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Jacob Kremer, Ph.D.

Senior Scientist | Health Sciences
Oakland
+1-510-268-5086 | jkremer@exponent.com

Professional Profile

Dr. Jacob Kremer is an environmental health scientist with focus in exposure assessment, risk assessment, industrial hygiene, and occupational health. His research has focused on human exposures and health effects associated with indoor and household air pollution.

Dr. Kremer has extensive experience with understanding exposure to fine particulate matter, black carbon, and carbon monoxide in the indoor air setting. As a doctoral student, he worked on the largest household air pollution intervention trial to date in Guatemala, India, Peru, and Rwanda. His work evaluated the effectiveness of a liquefied petroleum gas stove intervention at reducing emissions from woodsmoke in indoor air. He used novel exposure assessment methods including modeling exposures to carbon monoxide and characterizing sub-daily exposures to household air pollution. Using these methods, Dr. Kremer helped develop exposure response relationships for adverse human health end points including low birth weight and high blood pressure. As part of this project, Dr. Kremer gained field experience in rural Guatemala coordinating field visits, developing protocols for equipment setup and takedown, and leading analyses on collected samples.

Additionally, Dr. Kremer has experience characterizing firefighter exposures to wildfire smoke, specifically developing protocols for calculating black carbon concentrations.

Academic Credentials & Professional Honors

Ph.D., Environmental Health Science, University of Georgia, 2023

B.S., Environmental Health Science, University of Georgia, 2018

University of Alabama Birmingham, Deep South Center for Occupational Health and Safety, and NIOSH Pilot/Small Project Research Training Grant, 2022

Winner, Poster, University of Georgia Environmental Health Science Annual Symposium, 2022

University of Georgia Innovative and Interdisciplinary Research Grants for Doctoral Students, 2021

Prior Experience

Research Associate, Household Air Pollution Intervention Network, 2017- 2023

Teaching Assistant, University of Georgia, 2019- 2023

Research Assistant, USDA: Agricultural Research Service, 2016- 2017

Professional Affiliations

International Society for Exposure Sciences

American Industrial Hygiene Association- Georgia Local Section

Publications

Kremer, J., Johnson, M., Waller L.A., Pillarisetti, A., Ye, W., Piedrahita, R., Campbell, D., Kearns, K.A., Mollinedo, E., Clark, M.L., Williams K.N., Underhill, L.J., Wang, J., Kirby, M.A., McCracken, J.P., Diaz-Artiga, A., Ndagijimana, F., Dusabimana, E., Steenland, K., Rosa, G., Balakrishnan, K., Thompson, L.M., Nicolaou, L., Checkley, W., Peel, J.L., Clasen, T.F., Naeher, L.P., HAPIN Investigators. Evaluation of real-time personal carbon monoxide exposures in Guatemala, India, Peru, and Rwanda as part of the Household Air Pollution Intervention Network Trial. In Review at Environmental International.

Balakrishnan, K., Steenland, K., Clasen, T., Chang, H., Johnson, M., Pillarisetti, A., Ye, W., Naeher, L.P., Diaz-Artiga, A., McCracken, J.P., Thompson, L.M., Rosa, G., Kirby, M.A., Thangavel, G., Sambandam, S., Mukhopadhyay, K., Puttaswamy, N., Aravindalochanan, V., Garg, S., Ndagijimana, F., Hartinger, S., UnderHill, L., Kearns, K.A., Campbell, D., Kremer, J., Waller, L., Jabbarzadeh, S., Wang, J., Chen, Y., Rosenthal, J., Quinn, A., Papageorghiou, A.T., Ramakrishnan, U., Howards, P.P., Checkley, W., Peel, J.L., HAPIN Investigators, 2023. Exposure–response relationships for personal exposure to fine particulate matter (PM 2·5), carbon monoxide, and black carbon and birthweight: Results from the multi-country Household Air Pollution Intervention Network (HAPIN) trial. The Lancet Planetary Health 2023; 7 (5).

Johnson, M., Pillarisetti, A., Piedrahita, R., Balakrishnan, K., Peel, J.L., Steenland, K., Underhill, L.J., Rosa, G., Kirby, M.A., Díaz-Artiga, A., McCracken, J., Clark, M.L., Waller, L., Chang, H., Wang, J., Dusabimana, E., Ndagijimana, F., Sambandam, S., Mukhopadhyay, K., Kearns, K., Campbell, D., Kremer, J., Rosenthal, J., Checkley, W., Clasen, T., Naeher, L., 2022. Exposure contrasts of pregnant women during the Household Air Pollution Intervention Network randomized controlled trial. Environmental Health Perspectives 2022; 130 (9).

Wu, C.-M., Song, C. (Chuck), Chartier, R., Kremer, J., Naeher, L., Adetona, O., 2021. Characterization of occupational smoke exposure among wildland firefighters in the midwestern United States. Environmental Research 2021; 193, 110541.

Presentations

Kremer, J. Household air pollution exposure relationships for particulate matter (PM2.5), carbon monoxide (CO), and black carbon (BC) across four countries with a cookstove intervention. Oral presentation, International Society of Exposure Sciences, Lisbon, Portugal, 2022.

Kremer, J. Evaluation of real-time personal carbon monoxide (CO) exposure levels in the multi-country Household Air Pollution Intervention Network (HAPIN) liquified petroleum gas (LPG) stove and fuel intervention trial". Oral presentation, International Society of Exposure Sciences, Lisbon, Portugal, 2022.

Kremer, J. Household air pollution exposure relationships for particulate matter (PM2.5), carbon monoxide (CO), and black carbon (BC) across four countries with a cookstove intervention. Poster presentation with lightning talk, University of Georgia Environmental Health Science Annual Symposium, Athens, GA, 2022.

Kremer, J. Reducing Measurement Error of Continuous Carbon Monoxide Measurements in the Household Air Pollution Intervention Network (HAPIN) Trial. Poster presentation, International Society of Exposure Sciences, Virtual poster, 2021.

Kremer, J. Tracking Ambient Air Pollution Using Low-Cost Sensors in Guatemala. Poster presentation, University of Georgia Environmental Health Science Annual Symposium, Athens, GA, 2021.

Project Experience

List of Doctoral Experiences

Investigated pregnant women exposure to fine particulate matter, black carbon, and carbon monoxide to determine potential health benefits by using a liquefied petroleum gas stove intervention.

Established exposure response curves for sub-daily carbon monoxide exposures with low birth weight.

Worked in Guatemala with field team to build a gravimetric laboratory, assist data collection, generate protocols, and coordinate field site visits.

Coordinated with a lab team and three international sites to deliver samples to each site on time to ensure continuous exposure sampling.