# SOUTHWEST ENVIRONMENTAL HEALTH SCIENCE CENTER

**SOFIA FORIER-MONTES** 

ASSISTANT DIRECTOR, COMMUNITY ENGAGEMENT CORE



## WHAT IS SWEHSC?

- The mission of the Southwest Environmental Health Sciences Center (SWEHSC) is to facilitate and implement innovative research aimed at understanding the mechanisms underlying environmental health science risks and disease among people living in arid environments experiencing extreme heat events.
- SWEHSC is a NIEHS P30 center that has been operating for the past 30 years





## THE CENTER AT A GLANCE

A collaborative and interdisciplinary research center with 60 faculty research members across the University

### **Work occurs within 3 Research Focus Groups:**

- Environmental Exposures in Southwest Populations
- **Environmental Lung Disease**
- 3. Adaptive Response to Environmental Stress

### Members have access to 3 Facility Cores:

- I. Cellular Imaging Core
- 2. Translational Research Support Core
  - I. Data Science Resource
  - 2. Implementation Resource for Translational and Human Exposure Research
  - 3. Inhalation Exposure Developmental Resource
- 3. Omics Facility Core

## BY THE NUMBERS



**60** UA Faculty Research Members



**3** Facility Cores



**19** Unique services provided to researchers through Facility Cores



**\$46.9 Million** in NIH and NIEHS funding secured by SWEHSC researchers in the last 5 year period



\$1.5 Million in Pilot Awards funded leading to \$58.4 million in subsequent funding over the past 10 years

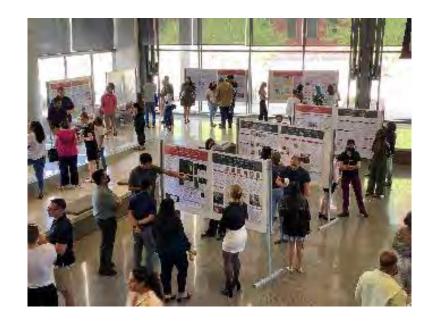


42 Articles and counting published in the last 5-year period



# COMMUNITY ENGAGEMENT CORE

- Focused on connecting research happening at the center with the broader community
- Attempt to achieve this through a variety of channels







## CEC – STUDENT DEVELOPMENT

- Steps 2 STEM 4 week program where 18 high school students work at a lab on campus
  - They finish a research project and develop an academic poster based on their experience
  - They attend a weekly seminar and learn about environmental health, STEM research, and campus resources
  - They complete a poster presentation at a final showcase event to friends, family, and the UA community
- Our Land, Our Education, Our Health (OLEH)
  - 18 students from Tribal workforce development programs across Arizona stay on campus for 2-weeks
  - Develop mini-grant proposals to address an environmental health issue in their community and a corresponding academic poster
  - Learn about STEM research and campus resources for Tribal students
  - Present at a final showcase event to friends, family, and the UA community





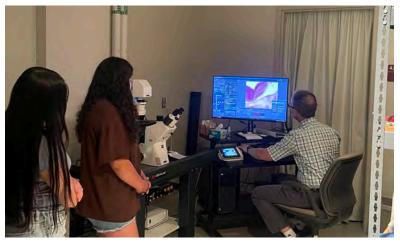
## CEC - STUDENT DEVELOPMENT

### Toxic Detectives

- One week summer camp for local middle school students
- They solve a "mystery" of a toxic exposure to a fictional family
- Research their own toxin and present to family at the end of the week
- Lots of hands-on activities all related to STEM

### Environmental Scholars

- Program exists within Upward Bound, managed by the College of Education
- Program participants spend I week with SWEHSC CEC getting a crash course in environmental health
- Develop a mini-grant proposal to address an issue in their community
- Present their project at the final Upward Bound event later in the summer that is open to friends, family, and UA community









### CEC – EDUCATIONAL MATERIALS

- We develop educational materials to organizations and groups that request support
  - Curriculum
  - Outreach materials, educational handouts
  - Virtual outreach materials
  - Materials in Spanish (ongoing)
- Rely on communities to let us know their concerns and priorities
- Learn community needs through attending events, connecting with individuals, and through outside connections

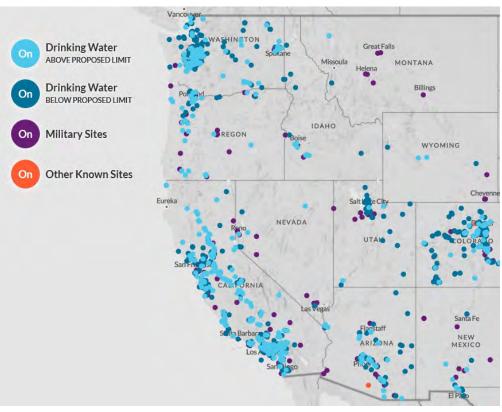


# PFAS COMMUNITY EDUCATION AND OUTREACH

- PFAS is a worldwide problem that impacts rural and urban communities
- Private wells are beyond regulations and need to be managed by owners
- Many larger municipal water systems have regular testing and are actively managing PFAS, but individuals on private wells or small water systems may not realize they are being exposed



# Environmental Working Group PFAS Interactive Map



# PFAS COMMUNITY EDUCATION AND OUTREACH

- Collaboration with Ms. Cynthia Lopez, a high school chemistry teacher at Desert View High School in Tucson, AZ
  - Ms. Tina Fingesi, a T32 graduate student, completed a guest lecture educating students on PFAS
  - Hoping to collaborate with PFAS curriculum for 2025/26 class







# PFAS COMMUNITY EDUCATION AND OUTREACH

- SWEHSC/UA will be hosting the 2026 National PFAS Conference in June, 2026
- Working with the national planning committee to put the event together
- A unique conference that brings together researchers and professionals as well as impacted community from all over the country
- Will be an opportunity to highlight the work and challenges in AZ

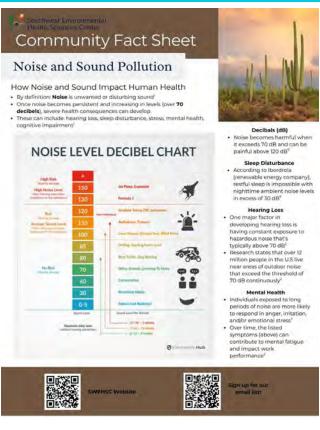






# PROJECT BLUE **INFORMATION**

- The community group advocating against the Project Blue data center reached out for support
- The CEC developed fact sheets on extreme heat and data centers as well as the noise pollution of data centers
- They were handed out at inperson events by organizers
- Also available on SWEHSC website







### Community Fact Sheet

### Heat and Industrial Zones

### How Does Heat Impact Human Health?

- . Heat Related Illnesses (HRI) include heat cramps, heat exhaustion, and heatstroke, which can be deadly . Each year in AZ, nearly 3,000 people visit emergency rooms because of
- . Research has found that for every I°C increase in temperature, direct his illness morbidity and mortality increased by 18% and 35%, respectively



- Reported associations temperatures and adverse pregnancy
- medications are more
- sensitive to heat.2
  - mental and behavioral durino heat waves."

- Older adults and children have a higher risk of dying or becoming ill que to extreme heat."
- Outdoor workers and athletes are more at-risk for HRPs . Extreme heat is associated to . 50% of heat-related deaths in 2024 were listed with drug or alcohol use
  - vulnerable to the toxicity of airborne pollutants, such as ozone and particulate matter.
  - Extreme heat is unevenly distributed agross cities, with higher heat island effects."

Pima County Heat

**Related Deaths** 

176 deaths

43 deaths

28 deaths

 In Maricopa County, only 5% of housing are mobile homes, but 38% of indoor deaths happened in these

### Heat in Pima County and Tucson, AZ



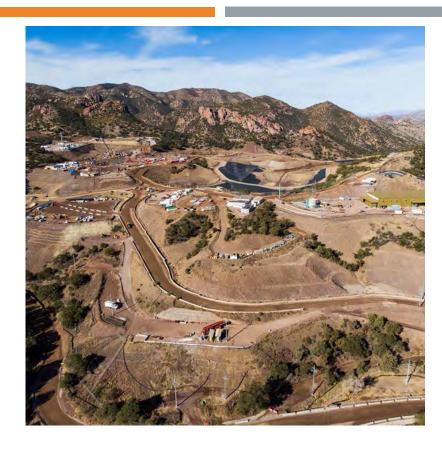
- Pima County's heat related death rate in 2024 exceeded Maricopa County's, despite the fact that Pima County summer temperatures are about 7 degrees cooler
- This implies that Pima County's population is more vulnerable to heat than Maricopa County's population Tucson average summer
- median temperatures have risen 4.1°F in the past hundred
- Heat severity is not equal throughout Tucson. with the hottest areas highlighted in darker red in the map to the left



**SWEHSC** Environmental Health and Data Centers Page

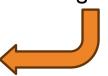
# COMMUNITY AIR MONITORS

- SWEHSC has a community air monitors lending program – open to community members in AZ for free
- Calabasas Alliance collaboration with Chris Lim,
   PhD, a UA Researcher and
   SWESCH Member
  - Installed Purple Air monitors in Patagonia to collect baseline data on air quality as Hermosa Mine gets established





SWEHSC Air Monitor Lending Program



https://swehsc.pharmacy.arizona.edu/facilities/translational-research-support-core/implementation-resource-translational-and-human

### **COMMUNITY AIR MONITORS**

- Currently collaborating with community members who are concerned about future air quality
- With our help, they installed 8 monitors around their community, including at an elementary school, to collect data and establish a baseline before mine operations begin

# Hudbay bulldozing mine site in the sacred Santa Ritas despite legal challenges from Indigenous communities

By John Washington in the Arizona Luminaria Newspaper, May 6, 2022



# BENSON ALUMINUM PLANT

- Have connected to various community groups in Benson that are concerned about the aluminum plant
- Working on developing infographics to educate the community on what the facility will include and potential environmental health concerns

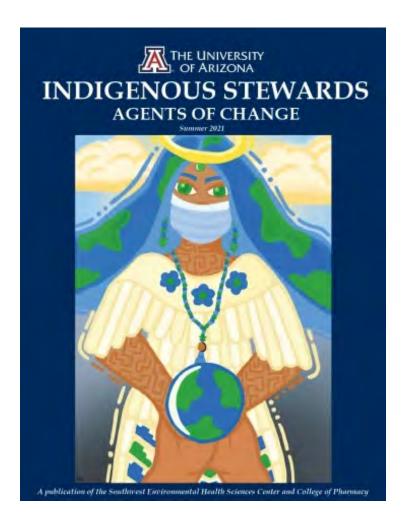
# Benson residents frustrated about proposed aluminum recycling plant



An aluminum recycling plant could start construction in Benson soon, but residents are frustrated about the prospect of the industrial project.

# **PUBLICATIONS** AND **INFOGRAPHICS**

- Indigenous Stewards Magazine
  - We are restarting this effort after a hiatus of a few years
  - 5 issues published to date
  - Focuses on efforts and research on Tribal lands and communities
- Infographics for SWEHSC researchers
  - We help develop infographics for researchers on specific publications
  - Translate research into an accessible form for community engagement





### LA FIREFIGHTER HEALTH **CHANGES AFTER URBAN FIRES**

### WHAT WAS STUDIED?





60 types of proteins body changed significantly after



5 different genetic to be significantly more active in bodies of firefighters after exposure

#### WHAT DOES THIS MEAN?

The protein changes and genetic pathway changes were generally associated with axidative stress, inflammatory, and immune responses, as well as DNA repair and energy metabolism. These changes were likely the body's response to the chemical exposures from the fires

#### **Protein Changes**

- . An increase in the types of proteins generally means the body is trying to perform more of these
- . The processes these proteins are related to
- Nucleotide synthesis and repair fixing and
- maintaining genetic information Oxidative stress response - detoxifying
- biological systems Energy metabolism - creating more energy
- for the body to take care of itself
- · An increase in these proteins is likely a response to exposures such as benzenes, fine and coarse particulate matter, heavy metals, volatile organic compounds (VOC's), and other

#### WHAT'S NEXT?

- · These findings suggest that exposed firefighters may be at increased risk of long-term adverse
- · Additional research needs to be completed to understand what these changes in the body meain terms of health risks

#### **Genetic Pathway Changes**

- . The five pathways that were found to be over-expressed (more active) include:
- Aminoacyl tRNA Biosynthesis and Purine Metabolism - part of the overall adaptive response of the body to the exposure of fire smoke, includes DNA repair and oxidative response
- · Lupus autoimmune disease pathway
- · MAPK regulation of immune function, inflammation, neurological health, and cancer risk
- One Carbon Folate DNA repair and oxidative stress response, had the highest level of expression in this
- Chemokine involved in immune and inflammatory tesponses
- . However, it is not known how long these pathways remained over-expressed and it is unclear what the additional risk to clinical disease is

#### WHAT CAN YOU DO?

- Shower frequently and immediately following a
- · Use skin wipes to remove soot when showering is not possit





paper citation here

### 2025 TRIBAL ENVIRONMENTAL HEALTH FORUM



- In collaboration with the Indigenous Resilience Center, we hosted the 2025 Tribal Environmental Health Forum
- We've been hosting these events every 2 years for 10 years
- An opportunity for Tribal communities and environmental professionals to connect and discuss Tribal-specific priorities







JOIN US FOR THE NEXT FORUM IN MAY 2027!

## **OPPORTUNITIES TO COLLABORATE**

- We are always looking for new community collaborators
- We can help:
  - Develop educational resources that are easy to understand
  - Develop curriculums for any age level
  - Connect you with data and resources
  - Connect you with experts in the field
- We want the SWEHSC CEC is the bridge between UA faculty and Tribal communities



# THANK YOU



# Sign up for our newsletter!

https://uarizona.col.qualtrics.com/jfe/form/SV\_eKWH416XgQL0ygu



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### Nathan Lothrop, PhD

Associate Director, BRISA Center for the Environment, University of







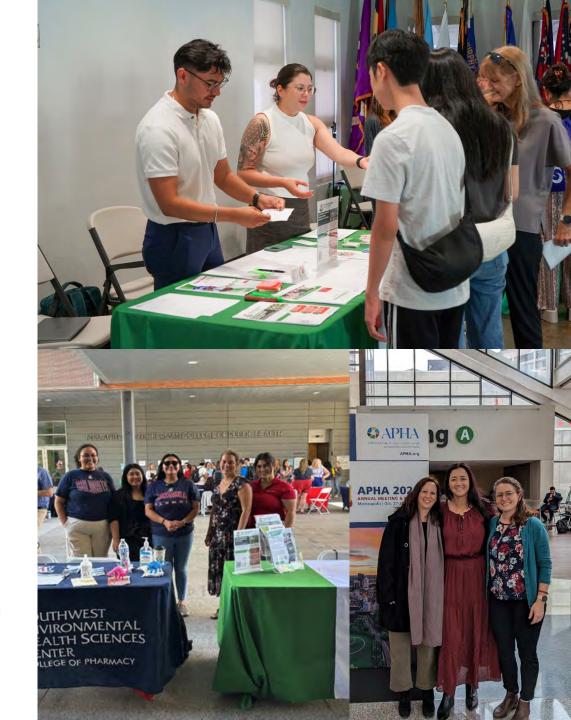


















# **Our Mission**

To work as authentic partners with communities towards environmental, energy, and climate resilience, innovation, and sustainability goals by being a one-stop shop for hands-on technical assistance, multi-faceted training, and other eligible forms of assistance, resources, and support to program participants.

# **Our Team**

On the ground in AZ, CA, HI, and NV, including Native American Tribes and Indigenous communities.























# Our Services and Offerings

- On-call triaging for environmental health, energy, and climate-related challenges and concerns
- Growing network of community-focused technical experts
- Free funding database of >200 opportunities
   from public, private, and philanthropic sources
- Free resources library with >170 resources grants, environmental health, energy efficiency and other topics
- Listening sessions report (2023-2024)



"The Center has been instrumental in connecting us to subject matter experts for answers to help advance our programs.

They have been proactive, helpful, and caring, making us feel comfortable and respected."

# **Technical Expertise**

- Environmental Health
- Epidemiology
- Evaluation
- Exposure Assessment
- Geographic Information Systems (GIS)



- Grant Planning/Navigation
- Mining Communities
- Needs Assessments
- Public Health
- Public Health Preparedness
- Renewable Energy
- Resilience and Impacts
- Rural Health
- Science Communication
- Study Design/Statistics
- Toxicology
- Training Development

# Assistance Numbers (since Nov. 2023)

- Served 25 Tribal or Indigenous communities
  - AZ (12), HI (8), NM (3), CA (1), Guam (1)
  - Community Orgs (56%), Tribal Govts
     (26%), Individuals/Schools/Other (19%)

- 400 hours of one-on-one assistance
- 80 assistance requests ranging from looking for and applying to grants to enviro health and exposure science resources
- Supported 10 grant submissions totaling \$31.1M





# Thank you!



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### For support or more info:



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- 1 (877) 518-4634
- BRISA@arizona.edu