CONGRATULATIONS, GRADUATES!
Joemy Ramsay received her PhD in Occupational and Environmental Health for her dissertation titled *Measurement of Exposure to Particulate Matter in the Nasal Airway.* Dr. Ramsay’s work focused on how particulate matter, or small particles in the air, deposited within a wind tunnel and within the nasal cavity of an anatomically correct physical model of the nasal cavity. Most research on particle deposition has focused on the respiratory system, which limits our full understanding of how particles can enter the body. Lastly, Dr. Ramsay examined the efficacy of nasal swabs, which provide a more comfortable alternative to nasopharyngeal swabs.

Madison Ellis’s research on temperature profiles in commercial kitchens began when a friend complained of high heat during his work as a line cook. Her interest piqued, Madison began work on *A Pilot Observational Study Comparing WBGT Parameter Measurements as a Result of Kitchen Configurations,* which examined three types of kitchens: zone, island, and assembly. Each of these place their heat-generating appliances in different positions. Her research found promising preliminary evidence that different kitchens experience different temperatures, and that line cooks do indeed experience temperatures that can possibly lead to heat stress.

Bruce Niebergall knew that surgical smoke produced by use of lasers in the operating room posed occupational hazards to those around, but he also knew that another medical procedure used lasers—and that population had not yet been studied extensively. His project, *Plume Analysis from Laser Hair Removal: A Pilot Study,* sought to do just that. Bruce worked with an industrial hygienist at Intermountain Health Care to monitor laser hair removal procedures using two air quality monitors, and found that laser hair removal produced high counts and concentrations of ultrafine particles that could pose a risk to provider and patient health both.

Kaylin Lake’s project *A Pilot Study to Investigate Heavy Metal Soil Contamination in a Frontier Tribal Population* was a culmination of her work sampling and analyzing soil from a frontier (i.e., extremely rural) Native American reservation. Kaylin’s work is part of several projects spearheaded by Industrial Hygiene faculty who are working in close partnership with Native American tribes within the Rocky Mountain West. One of Kaylin’s findings of dramatically high lead levels in the soil near a former community center and current preschool helped the tribal authorities initiate remediation to protect their community.

Angela Ho’s research project, *An Investigation of Aerosol Measurement Degradation in Low-Cost Particle Sensors Using Laboratory Calibration and Field Validation,* examined the University of Utah’s low-cost, integrated air quality sensor, the AirU (visit https://airu.coe.utah.edu to learn more) both in deployment in a field study and in her own home. Angela tracked pre- and post-deployment calibration equation changes and compared AirU data to those obtained from a reference-grade instrument, the GRIMM 1.109. Angela’s manuscript has been submitted to the journal of Aerosol and Air Quality Research (AAQR).
Derek Sandberg found himself intrigued by the rising prevalence of silicosis and coal worker pneumoconiosis in the 2000s, particularly among coal workers in West Virginia. His project examined the impact of a new respirable coal dust standard meant to combat those rates of disease, which began implementation in August 2014 and was finalized in August 2016. In his project, *Is the New Coal Dust Standard Protective for Respirable Quartz?*, Derek analyzed data from two databases from the Mining Health and Safety Administration (MSHA) to investigate the recorded coal dust and estimated quartz before and after the change.

Logan Webb worked to analyze and compare indoor air quality on two Native American reservations. Native American reservations experience high levels of environmental injustice and consequent health disparities, and Logan’s research focused on inadequate housing and consequent indoor air pollution from sources such as wood-burning stoves, poor ventilation, and other sources in *A Comparison of Indoor PM2.5 and Radon Concentrations for Two Rocky Mountain West Tribes*. His work intersects with several other students, including Angela Ho (analysis of AirUs) and previous graduate Jared Stenberg (indoor air quality analysis).

Raquel Robello’s project, *A quantitative comparison of heavy metal concentrations in the soils on two Rocky Mountain West tribal reservations*, incorporated data from Kaylin Lake’s study to compare heavy metal contaminations were for two reservations that had experienced histories of hard rock mining. Raquel hypothesized that there would be significant differences, as heavy metal contamination can be affected by type of mining, naturally-occurring levels, and other sources of contaminants. Her findings indicate a need for more individualized assessments to take place on reservations to determine specific patterns of contamination.
Ryan DiNapoli’s research focused on the potential injury to an automobile occupant during impact. During a vehicle impact, the automobile accelerates while the occupant remains still (until they are impacted by vehicle structures). If a vehicle is rear-ended, then the occupant can be impacted by the seat back and head restraint. Ryan’s research focused on creating a testing rig to characterize the mechanical properties of a seat in a low speed, rear-end collision. His research will help scientists further understand how to best design vehicles to reduce impact-related injuries.

Melynda Schreiber’s work in neuroscience and machine learning will help researchers determine user intent of gross motor movements in healthy subjects and people with high level spinal cord injuries. She investigated the accuracy to predict user intent changes. Dr. Schreiber’s work has also focused on predicting occupational risks in workers—postures and speeds of movement that can help researchers predict injury—and 3D printing, where she has worked to characterize the strength of 3D printed parts based on their structure.

Alex Tatom spent his graduate studies researching the safety envelope of the Tetradapt TetraSki—an automated ski chair adapted for use by quadriplegics—with specific interest in rollover risk and its hazards that it may represent to the occupant. He worked to develop a virtual test environment for the Tetra Ski that allowed researchers to alter initial conditions of the system, physical constraints on the motion of the equipment, and environmental response of the ski to unique scenarios designed to test resistance to rollover. Conclusions from his work will help inform operational safety procedures for the device out on the ski hill.

Dr. Andria Thatcher examined an occupational population that has been of considerable interest to researchers at the RMCOEH—long-haul truck drivers, who experience high rates of certain injuries and illnesses, and who are vulnerable due to the particular isolating challenges of their occupation. Her dissertation, Manual Materials Handling and Musculoskeletal Disorders in Occupational Drivers: A Cross-Sectional Study, examines where and how drivers encounter risky tasks in their days (pulling the 5th wheel pin, helping load and unload cargo, and even entering into the truck cab) and rates of musculoskeletal disorders among drivers.
MASTER OF OCCUPATIONAL HEALTH GRADS

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