RC**, "Detection of 30 Fentanyl Analogs by Commercial Immunoassay Kits" *J. Anal. Toxicol.* (2021) Feb 13; 45(2):111-116. PMID: 33580693 DOI: 10.1093/jat/bkaa181

   Co-author role: I was the senior scientist for this project.

7. Cunningham BR, Coleman RM, Schaefer AM, Hamelin EI, **Johnson RC**, "Detection of Brevotoxin in Human Plasma by ELISA" *J. Anal. Tox.* (2021) Jan 30. PMCID: PMC8679180 NIHMSID: NIHMS1761536 PMID: 33515246

   Co-author role: I was the senior scientist for this project.

8. Isenberg SL, Carter MD, Moon JL, Laughlin S, Petway M, Mojica MA, Rood JE, Gursky AK, Sheppard CI, Bagarozzi DA, Pirkle JL, **Johnson RC**, "The Effect of Gamma Irradiation on Chemical Biomarker Recovery from Mixed Chemical/Biological Threat Exposure Specimens" *J. Appl Lab Med* (2020) Mar 1;5(2):273-280. PMID: 32445395, PMCID: PMC9022197 DOI: 10.1093/jalm/jfz022

   Co-author role: I was the senior scientist for this project.

9. Horowitz BZ, Castelli R, Hughes A, Hendrickson RG, **Johnson RC**, Thomas JD "Massive fatal overdose of abrin with progressive encephalopathy" *Clin. Toxicol.* (2020) May 58(5): 417-420. PMID: 31456429 DOI: 10.1080/15563650.2019.1655150

   Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

10. Krajewski LC, Swanson KD, Bragg WA, Shaner RL, Seymour C, Carter MD, Hamelin EI, **Johnson RC**. "Application of the fentanyl analog screening kit toward the identification of emerging synthetic opioids in human plasma and urine by LC-QTOF" *Toxicol. Lett.* (2019) Dec 5; 320: 87-94.

    Co-author role: I was the senior scientist for this project.

11. (*) Mojica MA, Carter MD, Isenberg SL, Pirkle JL, Hamelin EI, Shaner RL, Seymour C, Sheppard CI, Baldwin GT, **Johnson RC**. "Designing traceable opioid material kits to improve laboratory testing during the U.S. opioid overdose crisis" *Toxicol. Lett.* (2019) Dec 15; 317:53-58.

Co-author role: I was the senior scientist for this project.

12. Wharton EW, Cunningham BR, Schaefer AM, Guldberg SM, Hamelin EI, **Johnson RC**, "Measurement of Microcystin and Nodularin Activity in Human Urine by Immunocapture-Protein Phosphatase 2A" Assay. *Toxins* (2019) Dec 13; 11(2), 729.
    Co-author role: I was the senior scientist for this project.

13. Pantazides BG, Quinones-Gonzalez J, Rivera Nazario DM, Crow BS, Perez JW, Blake TA, **Johnson RC.** "A quantitative method to detect human exposure to sulfur and nitrogen mustards via protein adducts." *J. Chromatogr. B Analyt Biomed Life Sci*. (2019) Jul 15; 1121:9-17.
    Co-author role: I was the senior scientist for this project.

14. Seymour C, Shaner RL, Feyereisen MC, Wharton RE, Kaplan P, Hamelin EI, **Johnson RC**. "Determination of Fentanyl Analog Exposure Using Dried Blood Spots with LC-MS-MS" *J. Anal. Toxicol.* May (2019) 1;43(4): 26-276.
    Co-author role: I was the senior scientist for this project.

15. Kammer M, Kussrow A, Carter MD, Isenberg SL, **Johnson RC**, Batchelor RH, Jackson GW, Bornhop DJ. "Rapid quantification of two ch**e**mical nerve agent metabolites in serum" *Biosensors and Bioelectronic* (2019) Apr 15; 131:119-127.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

16. Arthur Chang, Jerry Thomas, **Rudolph Johnson**, Susan Gorman, Josh Shier, Luke Yip; "Nerve Agent Incidents and Public Health Preparedness" *Ann. Intern. Med.* (2019) Jan 1;170(1):59-61.
    Co-author role: I contributed to discussions about this project, design of the manuscript and messaging, and editing of the manuscript.

17. Shaner RL, Coleman RM, Schulze N, Platanitis K, Brown AA, Seymour C, Kaplan P, Perez J, Hamelin EI, **Johnson RC**. "Investigation of dried blood sampling with liquid chromatography tandem mass spectrometry to confirm human exposure to nerve agents" *Anal. Chim. Acta.*, (2018) Nov 29; 1033: 100-107.
    Co-author role: I was the senior scientist for this project.

18. Wharton RE, Ojeda-Torres G, Cunningham B, Feyereisen MC, Hill KL, Abbott NL, Seymour C, Hill D, Lang J, Hamelin EI, **Johnson RC**. "Quantification of Microcystin-LR in Human Urine by Immunocapture Liquid Chromatography Tandem Mass Spectrometry" *Chem. Res. Toxicol.* (2018) Sept 17; 31(9):893-903.
    Co-author role: I was the senior scientist for this project.

19. Coleman RM, Ojeda-Torres G, Bragg W, Feary D, McKinney P, Castrodale L, Verbrugge D, Stryker K, DeHart E, Cooper M, Hamelin E, Thomas J, **Johnson RC**. "Saxitoxin Exposure Confirmed by Human Urine and Food Analysis" *J. Anal. Toxicol* (2018), Sep 1;42(7).
    Co-author role: I was the senior scientist for this project.

20. Abbott NL, Hill KL, Garrett A, Carter MD, Hamelin EI, **Johnson RC** "Detection of alpha, beta and gamma amanitin in urine by LC-MS/MS using 15N10-alpha-amanitin as the internal standard." *Toxicon* (2018) 152; 71-77.
    Co-author role: I was the senior scientist for this project.

21. Isenberg SL, Carter MD, Miller MA, Noras AI, Mojica MA, Carlsen ST, Bulathsinghala CP, Thomas JD, **Johnson RC**. "Quantification of Ricinine and Abrine in Human Plasma by HPLC-MS-MS: Biomarkers of Exposure to Ricin and Abrin." *J Anal Toxicol* (2018) Nov 1;42(9):630-636.
    Co-author role: I was the senior scientist for this project.

22. Sanford AA, Isenberg SL, Carter MD, Mojica MA, Mathews TP, Harden LA, Takeoka GR, Thomas JD, Pirkle JL, **Johnson RC**. "Quantitative HPLC-MS/MS analysis of toxins in soapberry seeds: Methylenecyclopropylglycine and hypoglycin A." *Food Chem.* (2018) Oct 30;264:449-454.
    Co-author role: I was the senior scientist for this project.

23. Sanford AA, Isenberg SL, Carter MD, Mojica MA, Mathews TP, Laughlin S, Thomas JD, Pirkle JL, **Johnson RC**, "Quantification of hypoglycin A and methyelenecyclopropylglycine in human plasma by HPLC-MS/MS", *J. Chrom. B* (2018) Sep 15;1095:112-118.
    Co-author role: I was the senior scientist for this project.

24. Attard TJ, Carter MD, Fang M, **Johnson RC**, Reid GE. "Structural Characterization and Absolute Quantification of Microcystin Peptides Using Collision-Induced and Ultraviolet Photo-Dissociation Tandem Mass Spectrometry." *J. Am. Soc. Mass Spectrom.* (2018) Sep;29(9):1812-1825.
    Co-author role: I was the senior scientist for this project.

25. Onder S, Schopfer LM, Tacal O, Blake TA, **Johnson RC**, Lockridge O. "Mass Spectral Detection of Diethoxyphospho-Tyrosine Adducts on Proteins from HEK293 Cells Using Monoclonal Antibody depY for Enrichment." *Chem. Res. Toxicol.* (2018) Jun 18;31(6):520-530.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

26. Bragg WA, Garrett A, Hamelin EI, Coleman RM, Campbell K, Elliott CT, **Johnson RC**."Quantitation of saxitoxin in human urine using immunocapture extraction and LC-MS." *Bioanalysis* (2018) Feb;10(4):229-239.
    Co-author role: I was the senior scientist for this project.

27. Onder S, Schopfer LM, Cashman JR, Tacal O, **Johnson RC**, Blake TA, Lockridge O. "Use of Hupresin To Capture Red Blood Cell Acetylcholinesterase for Detection of Soman Exposure." *Anal. Chem.* (2018) Jan 2;90(1):974-979.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

28. Shaner RL, Schulze ND, Seymour C, Hamelin EI, Thomas JD, **Johnson RC**. "Quantitation of Fentanyl Analogs in Dried Blood Spots by Flow-Through Desorption Coupled to Online Solid Phase Extraction Tandem Mass Spectrometry." *Anal. Methods* (2017);9:3876-3883.
    Co-author role: I was the senior scientist for this project.

29. Onder S, Dafferner AJ, Schopfer LM, Xiao G, Yerramalla U, Tacal O, Blake TA, **Johnson RC**, Lockridge O. "Monoclonal Antibody That Recognizes Diethoxyphosphotyrosine-Modified Proteins and Peptides Independent of Surrounding Amino Acids." *Chem. Res. Toxicol.* (2017) Dec 18;30(12):2218-2228.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

30. Dafferner AJ, Schopfer LM, Xiao G, Cashman JR, Yerramalla U, **Johnson RC**, Blake TA, Lockridge O. “Immunopurification of Acetylcholinesterase from Red Blood Cells for Detection of Nerve Agent Exposure.” *Chem. Res. Toxicol.* (2017) Oct 16;30(10):1897-1910.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

31. Dhariwal AC, Venkatesh S, Shrivastava A, Chakrabarti A, Thomas JD, Carter MD, **Johnson R**, Laserson KF, Srikantiah P. “Routine fruit washing to prevent acute toxic encephalopathy - Authors' reply.” *Lancet Glob. Health.* (2017) Sep;5(9):e864.
    Co-author role: I contributed to discussions about this research project, and editing of the manuscript.

32. Elizabeth I. Hamelin, Rebecca L. Shaner, Brian S. Crow, Thomas A. Blake*, Jerry D. Thomas, **Rudolph C. Johnson**. “Quantitation of metabolites in serum for human exposure determinations using solid phase extraction liquid chromatography isotope dilution tandem mass spectrometry.” *J. of Chem. and Biol. Def.* (2017).
    Co-author role: I was the senior scientist for this project.

33. Wharton RE, Feyereisen MC, Gonzalez AL, Abbott NL, Hamelin EI, **Johnson RC**. “Quantification of saxitoxin in human blood by ELISA.” *Toxicon* (2017) Jul;133:110-115.
    Co-author role: I was the senior scientist for this project.

34. Mathews TP, Carter MD, Johnson D, Isenberg SL, Graham LA, Thomas JD, **Johnson RC**. “High-Confidence Qualitative Identification of Organophosphorus Nerve Agent Adducts to Human Butyrylcholinesterase.” *Anal. Chem.* (2017) Feb 7;89(3):1955-1964.
    Co-author role: I was the senior scientist for this project.

35. Coleman R, Lemire SW, Bragg W, Garrett A, Ojeda-Torres G, Wharton R, Hamelin E, Thomas J, **Johnson RC**. “Development and validation of a high-throughput online solid-phase extraction-liquid chromatography-tandem mass spectrometry method for the detection of gonyautoxins 1&4 and gonyautoxins 2&3 in human urine.” *Biomed. Chromatogr.* (2017) Sep;31(9).
    Co-author role: I was the senior scientist for this project.

36. Carter MD, Pierce SS, Dukes III AD, Brown RH, Crow BS, Shaner RL, Heidari L, Isenberg SL, Perez JW, Graham LA, Thomas JD, **Johnson RC**, and Gerdon AE. Supplemental Learning in the Laboratory: An Innovative Approach for Evaluating Knowledge and Method Transfer. *J. Chem. Educat* (2017) Jul 10;94(8):1094-7.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

37. Graham LA, Johnson D, Carter MD, Stout EG, Erol HA, Isenberg SL, Mathews TP, Thomas JD, **Johnson RC**. “A high-throughput UHPLC-MS/MS method for the quantification of five aged butyrylcholinesterase biomarkers from human exposure to organophosphorus nerve agents.” *Biomed. Chromatogr.* (2017) Apr;31(4).
    Co-author role: I was the senior scientist for this project.

38. Peng H, Blake TA, **Johnson RC**, Dafferner AJ, Brimijoin S, Lockridge O. “Monoclonal Antibodies That Recognize Various Folding States of Pure Human Butyrylcholinesterase

Can Immunopurify Butyrylcholinesterase from Human Plasma Stored at Elevated Temperatures." *ACS Omega.* (2016) Dec 31;1(6):1182-1191.

Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

39. Lockridge O, Norgren RB Jr, **Johnson RC**, Blake TA. "Naturally Occurring Genetic Variants of Human Acetylcholinesterase and Butyrylcholinesterase and Their Potential Impact on the Risk of Toxicity from Cholinesterase Inhibitors." *Chem. Res. Toxicol.* (2016) Sep 19;29(9):1381-92.

    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

40. Isenberg SL, Carter MD, Hayes SR, Graham LA, Johnson D, Mathews TP, Harden LA, Takeoka GR, Thomas JD, Pirkle JL, **Johnson RC**. "Quantification of Toxins in Soapberry (Sapindaceae) Arils: Hypoglycin A and Methylene-cyclopropylglycine." *J. Agric. Food Chem.* (2016) Jul 13;64(27):5607-13.

    Co-author role: I was the senior scientist for this project.

41. Coleman R, Lemire SW, Bragg W, Garrett A, Ojeda-Torres G, Hamelin E, **Johnson RC**, Thomas J. "Development and validation of a high-throughput online solid phase extraction - Liquid chromatography - Tandem mass spectrometry method for the detection of tetrodotoxin in human urine." *Toxicon* (2016) Sep 1;119:64-71.

    Co-author role: I was the senior scientist for this project.

42. Hamelin EI, Blake RA, Perez JW, Crow BS, Shaner RL, Coleman RM, **Johnson RC**, "Bridging the Gap between Sample Collection and Laboratory Analysis: Using Dried Blood Spots to Identify Human Exposure to Chemical Agents" *Proc SPIE Int Soc Opt Eng* (2016) May 13; 98630.

    Co-author role: I was the senior scientist for this project.

43. Isenberg SL, Carter MD, Crow BS, Graham LA, Johnson D, Beninato N, Steele K, Thomas JD, **Johnson RC**. "Quantification of Hydrazine in Human Urine by HPLC-MS-MS." *J. Anal. Toxicol.* (2016) May;40(4):248-54.

    Co-author role: I was the senior scientist for this project.

44. Crow BS, Quiñones-González J, Pantazides BG, Perez JW, Winkeljohn WR, Garton JW, Thomas JD, Blake TA, **Johnson RC**. "Simultaneous Measurement of 3-Chlorotyrosine and 3,5-Dichlorotyrosine in Whole Blood, Serum and Plasma by Isotope Dilution HPLC-MS-MS." *J. Anal. Toxicol.* (2016) May;40(4):264-71.

    Co-author role: I was the senior scientist for this project.

45. Schulze ND, Hamelin EI, Winkeljohn WR, Shaner RL, Basden BJ, deCastro BR, Pantazides BG, Thomas JD, **Johnson RC**. "Evaluation of Multiple Blood Matrices for Assessment of Human Exposure to Nerve Agents." *J. Anal. Toxicol.* (2016) Apr;40(3):229-35.

    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

46. Peng H, Brimijoin S, Hrabovska A, Krejci E, Blake TA, **Johnson RC**, Masson P, Lockridge O Monoclonal antibodies to human butyrylcholinesterase reactive with butyrylcholinesterase in animal plasma. *Chem. Biol. Interact.* (2016) Jan 5;243:82-90.

    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

47. Peng H, Brimijoin S, Hrabovska A, Targosova K, Krejci E, Blake TA, **Johnson RC**, Masson P, Lockridge O. Comparison of 5 monoclonal antibodies for immunopurification of human butyrylcholinesterase on Dynabeads: KD values, binding pairs, and amino acid sequences. *Chem. Biol. Interact.* (2015) Oct 5;240:336-45.
    Co-author role: I contributed to discussions about this research project, design of experiments and editing of the manuscript.

48. Isenberg SL, Carter MD, Graham LA, Mathews TP, Johnson D, Thomas JD, Pirkle JL, **Johnson RC**. "Quantification of metabolites for assessing human exposure to soapberry toxins hypoglycin A and methylenecyclopropylglycine." *Chem. Res. Toxicol.* (2015) Sep 21;28(9):1753-9.
    Co-author role: I was the senior scientist for this project.

49. Johnson D, Carter MD, Crow BS, Isenberg SL, Graham LA, Erol HA, Watson CM, Pantazides BG, van der Schans MJ, Langenberg JP, Noort D, Blake TA, Thomas JD, **Johnson RC**. "Quantitation of ortho-cresyl phosphate adducts to butyrylcholinesterase in human serum by immunomagnetic-UHPLC-MS/MS" *J. Mass Spectrom.* (2015) Apr;50(4):683-92.
    Co-author role: I was the senior scientist for this project.

50. Perez JW, Pantazides BG, Watson CM, Thomas JD, Blake TA, **Johnson RC**. "Enhanced stability of blood matrices using a dried sample spot assay to measure human butyrylcholinesterase activity and nerve agent adducts." *Anal. Chem*. (2015) Jun 2;87(11):5723-9.
    Co-author role: I was the senior scientist for this project.

51. Bragg WA, Lemire SW, Coleman RM, Hamelin EI, **Johnson RC**. "Detection of human exposure to saxitoxin and neosaxitoxin in urine by online-solid phase extraction-liquid chromatography-tandem mass spectrometry." *Toxicon* (2015) Jun 1;99:118-24.
    Co-author role: I was the senior scientist for this project.

52. Pantazides BG, Crow BS, Garton JW, Quiñones-González JA, Blake TA, Thomas JD, **Johnson RC**. "Simplified Method for Quantifying Sulfur Mustard Adducts to Blood Proteins by Ultrahigh Pressure Liquid Chromatography−Isotope Dilution Tandem Mass Spectrometry." *Chem. Res. Toxicol.* (2015) Feb 16;28(2):256-61.
    Co-author role: I was the senior scientist for this project.

53. Crow BS, Pantazides BG, Quiñones-González J, Garton JW, Carter MD, Perez JW, Watson CM, Tomcik DJ, Crenshaw MD, Brewer BN, Riches JR, Stubbs SJ, Read RW, Evans RA, Thomas JD, Blake TA, **Johnson RC** "Simultaneous measurement of tabun, sarin, soman, cyclosarin, VR, VX, and VM adducts to tyrosine in blood products by isotope dilution UHPLC-MS/MS." *Anal. Chem.* (2014) Oct 21;86(20):10397-405.
    Co-author role: I was the senior scientist for this project.

54. Shaner RL, Kaplan P, Hamelin EI, Bragg WA, **Johnson RC**. "Comparison of two automated solid phase extractions for the detection of ten fentanyl analogs and metabolites in human urine using liquid chromatography tandem mass spectrometry." *J Chromatogr B Analyt. Technol. Biomed. Life Sci.* (2014) Jul 1;962:52-8.
    Co-author role: I was the senior scientist for this project.

55. Hamelin EI, Schulze ND, Shaner RL, Coleman RM, Lawrence RJ, Crow BS, Jakubowski

EM, **Johnson RC**. "Quantitation of five organophosphorus nerve agent metabolites in serum using hydrophilic interaction liquid chromatography and tandem mass spectrometry." *Anal Bioanal. Chem.* (2014) Aug;406(21):5195-202.
Co-author role: I was the senior scientist for this project.

56. Pantazides BG, Watson CM, Carter MD, Crow BS, Perez JW, Blake TA, Thomas JD, **Johnson RC**. "An enhanced butyrylcholinesterase method to measure organophosphorus nerve agent exposure in humans." *Anal. Bioanal. Chem.* (2014) Aug;406(21):5187-94.
Co-author role: I was the senior scientist for this project.

57. Wooten JV, Pittman CT, Blake TA, Thomas JD, Devlin JJ, Higgerson RA, **Johnson RC**. "A case of abrin toxin poisoning, confirmed via quantitation of L-abrine (N-methyl-L-tryptophan) biomarker". *J. Med. Toxicol.* (2014) Dec;10(4):392-4.
Co-author role: I was the senior researcher for this publication and mentored Wooten to draft his first manuscript.

58. Carter MD, Crow BS, Pantazides BG, Watson CM, Thomas JD, Blake TA, **Johnson RC**. "Direct quantitation of methyl phosphonate adducts to human serum butyrylcholinesterase by immunomagnetic-UHPLC-MS/MS." *Anal. Chem.* (2013) Nov 19;85(22):11106-11.
Co-author role: I was the senior researcher for this project.

59. Andacht TM, Pantazides BG, Crow BS, Fidder A, Noort D, Thomas JD, Blake TA, **Johnson RC.** "An enhanced throughput method for quantification of sulfur mustard adducts to human serum albumin via isotope dilution tandem mass spectrometry." *J. Anal. Toxicol.* (2014) Jan-Feb;38(1):8-15.
Co-author role: I was the senior researcher for this project.

60. Carter MD, Crow BS, Pantazides BG, Watson CM, DeCastro BR, Thomas JD, Blake TA, **Johnson RC**. "Profiling cholinesterase adduction: a high-throughput prioritization method for organophosphate exposure samples." *J. Biomol. Screen* (2014) Feb;19(2):325-30.
Co-author role: I was the senior researcher for this project.

61. Hamelin EI, Bragg W, Shaner RL, Swaim LL, **Johnson RC**. "Comparison of high-resolution and tandem mass spectrometry for the analysis of nerve agent metabolites in urine." *Rapid Commun. Mass Spectrom.* (2013) Aug 15;27(15):1697-704.
Co-author role: I was the senior researcher for this project.

62. Abney CW, Knaack JL, Ali AA, Johnson RC. "Novel dual-mode immunomagnetic method for studying reactivation of nerve agent-inhibited butyrylcholinesterase." *Chem. Res. Toxicol.* (2013) May 20;26(5):775-82.
Co-author role: I was the senior researcher for this project.

63. Pittman CT, Guido JM, Hamelin EI, Blake TA, **Johnson RC**. "Analysis of a ricin biomarker, ricinine, in 989 individual human urine samples." *J. Anal. Toxicol.* (2013) May;37(4):237-40.
Co-author role: I was the senior researcher for this project.

64. Knaack JS, Zhou Y, Magnuson M, Silvestri E, **Johnson RC**. "Performance of a novel high throughput method for the determination of VX in drinking water samples." *Anal. Chem.* (2013) Mar 5;85(5):2611-6.
Co-author role: I was the senior researcher for this project.

65. Knaack JS, Zhou Y, Abney CW, Prezioso SM, Magnuson M, Evans R, Jakubowski EM,

Hardy K, **Johnson RC**. “High-throughput immunomagnetic scavenging technique for quantitative analysis of live VX nerve agent in water, hamburger, and soil matrixes.” *Anal. Chem.* (2012) Nov 20;84(22):10052-7.
Co-author role: I was the senior researcher for this project.

66. Knaack JS, Zhou Y, Abney CW, Jacob JT, Prezioso SM, Hardy K, Lemire SW, Thomas J, **Johnson RC**. “A high-throughput diagnostic method for measuring human exposure to organophosphorus nerve agents.” *Anal. Chem.* (2012) Nov 6;84(21):9470-7.
Co-author role: I was the senior researcher for this project.

67. Reutter D, Schutzer SE, Craft CM, Fletcher J, Fricke FL, Holowachuk SA, **Johnson RC**, Keim PS, Pearson JL, Sibert RW, Velsko S. “Planning for exercises of chemical, biological, radiological, and nuclear (CBRN) forensic capabilities.” *Biosecur. Bioterror* (2010) Dec;8(4):343-55.
Co-author role: I contributed by participating in this workshop, drafting and editing language.

68. (*) Sporty JL, Lemire SW, Jakubowski EM, Renner JA, Evans RA, Williams RF, Schmidt JG, van der Schans MJ, Noort D, **Johnson RC**. “Immunomagnetic separation and quantification of butyrylcholinesterase nerve agent adducts in human serum.” *Anal. Chem.* (2010) Aug 1;82(15):6593-600.
Co-author role: I was the senior researcher for this project.

69. Hamelin E, Swaim L, Thomas J, Kobelski R, **Johnson RC**. “Quantitation of tetramethylene disulfotetramine in human urine using isotope dilution gas chromatography mass spectrometry (GC/MS and GC/MS/MS).” *J Chromatogr. B Analyt. Technol. Biomed. Life Sci.* (2010) Oct 1;878(27):2541-7.
Co-author role: I was the senior researcher on the project. I contributed to the writing and mentoring of Hamelin.

70. **Johnson RC**, Zhou Y, Jain R, Lemire SW, Fox S, Sabourin P, Barr JR. “Quantification of L-abrine in human and rat urine: a biomarker for the toxin abrin.” *J. Anal. Toxicol.* (2009) Mar; 33(2):77-84.
Co-author role: I was the lead researcher for this project.

71. Skinner C, Thomas J, **Johnson R,** Kobelski R. “Medical toxicology and public health--update on research and activities at the Centers for Disease Control and Prevention, and the Agency for Toxic Substances and Disease Registry: introduction to the Laboratory Response Network-Chemical (LRN-C).” *J. Med. Toxicol.* (2009) Mar;5(1):46-9.
Co-author role: I contributed to drafting the manuscript, and designing the outline of this document.

72. **Johnson RC**, Zhou Y, Statler K, Thomas J, Cox F, Hall S, Barr JR. “Quantification of saxitoxin and neosaxitoxin in human urine utilizing isotope dilution tandem mass spectrometry.” *J. Anal. Toxicol. (*2009) Jan-Feb;33(1):8-14.
Co-author role: I was the lead researcher for this project.

73. Swaim LL, **Johnson RC**, Zhou Y, Sandlin C, Barr JR. “Quantification of organophosphorus nerve agent metabolites using a reduced-volume, high-throughput sample processing format and liquid chromatography-tandem mass spectrometry.” *J. Anal. Toxicol.* (2008) Nov-Dec;32(9):774-7.
Co-author role: I was the lead researcher for this project and Swaim reported to me.

I mentored her to write her first publication. Barr was the senior staff member.

74. Holland KE, Solano MI, **Johnson RC**, Maggio VL, Barr JR. “Modifications to the organophosphorus nerve agent-protein adduct refluoridation method for retrospective analysis of nerve agent exposures.” *J. Anal. Toxicol.* (2008) Jan-Feb;32(1):116-24.
    Co-author role: I contributed to the drafting of the manuscript and preparation of a limited number of samples.

75. Lemire SW, Ash DH, **Johnson RC**, Barr JR. “Mass spectral behavior of the hydrolysis products of sesqui- and oxy-mustard type chemical warfare agents in atmospheric pressure chemical ionization.” *J. Am. Soc. Mass Spectrom.* (2007) Aug;18(8):1364-74.
    Co-author role: I contributed to the experimental design, selection of the mustard agent and drafting of the manuscript.

76. **Johnson RC**, Lemire SW, Woolfitt AR, Ospina M, Preston KP, Olson CT, Barr JR. “Quantification of ricinine in rat and human urine: a biomarker for ricin exposure.” *J. Anal. Toxicol.* (2005) Apr;29(3):149-55.
    Co-author role: I was the lead researcher for this project, and complete the animal model design, extractions, interpretation with a veterinarian, and drafted the bulk of the manuscript.

77. **Johnson RC**, Cooks RG, Allen TM, Cisper ME, Hemberger PH, "Membrane Introduction Mass Spectrometry: Trends and Applications", *Rev. Mass Spectrom*., 19, 1 (2000).
    Co-author role: I was the lead graduate student for this project, and Hemberger was a senior scientist from a national laboratory. I drafted the bulk of the document, and there was very little new data collection included here.

78. **Johnson RC,** Koch K, Cooks RG, "Affinity Liquid Membrane Introduction Mass Spectrometry", *Anal. Chim. Acta,* 395, 239-249 (1999).
    Co-author role: I was the lead graduate student and Koch reported to me for this project. Cooks was the faculty advisor of the project.

79. **Johnson RC,** Koch K, Cooks RG, "On-line Monitoring of Reactions of Epichlorohydrin in Water using Liquid-MIMS", *Ind. Engin. Chem. Res*., 38, 343 (1999).
    Co-author role: I was the lead graduate student and Koch reported to me for this project. This was an in-situ organic chemistry project. Cooks was the faculty advisor of the project.

80. Badman ER, **Johnson RC**, Plass WR, Cooks RG, "A Miniature Cylindrical Quadrupole Ion Trap: Simulation and Experiment", *Anal. Chem*., 70, 4896-4901 (1998).
    Co-author role: I was a graduate student and Badman was the lead on this project. I contributed to the writing and instrument data collection. Wolfgang Plass was a theoretical physicist who calculated the geometry of the ion trap. Cooks was the faculty advisor of the project.

81. **Johnson RC**, Srinivasan N, Cooks RG, Schell D, "MIMS in a Pilot Plant: On-line Monitoring of Fermentation Broths", *Rapid Commun. Mass Spectrom.,* 363-367 (1997).
    Co-author role: I was a graduate student leading this research topic, completing all experiments, developing design and drafting manuscript for senior advisor review. Cooks was the faculty advisor of the project.

82. **Johnson RC**, Koch K, Kasthurikrishnan N, Plass W, Patrick JS, Cooks RG, "An Evaluation

of Low Vapor Pressure Liquids for Membrane Introduction Mass Spectrometry", *J. Mass Spectrom.,* 1299-1304 (1997).

Co-author role: I was a graduate student leading this research topic, completing all experiments, developing design and drafting manuscript for senior advisor review. Cooks was the faculty advisor of the project.

83. Srinivasan N, **Johnson RC**, Kasthurikrishnan N, Wong PW, Cooks RG, "Membrane Introduction Mass Spectrometry" *Anal. Chim. Acta,* 350, 257-271 (1997).

Co-author role: I was a graduate student working on this topic. Co-authors had overlap with this project. Cooks was the faculty advisor of the project.

84. Kopf G, Headley JV, Peru K, **Johnson RC**, Soni MH, Cooks RG, "Comparison of Tandem MS Techniques", *Rapid Commun. Mass Spectrom.*, 24-30 (1997).

Co-author role: This was a biochemical experiment led by Kopf, and I performed the experiments and contributed to drafting the manuscript. Cooks was the faculty advisor of the project.

85. Settle FA, Pharr DA, **Johnson RC**, Knick E, "Validation Procedures for Automated Chemical Analysis", *Laboratory Robotics and Automation*, 293-299 (1996).

Co-author role: I was an undergraduate student and this publication was based on my thesis. Settle was the faculty advisor of the project.

Reviews, Case Reports, and Other

1. Alhatali B, Al Lawatia S, Khamis F, Kantur S, Al-Abri S, Kapil V, Thomas J, **Johnson R**, Hamelin EI, Coleman RM, Kazzi Z. “A Cluster of Tetrodotoxin Poisoning in Oman” *Clin. Tox.* (2021) Apr 29:1-5. PMID: 33913398 DOI: 10.1080/15563650.2021.1917595

Co-author role: I developed and validated the method used to test these case specimens. Kazzi provided interpretations as lead physician.

2. Knaack JS, Porter KA, Jacob JT, Sullivan K, Forester M, Wang RY, Trainer VL, Morton S, Eckert G, McGahee E, Thomas J, McLaughlin J, Johnson RC. “Case diagnosis and characterization of suspected paralytic shellfish poisoning in Alaska.” Harmful Algae (2016) Jul;57(Pt B):45-50.

Co-author role: I was the senior scientist for this project.
the language of the manuscript.

3. Shrivastava A, Kumar A, Thomas JD, Laserson KF, Bhushan G, Carter MD, Chhabra M, Mittal V, Khare S, Sejvar JJ, Dwivedi M, Isenberg SL, Johnson R, Pirkle JL, Sharer JD, Hall PL, Yadav R, Velayudhan A, Papanna M, Singh P, Somashekar D, Pradhan A, Goel K, Pandey R, Kumar M, Kumar S, Chakrabarti A, Sivaperumal P, Kumar AR, Schier JG, Chang A, Graham LA, Mathews TP, Johnson D, Valentin L, Caldwell KL, Jarrett JM, Harden LA, Takeoka GR, Tong S, Queen K, Paden C, Whitney A, Haberling DL, Singh R, Singh RS, Earhart KC, Dhariwal AC, Chauhan LS, Venkatesh S, Srikantiah P. “Association of acute toxic encephalopathy with litchi consumption in an outbreak in Muzaffarpur, India, 2014: a case-control study.” Lancet Glob. Health (2017) Apr;5(4):e458-e466.

Co-author role: I was the senior scientist for the development of the diagnostic method used, and contributed to the writing and editing of the manuscript.

4. Hamelin EI, Johnson RC, Osterloh JD, Howard DJ, Thomas JD. “Evaluation of ricinine, a ricin biomarker, from a non-lethal castor bean ingestion.” J. Anal. Toxicol. (2012) Nov-Dec;36(9):660-2.

Co-author role: I designed the experiments and contributing to drafting

5. Smith SW, Graber NM, Johnson RC, Barr JR, Hoffman RS, Nelson LS. "Multisystem organ failure after large volume injection of castor oil." Ann. Plast. Surg. (2009) Jan;62(1):12-4.
   Co-author role: I developed the method, collected the data and drafted language which was used in this case report.

Chapters in Books, Videos or Other Appropriate Media

1. Blake TA, Kalb SR, Johnson RC, Barr JR. Toxin Analysis Using Mass Spectrometry (2019) 225. This is a book chapter in Microbial Forensics ISBN 9780128153796.
   Co-author role: I contributed to discussions about this project, design of the manuscript and messaging, and editing of the manuscript.

2. Johnson RC, Kalb SR, Barr, JR, Microbial Forensics, Second Edition (2011), 405-420.
   Co-author role: I was the primary author of the manuscript and coordinated any outside contributions from the other authors.

Invited Research Presentations

2026 **University of Madison Wisconsin, School of Medicine and Public Health.** The topic of the presentation was " The Sentinel Laboratory Library to Improve Quality of Life in Wisconsin". The topic of the conversation was how to develop biorepositories to support public health investigations. In addition, a review of the Wisconsin State Laboratory of Hygiene was provided.

2025 **US National Academy of Science.** The topic of the presentation was "Chemical Preparedness" related to chemical agent exposures. I provided a presentation and then answered questions as part of a panel.

2025 **Vietnam Veterans of America (VVA).** Presented on progress in expanding the use of the Agent Orange Ranch Hand study.

2019 **American Association of Forensic Sciences**. "Collaborating to Develop Fentanyl Testing Capability in Public Health Laboratories". The topic of the presentation was the newly developed tradeable opioid material kits (TOM KITS).

2013 **US National Academy of Sciences**. "State of the Art for Autonomous Detection Systems Using Mass Spectrometry". The topic of the presentation was advances in mass spectrometry and considerations for funding Biowatch Generation IV.

2013 **Dutch Royal Academy of Science.** Presented on ethical and dual use considerations for pathogen research and publications.

2011 **Oklahoma State University, Center for Health Sciences.** Provided a review of toxicological research related to chemical poisons and agents.

2011 **Organisation for the Prohibition of Chemical Weapons.** "Overview of CDC's Support of US States" Review of the Laboratory Response Network and Applicability to the OPCW Biomedical Program. Following this discussion, I

provided input on toxin related research to the US Ambassador at the OPCW.

2011 **Organisation for the Prohibition of Chemical Weapons.** "Alkaloid Toxin Analysis in the US Centers for Disease Control and Prevention". The topic of the discussion was alkaloid toxins (warfarin) and detection using clinical diagnostic methods.

2011 **American Society for Mass Spectrometry.** "Mass Spectrometry: A Tool in CDC's Mission of Protecting Public Health". The topic of the presentation focused on the use of high resolution, matrix assisted and high throughput mass spectrometry.

2010 **Mass Spectrometry and Advances in the Clinical Laboratory (MSACL). "**Quantitative Analysis of Human Exposure to α-Amanitin, T-2, HT-2, DAS and DON".

2010 **Session Chair and Presenter for the Mass Spectrometry and Advances in the Clinical Laboratory (MSACL) Conference.** "Emergency Response – Adduct Methods". The Topic of the conversation was chemical agent analysis and the use of agnostic protein adducts to detect human exposures.

2010 **Speaker AOAC International Pacific Northwest Regional Section Meeting,** "High Throughput Quantitation of Saxitoxin in Human Urine Using 96-well Solid Phase Extraction"

2009 **Session Chair and Presenter for National Environmental Public Health Conference (NEPHC)**, "Quantitation of Human Exposure to OP-Nerve Agents"

2007 **Department of Defense, Edgewood Chemical and Biological Center (ECBC).** Provided two presentations. The first one was an overview of environmental health collaborations with ECBC. The second presentation was "Quantitation of Human Exposure to OP-Nerve Agents and Mycotoxins". This was followed by an award ceremony, where I was presented with an award and interviewed by the military public affairs office.

2005 **Association of Public Health Laboratories Podium talks** for the Laboratory Response Network. Provided routine updates on leveraging 96-well dual pump technologies to quadruple throughput of the network laboratories. Provided updates from 2005-2013.

Research Support

2016 Centers for Disease Control and Prevention – National Center for Injury Prevention (2016-2021). This was a total of $15M to create Traceable Opioid Material Kits. These kits were manufactured and distributed to all 50 states including public health and forensic laboratories.

2014 Centers for Disease Control and Prevention – Preparedness Division - Internal Competitive Funding (2014-2023). This averaged about $2M per year. This was an annual competition for internal resources beyond base-level funding. These funds were used to develop innovative methods to prepare for chemical and toxin exposures. It was also used to support projects tasked by the Executive Office. I

served as the PI for these projects.

2012 Defense Threat Reduction Agency (DTRA) - $1.5 per year for 4 years. This research was related to developing diagnostic tests for cholinesterase inhibitors. The Department of Defense Edgewood Chemical and Biological Center (ECBC) was cofounded to perform animal models as well as enrichment of environmental and food samples. These matrices were rendered safe and provided to CDC to be used as controls for method validation.

2010 Environmental Protection Agency – $2M award per year for 5 years. This award supported developing analytical methods for the "Standard Analytical Methods" initiative. This award was used to develop five analytical methods for use in the Environmental Response Laboratory Network (ERLN). The award included funding to develop the quality assurance plan protocol (QAPP), validate the methods and transfer the methods to the EPA. I was the PI on the project.

Service Activities

UWSMPH

2026 **Task Force for the UW-Madison School of Medicine and Public Health: Past Integration and Future Vision.** I serve as a co-chair to develop a review of the past twenty years of the integration of SMPH and envision success in the next twenty years. The focus is on the combination of the schools of medicine and public health. The committee consists of about 14 members plus leadership.

Professional Service

National/International

2023 **Initiated Program for the Promise to Address Chemical Toxicants (PACT ACT) program at the US Department of Veterans Affairs.** This required initiating the program, meeting with the stakeholders, consumers and customers. Functioning components were the expert scientific resources, budget management, and reporting the Executive Leadership about the program. Trained to lead Federal Advisory Committees (FACA).

2023 **White House Office of Science Technology and Policy (OSTP) Perfluorinated alkyl substances (PFAS) workgroup.** While at the US Department of Veterans Affairs, I supported the secretary's workgroup to identify causes and detection of PFAS contamination. The OSTP PFAS group was managed out of the Department of Energy.

2022 **Detailed to Support Public Health Response to the Ukraine Conflict.** Served as the chemical, biological, radiological, nuclear and explosive (CBRNE) expert. Collaborated with all aspects of US support for the Ukraine, Executive office and Ukrainian representatives for weekly updates.

2022 **Detailed to Direct the CDC COVID-19 Laboratory Testing Task Force**. Responsibilities included drive-through testing, school and senior center national testing, In-home testing kit for COVID-19 testing (Binax), food bank distribution of COVID-19 test kits, Distribution to US territories. Operating budget during COVID-19 was $1.5B.

2021 **Nuclear and Radiological investigative support for the US Department of State.** Served as the lead public health expert on radiological and nuclear topics because the Laboratory Response Network provided clinical testing support for uranium and plutonium environmental exposures

2019 **Detailed as Director of the CDC Emergency Operations Center**. Served as the Acting Director of Emergency Operations (2019-2020). Responsibilities include CDC staffing and logistic support for Polio, Ebola, Electronic cigarette lung injury (EVALI) and COVID-19 responses. Directed a staff of 280 emergency management staff and managed assigned volunteer technical and medical staff.

2016 **Associate Editor for the Journal of Analytical Toxicology.** Served as an expert for the chemical agent, illicit drug and industrial chemical exposures.

2015 **National preparedness task force for the Federal Bureau of Investigation**. I served as the CDC toxicological expert at the FBI Hoover building and all joint preparedness activities. I was on call and was required to report an FBI field office within two hours of any critical notification. This required training on all FBI administrative system for communications (8 years), incident command system and National Incident Management System.

2013 **White House Office of Science Technology and Policy (OSTP) Suspected international use of chemical weapons task force**. Served as lead public health representative and was assigned to collaborated with various international laboratories including the Netherlands, United Kingdom, Denmark, Finland and Sweden. I worked with the US Ambassadors assigned to the mission in the Hague, Netherlands (4 years).

2013 **Nominated Chair, Shepard Award Committees**. Nominated to select the top scientific awards across the US Centers for Disease Control and Prevention. Included recruiting representative from all Centers, evaluating top publications, and selecting the awardee through statistical metrics. Invited back to repeat the effort for a second time (2 years).

2013 **Steering Committee Member for the Scientific Workgroup for Chemical Biological Radiological Nuclear and Explosive forensics workgroup (SWG CBRNE).** Served as the CDC environmental lead for collaborations with the FBI. This committee the lead SWG that addressed all issues in the forensic communities related to terrorism activities.

2013 **Chair of Session, Gordon Research Conference for Chemical and Biological Defense.** The session title was “Detection and Analysis of Chemical Agents and Toxins” and was cochaired by Ben Capacio from the US Army Institute of Chemical Defense.

2012 Steering Committee for the Gordon Research Conference on Chemical and Biological Defense. In this role I co-developed the meeting agenda, funding sources and invited speakers to create this conference.

2011 Session Chair for the Gordon Research Conference, focusing on Laboratory Response Network response and collaboration. Invited representatives from Pacific Northwest Laboratories, Federal Bureau of Investigation and Department of Defense.

2005 Scientific Workgroup for Forensic Analysis of Chemical Terrorism (SWG FACT). I served as the CDC environmental lead for collaborations with the FBI. This role addressed shortcomings in the forensic community identified by the National Academies.