

Southwest Environmental Health Sciences Center



November 2019

Marti Lindsey, PhD, honored as Arizona Bioscience Educator of the Year

Press Release from Alli Benjamin, past Communications Director, College of Pharmacy, University of Arizona



The Arizona Bioindustry Association (AZBio) announced that Marti Lindsey, PhD, community engagement director for the Southwest Environmental Health Sciences Center at the University of Arizona College of Pharmacy and founder and co-director of the KEYS High School Student Internship program at the UA BIO5 Institute, was honored as the Michael A. Cusanovich Arizona Bioscience Educator of the Year at

the AZBio Awards on Oct. 2, 2019.

Each year, the Michael A. Cusanovich Arizona Bioscience Educator of the Year Award honors an educator who, as a member of the faculty or administration of an educational institution, demonstrated the greatest leadership, creativity and/or actions to inspire students and encourage them in the biosciences.

Dr. Lindsey has been co-director of the KEYS Research Internship Program since its inception in 2007. KEYS, short for Keep Engaging Youth in Science, is a unique summer opportunity for motivated Arizona high school students who have a strong interest in bioscience, engineering, environmental health or biostatistics. KEYS provides students the opportunity to work side-by-side with top faculty in laboratories at the UA. Since establishing KEYS in 2007, Dr. Lindsey has directly mentored more than 400 high school students. The program now serves about 50 high school students each year. To recruit students to KEYS, Dr. Lindsey travels the state, forming relationships with teachers, schools and gifted high school students.

As the community engagement director at the Southwest Environmental Health Sciences Center (SWEHSC), and associate director of the Center for Toxicology at the UA College of Pharmacy, Dr. Lindsey works to promote environmental health science literacy and to serve as a non-biased source of scientific information to the public on environmental health educational issues.

Through research, outreach and education, SWEHSC plays an important role in stimulating discussions and collaborative interactions among researchers and the broader community.

Dr. Lindsey, who lived and worked on the Navajo Nation for six years, is uniquely qualified and invested in Native American health and outreach. Over many years, she has worked tirelessly to build trusted relationships with tribal people and communities. While her work and influence make a difference for all people across our region, it provides a special benefit for those in underserved communities who may not otherwise have access to the information resources that so many of us take for granted.

Southwest Environmental Health Sciences Center

As the only NIEHS supported center located in the desert Southwest, SWEHSC strives to become a leader in environmental health issues associated with at-risk populations residing in arid environments. Our mission is to facilitate and implement innovative research aimed at understanding the mechanisms underlying the modulation of human disease risks due to environmental exposures among populations living in arid environments. The themes of the SWEHSC are based on the unique environment and distinctive populations in the desert Southwest, which are unlike any other in the US yet similar to many other global environments. The desert Southwest is the only US region that adequately represents much of the world's arid habitats.

Upcoming Events Save the Date!

The SWEHSC is collaborating with the Water & Energy Sustainable Technology Center (WEST) for the 1st annual Water and Environmental Health Networking Event on January 9, 2020. Watch the SWEHSC website for up-to-date information.

To read the full article please follow this [link](#). Watch a video about Dr. Lindsey [here](#).

Investigators Awarded Pilot Project Funds

Recent Pilot Project Awards

The goals of the Southwest Environmental Health Sciences Center (SWEHSC) Pilot Projects Program to provide short-term support for innovative projects aimed at exploring new areas of environmental health research and acquiring preliminary data necessary to pursue long-term extramural funding, and to support the development of new investigators, and highly successful senior investigators who wish to redirect their research to include environmental health. In doing so, the SWEHSC aims to test the most innovative ideas relevant to environmental health which help fulfill the overall strategic vision of the Center.

Faculty members of all universities in the State of Arizona are eligible and encouraged to apply. Junior and clinical faculty, in particular, who have not previously performed research in environmental health science but who would be interested in broadening their research to include environmentally related research, are especially invited to pursue membership in the Center and to apply. Translational projects, defined as research that advance a scientific finding toward practical application in the areas of public health, medical treatment/management, or public policy are encouraged.

Requested funding for the Pilot Project Program represents 18% of the SWEHSC budget. The Office of Research, Discovery and Innovation has provided additional funds for Pilot Projects that utilize the RDI Facilities. So far, during this project period (04/01/18-03/31/23), 21 pilot project applications have been received; of those, 12 projects were funded for more than \$375,000. A small sampling of recent pilot project awards are highlighted in this newsletter.

For more information regarding the Pilot Project Program, including application procedures, please visit the [Pilot Project](#) web page on the [SWEHSC](#) site.



Validating Dendrochemistry as a Technique for Temporal Analysis of Environmental Contaminants in Public Health Research

Pilot Project PI: Paul Sheppard (RFG1)

Dr. Paul Sheppard, a dendrochemist at the University of Arizona Laboratory of Tree-Ring Research, and Dr. Melissa Furlong, an environmental epidemiologist and postdoctoral fellow at the University of Arizona College of Public Health, recently visited Chiricahua National Monument in southeast Arizona to collect tree cores located near an EPA air monitoring site. Rietta Waggoner, SWEHSC Human Population Exposure Resource staff member, assisted the team in



obtaining formal permission from the National Park Service and collecting tree core samples. Sheppard and Furlong are recipients of 2019 SWEHSC pilot project funding for the project *Validating Dendrochemistry (tree rings) as a Technique for Temporal Analysis of Environmental Contaminants in Public Health Research*. As part of the project, the team will collect tree cores from trees located near 4 EPA monitoring sites to evaluate whether annual concentrations of metals in tree rings predict EPA-measured ambient annual metals



over a 25-year time period. To assess tree ring metal concentration, pencil-sized samples are extracted with an inexpensive tree-ring borer and are then prepared for inductively coupled plasma mass spectrometry (ICP-MS) analysis at the Arizona Laboratory for Emerging Contaminants, a core facility within SWEHSC IHSFC. Following the pilot project, the team plans to apply for a larger R21 validation study to delve deeper into the influence of characteristics that

may influence metal uptake and to estimate associations of dendro-metals with human biomarkers and human health outcomes.

The goal of Research Focus Group 1, Environmental Exposures in Underserved Southwest Populations, is to partner with Indigenous, Hispanic, and rural communities in the Southwest to determine the contribution of chemical and other environmental exposures to health inequities and to support efforts to eliminate these disparities.

Evaluation of pediatric respiratory toxicity from arsenic exposure by various environmental media

Pilot Project PI: Maria Mercedes Meza-Montenegro (RFG2)



Dr. Meza-Montenegro, a visiting scholar from the Instituto Tecnológico de Sonora was awarded a Pilot Project to continue pediatric environmental health research in the Yaqui population in southern Sonora, Mexico. Previous studies in children exposed to low and moderate arsenic levels via drinking water (<10 to 96 µg/L) from three Yaqui communities revealed urinary arsenic concentrations above the established criteria of

50 µg/L. The goal of the current study is to identify the most important environmental media associated with urinary arsenic levels, serum club cell protein (CC16) concentrations, and negative respiratory outcomes in a cohort of indigenous Yaqui children. To date, 147 children from the Yaqui communities of Pótam, Vícam and Córorit have been recruited and have completed a 48-hour food diary, demographic and health questionnaires, spirometry tests, and blood and urine sampling. The urine will be analyzed for total arsenic and arsenic species at the University of Arizona Laboratory for Emerging Contaminants (ALEC) while the blood serum will be analyzed for CC16, a marker for lung damage. Dr. Meza-Montenegro's team has also collected house dust and yard soil from each participant's home as well as community well water that will be analyzed for total arsenic and arsenic species at ALEC.

This project builds upon Dr. Montenegro's previous work carried out in Sonora populations with SWEHSC collaborators for almost two decades. The impact of this research has been recognized by the Ministry of Public Health in Sonora with two Health State awards. Dr. Meza-Montenegro has been supported by the National Council of Science and Technology (CONACYT). She is a Level 2 member of the National Research System of CONACYT and she was supported with a sabbatical fellowship from CONACYT to work in collaboration with Dr. Paloma Beamer. Moving forward, Dr. Meza-Montenegro is working on several manuscripts and plans to submit an R01 in collaboration with multiple SWEHSC members.



The goal of Research Focus Group 2, Environmental Lung Diseases, is to promote interdisciplinary research into the mechanisms by which environmental agents affect lung structure and function and lead to or exacerbate disease.

Inhaled Environmental Exposures and Anti-mullerian Hormone Levels, a Marker of Reproductive Health

Pilot Project PI: Leslie Farland (RFG3)



Increasing research suggests that women's reproductive health can be adversely affected by inhaled environmental exposures. Given that aberrant reproductive health can severely burden women and may be associated with risk for chronic diseases later in life, the overarching goal of this project was to understand how inhaled environmental exposures influence biologic markers of reproductive health. Specifically, we were interested in measuring Anti-müllerian hormone (AMH), among a cohort of women firefighters, a group highly exposed to inhaled environmental chemicals.

The time period during which a woman is able to reproduce and the age at which she undergoes menopause is correlated with her ovarian reserve. As a woman ages, her levels of AMH steadily decline to mirror the decline in number of oocytes. Prior limited research suggests that AMH levels are susceptible to alterations by inhaled environmental exposures including smoking, burning fuel for heating or cooking, and indoor spraying for malaria control. Smoking and biomass fuel burning result in similar combustion by-products including polycyclic aromatic hydrocarbons (PAH). Prior research in mice has shown that Benzo[a]pyrene, a PAH, and PM2.5 exposure were associated with decreased AMH. However, little is known about the effect of smoke exposure and air pollution on AMH in human populations.

Female firefighters are a highly exposed population to inhaled environmental exposures, which have been shown to influence their reproductive health, increasing risk of miscarriage, pre-term birth, and utilization of fertility drugs to get pregnant. Specifically firefighters are exposed to PAH's, as well as chemicals in flame retardants, perfluoroalkyl substances (PFAS), organic materials, and other products of combustion. Our pilot project will focus on measuring AMH as a proxy measure of ovarian reserve and timing of menopause. Specifically, we will measure AMH levels via dried blood spots (DBS) among a cohort of over 300 female firefighters and a matched comparison population. We hypothesize that firefighters will have lower AMH levels compared to non-firefighting women. Among firefighters, we hypothesize that there will be an inverse dose-response relationship between number of years in the fire service, AMH levels, and rate of decline in AMH. We hope that this project is the first of many to investigate the role of environmental exposures on reproductive health outcomes.

The goal of Research Focus Group 3, Adaptive Response to Environmental Stress, is to provide expert evaluation and support for intra- and inter-programmatic research initiatives related to oxidative stress and other molecular mechanisms associated with environmental exposures.

The ability of glyphosate to promote obesity via alterations in the gut microbiota

Pilot Project PI: Frank Duca (RFG3)



Obesity rates have risen dramatically over the last four decades, highlighting that this is likely not due to genetics alone, but rather an interaction between genetics and the environment. Interestingly, recent work has highlighted the importance of the gut microbiota, the entire collection of microbes residing in the intestinal tract, in the development of metabolic disease, acting as a potential mediator of host

and environmental interactions. Dr. Frank Duca's lab is interested in determining how environmental factors, like the diet, can alter the gut microbiota to impact gut-brain signaling mechanisms that play a pivotal role in energy and glucose homeostasis. For example, his work has found that high-fat feeding impairs intestinal nutrient-sensing mechanisms that regulate glucose homeostasis via diet-induced alterations in the small intestinal microbiota that then impact intestinal epithelial cell nutrient-sensing mechanisms. Furthermore, it was shown that metformin, a widely-used type II diabetic drug, can restore impairments in intestinal nutrient-sensing and improve overall energy and glucose homeostasis, via directly altering the gut microbiota. This then leads to the question, are there other commonly ingested chemicals in society that could shift the gut microbiota to impact the development of obesity and diabetes? Interestingly, along the same time frame as the obesity spike, the use of pesticides and herbicides in the United States has increased dramatically, with RoundUp being one of the most widely used herbicides in the agriculture industry. Originally developed to target the shikimate pathway which is only found in plants, it was assumed that RoundUp and its chemically active component, glyphosate, would have no physiological effect on mammals, however it is now known it can also affect bacteria, a key component of the gut microbiota. Dr. Duca was awarded the SWEHSC Pilot Grant to determine whether increased exposure to glyphosate promotes the development of obesity via alterations in the gut microbiota. This work will: 1) determine if an association exists between glyphosate induced changes in the gut microbiota with host obese phenotype 2) demonstrate whether changes in the gut microbiota from glyphosate are causal to metabolic dysfunction using germ-free mice transplant studies, and 3) demonstrate the detrimental effects of early-life glyphosate exposure on propensity to develop obesity later in life via the gut microbiota. Given the widespread use of Round-Up in the United States, this work is critical to determine if herbicide use contributes to the high prevalence of metabolic dysfunction.

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System Genetics Analysis of Asthma-Protective Responses

Pilot Project PI: Casey Romanoski (RFG3)



Asthma, the most common chronic disease of childhood, imposes a societal burden that is higher than that of tuberculosis and HIV/AIDS combined. Currently, asthma can be treated but not cured. Therefore, strategies to understand the mechanisms promoting onset and therapies to prevent asthma are urgently needed.

One of the major reasons that asthma is so difficult to prevent at the molecular and cellular level is because it is the culmination of both an individual's genetic make-up and environmental exposures. This relationship is exemplified nicely by two human populations, the Amish and Hutterites that have similar genetic ancestries. However, the Amish have ~4-times less asthma compared to the Hutterites (and most other human populations). Interestingly, asthma protection in the Amish results from their exposure to microbe-rich environments, coincident with their traditional farming practices – a finding that is effectively recapitulated in laboratory mice. Results from lab experiments show that asthma-like traits are suppressed in mice exposed intra-nasally to Amish dust as compared to mice exposed to no dust or Hutterite dust, demonstrating that this environmental exposure shapes biologic responses.

Inspired by these discoveries, Drs. Casey Romanoski and Donata Vercelli in the UA College of Medicine have received pilot funds from SWEHSC to carry out a study that will identify genes and biologic mechanisms of asthma protection by Amish dust by comparing asthma responses in genetically-diverse mouse strains treated with the same experimental protocol. The design of this study draws upon the strengths of controlled laboratory exposure environments and recent advances in genomic technologies. Research findings are



anticipated to accelerate the development of new strategies to promote health in asthma-prone individuals.

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Exploring The Role Of HOCl In Skin Photodamage, Immunosuppression, And Carcinogenesis

PI: Georg Wondrak (RFG3) and George Watts (Genomics Facility Core)

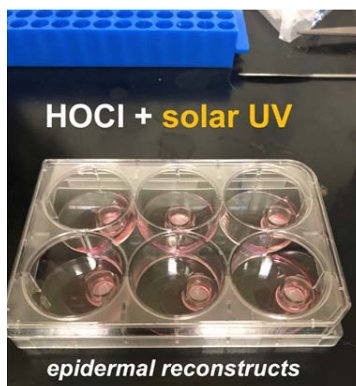


Hypochlorous acid (HOCl) is the active oxidizing principle released by standard swimming pool disinfectants used on a global scale, but the health consequences of human exposure inflicted by HOCl remain largely unknown, posing a major public health concern relevant to populations around the world. Moreover, environmental exposure to solar ultraviolet (UV) radiation is a causative factor in skin photocarcinogenesis. In an ongoing R21 research project funded by NIEHS since April 2019 (1R21ES029579),

SWEHSC researcher Dr. Georg Wondrak explores the molecular potentiation of UV-induced cutaneous and systemic damage by co-exposure to HOCl-based swimming pool disinfectants, examined in cell culture, skin tissue models, and mouse models of UV-induced skin damage and cancer. In the Wondrak laboratory, organotypic models of fully differentiated human epidermis are treated with topical HOCl at low micromolar concentrations, a procedure mimicking chlorination exposure experienced by recreational swimmers (see image; left panel). Performing gene expression analysis in collaboration with the SWEHSC Genomics Core facility, *TXNRD2*, a gene encoding the mitochondrial antioxidant enzyme thioredoxin reductase 2, has now been identified as a novel key response factor in human skin, determining sensitivity to recreational chlorination stress (see image, right panel). Other preliminary data indicate that HOCl exposure might potentiate the genotoxicity of solar UV photons thought to originate from oxidative DNA base modifications caused by this potent electrophile.

'The public health relevance of human co-exposure to chlorination stress (mediated by HOCl) and solar radiation in the context of recreational swimming pool use creates an urgent need for further detailed molecular investigations', says Dr. Wondrak, emphasizing that 'this important environmental exposure is being addressed for the first time by our ongoing SWEHSC research'.

The goal of Research Focus Group 3, Adaptive Response to Environmental Stress, is to provide expert evaluation and support for intra- and inter-programmatic research initiatives related to oxidative stress and other molecular mechanisms associated with environmental exposures.

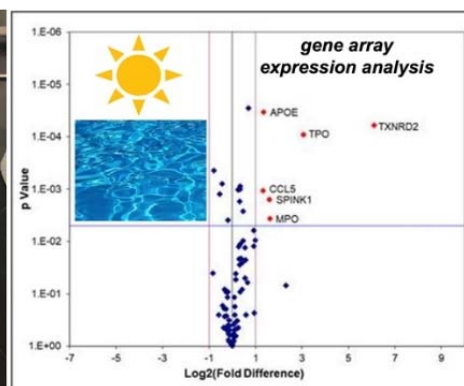


The Genomics Facility Core (GFC) at the SWEHSC provides complete support for investigators' genomics studies. In the case of the Wondrak lab, the GFC performed sample quality control and stress response transcriptome analysis of RNA from human reconstructed epidermis exposed to chlorination at levels associated with recreational swimming pool use. Several genes of interest were identified, including *thioredoxin reductase 2*. The GFC has provided additional support to the

Wondrak lab in follow up experiments using single qPCR to confirm environmental exposure-induced changes identified in gene expression array format.

The GFC has also continued development of its microbiome analysis pipeline (Watts et al. 2019, PLOS Comp Biol, in press) in which controls for low-biomass samples are being developed to suppress false positives that plague microbiome studies, along with accurate data analysis pipelines. Several SWEHSC investigators have expressed interest in microbiome experiments and the GFC is positioning itself to provide robust services from samples preparation to data analysis in support of their needs.

The Genomics Facility Core provides value to the scientific mission of the SWEHSC through a staff of experienced and engaged personnel who provide assistance in research applications, experimental design, and genome analysis. The GFC personnel leverages its research expertise on cornerstone technologies in order to provide SWEHSC membership local and ready access to cutting-edge genomic and epigenomic research tools. For example, the SWEHSC GFC is the only facility on the UA campus that offers microarray solutions to genomic questions and is the only Life Technologies-certified exome service provider in the State of Arizona.



Avoiding Twisted Pixels: Teaching scientists how to properly work with digital image data

Doug Cromeley (Cellular Imaging Facility Core)



The idea for a digital imaging workshop began in 2007 as four UArizona core facility managers chatted over lunch. All of them had seen the problems that people got themselves into because they did not understand how to correctly work with digital image data. They would often observe the dangerous combination

of ignorance (of the basic principles of digital imaging) mixed with enthusiasm for a lab's research that had sometimes led users to make inappropriate choices. Dividing the teaching responsibilities up, the managers came up with the idea for a half-day workshop to teach people about digital image data. After 20 workshops at the UA and two workshops at ASU, literally hundreds of students, staff, postdocs, and faculty have attended and gained a new appreciation for properly working with image data. Many of the participants have been able to use the workshop to obtain NIH and NSF-required training credit in the responsible conduct of research.

Cellular Imaging FC manager Doug Cromeley, MS has been part of the workshop since the very beginning and has, at one time or another, taught every section of the workshop. His current UArizona collaborators, Dr. Brooke Massani (Chemistry and Biochemistry) and PhD candidate Benjamin Cromeley, MS (Optical Sciences), gave the workshop to over 40 attendees in August 2019. In October 2019, Doug Cromeley was a guest of Virginia Tech University's LabConnect group and gave the entire workshop to over 50 attendees. Plans are underway for a workshop at the UArizona's College of Medicine – Phoenix in January 2020.

The workshop emphasizes that digital images are scientific data and that manipulating images is typically the application of a mathematical function to the underlying data. Beginning with the basics of digital images, the workshop progresses to presenting images, the ethics of image manipulation, and ends with a hands-on segment demonstrating common image processing pitfalls. The instructors make themselves available to the attendees after the workshop to help them sort out the questions that often come up as people perform their research.

For more information about the workshop: http://microscopy.arizona.edu/dig_image_workshop/index

The Cellular Imaging Core Director and Manager draw from over 70 years of combined experience in microscopy and microscopic techniques. The Cellular Imaging Core strives to assist Center investigators to perform high quality research that makes the best use of microscopic and digital imaging techniques.

What's Brewin' in Your Lab

Marti Lindsey (Community Engagement Core)

What's Brewin' in Your Lab, is a new collaboration between the Community Engagement Core (CEC) and the SWEHSC researcher members. It is a chance to discuss present research and findings while coffee and refreshments are provided. The output from the project is new materials and educational activities to teach the public about existing SWEHC research. The goals of the project are:



- To connect research projects with the Tucson community, so community members can better understand the efforts that are being done to improve environmental health status.
- Establish relationships with researchers in order for the CEC to continue to work with them and their labs on future projects
- Understand their research so the CEC is able to disseminate that information to the general public in plain language
- To utilize the information, the CEC gets from the researchers and their lab staff, in potential educational materials and programs
- To recruit researchers and students to participate in CEC community and youth activities, which include the following.
 - Internships and Youth Programs, such as summer camps that provide researchers and students the possibilities to speak, lead, and/or teach students about real world connections with toxicology and the environment. They can also Host interns for Steps 2 Stem or A Student's Journey. For UA and Tribal community college students, or to review environmental health curriculum and lessons for K-12 teachers to use in their classes.
 - In Risk Communication Programs they can review educational materials for schools and outreach to community members and speak and/or lead activities on environmental health topics at professional development events for teachers or at parent/youth meetings.
 - For Tribal Communities Engagement researchers and students can speak about a variety of environmental health issues and the public events and lead hands-on activities to engage communities at Earth Day events in collaboration with Tribal Environmental Protection Offices.
 - For Citizen Science Projects they can assist the CEC to involve community members and scientists working together to answer real-world questions and gather data and to collaborate on grants and provide environmental health education and community engagement components.

New Youth Programs

Marti Lindsey (Community Engagement Core)



A Student's Journey, a brand new program of the Community Engagement Core, will address the academic transfer barriers for Tohono O'odham Community College students enrolling at 4-year universities.

Our staff members and collaborating faculty are determined to change the landscape of higher education and workforce on the Tohono O'odham Nation by offering an on-campus experience at the University of Arizona to directly serve the needs for TOCC students.

Students will be oriented by our friendly and engaging staff before their internship placement. During their stay on campus, students will learn about critical environmental health and environmental justice issues while collaborating with UA researchers and professionals by assisting their projects and developing skills as professional interns. At the conclusion of the program, each student will give a final poster presentation regarding their internship and bring this memorable experience back to the Tohono O'odham Nation.

A Student's Journey is funded for the next three years by the Agnese Nelms Haury Program in Environmental and Social Justice, which announced the Spring 2019 Challenge Grant to A Student's Journey in April. The co-leads are Marti Lindsey, PhD (UA) and Daniel Sestiaga, MPH (TOCC). They will work together to help develop the program. It is important to the Tohono O'odham Nation that students develop knowledge about environmental and social justice issues, skills and confidence to pursue bachelor's degrees and work experiences in Tribal departments.

A second new program is Ta-Jewedga, Ta-Mascma, Ta-Apedag (Our Land, Our Education, Our Health or OLEH). It is a two-week environmental health summer program designed to increase high school students' environmental health literacy, college readiness, and sense of belonging at the University of Arizona. During the program, students live in a University of Arizona dormitory, receive lessons from a variety of UA faculty and Tohono O'odham professionals, and design a research project proposal to improve environmental conditions in the Nation. Concluding the program, students will present their proposal to their peers and program staff. Additional activities include field trips, connecting with student academic services, and discovering new ways of Native Nation Building. The program is a collaboration with and is funded by the One Stop program of the Nation. The team are actively recruiting students from other Native Nations for the summer of 2020.

Stop Burning Project

Researchers and community engagement staff from the Southwest Environmental Health Sciences Center (SWEHSC) at the University of Arizona teamed up with staff from a local tribal Environmental Protection Agency to study the effects of trash burning and to develop a data-driven education campaign to reduce trash burning within their community. An overarching goal for this project is to increase the level of Environmental Health Literacy within the tribal community. The project is essentially responsible for helping community members make healthier choices for their solid waste disposal. This responsibility also includes providing science education on environmental health and creating information that can lead to overall systemic change.



In 2014, The Tribe identified an on-going, open trash burning issue within their community. According to tribal EPO staff, open-burning has been outlawed since 2015 due to the concerns of chemical exposure from the burns. Unfortunately, there aren't enough resources to enforce this law. The vastness of the community is too much for Game and Fish rangers to monitor and the EPA staff are not authorized to give out citations. Monitoring for open burning also grows to be more difficult during the night time, which is said to have the most activity. We know that the health effects from open-burning include: nausea, fatigue, dizziness, burning eyes, headaches and asthma exacerbation. More chronic effects include organ damage, emphysema, and some cancers.

The team developed a three-part plan to direct the project:

- 1) Conduct exposure assessment to sample air pollutants,
- 2) Survey the knowledge, practices, and attitudes from local tribal members concerning trash burning,
- 3) And generate community-directed education information to be shared at outreach events.

The project is led by tribal EPA staff, with the support of Dr. Marti Lindsey and SWEHSC CEC Staff and Interns. Dr. Mary Kay O'Rourke (RFG1) and her team from the SWEHSC are leading the exposure assessment. The survey data is being administered and collected by the SWEHSC Community Engagement Core staff with support from local tribal college students.

The goals of the Community Engagement Core are to promote environmental health science literacy; serve as a non-biased source of scientific information to the public; provide environmental health educational resources; and to support connections between SWEHSC investigators and the community.

Meet Rietta Wagoner, staff member, Integrative Health Sciences Facility Core



Rietta Wagoner, a PhD student in the Mel and Enid Zuckerman College of Public Health and research specialist in the SWEHSC Human Population Exposure Resource, was recently awarded funding from the Southern California NIOSH Education and Research Center and the NIOSH Western Center for Agricultural Health and Safety to conduct her dissertation research. Wagoner's research focuses on how heat stress and dehydration, serious and under-reported problems in Arizona's migrant and seasonal agricultural workers, can affect agricultural workers' kidney functioning during the workday. Working with an established mobile health clinic and community health worker programs, Wagoner will assess agricultural workers' kidney functioning, hydration status, core body temperature, and heart rate before, during, and after working in agricultural fields. The long-term goal of the project is to reduce heat-related morbidity and mortality in agricultural workers in the Arizona-Sonora border region.

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Wagoner (far right) during a farm site-visit with fellow University of Arizona students.

As attractive as translational research sounds, it presents many hurdles to scientists. These can include an increased demand for rigorous statistical help in the design and analysis of a study, increased data management requirements, measuring exposure in environmental and human samples, getting buy-in from key stakeholders in communities affected by environmental exposures, navigating regulatory requirements to ensure high ethical standards and safe treatment of human participants, and many others. Researchers transitioning to a new research area may be discouraged from translational research. The goal of the IHSFC is to provide expertise and technologies to aid SWEHSC investigators to overcome these obstacles.

SWEHSC Water & Environmental Health Networking Event

The Southwest Environmental Health Sciences Center is collaborating with the Water & Energy Sustainable Technology Center (WEST) for the 1st annual Water and Environmental Health Networking Event on January 9, 2020.

We welcome University of Arizona's Water & Environmental Health departments, affiliated faculty, students, and researchers to join us! Learn about emerging topics in Environmental Health and connect with fellow colleagues who are passionate in this field!

The goals of the event are:

- Increase integration between researchers and SWEHSC members
- Increase cross-center environmental collaborations within UA and Tucson community
- To serve as a recruiting opportunity for labs and interdisciplinary centers to showcase research to prospecting students and researchers
- Promote networking and develop partnerships in multidisciplinary science

This event showcases current and emerging research topics related to Water and Environmental Health and is set up for maximum socialization and networking opportunities. Interdisciplinary science departments join to explore intersecting themes within their research to cultivate cross-center collaborations, recruit new members, and promote innovative ideas. Our theme is to integrate scientific research to health outcomes in a changing environment in relation to how exposures affect health.

If interested, please contact the Community Engagement Core Assistant Director, Ben Richmond at richmond@pharmacy.arizona.edu



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RESEARCH, DISCOVERY & INNOVATION
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