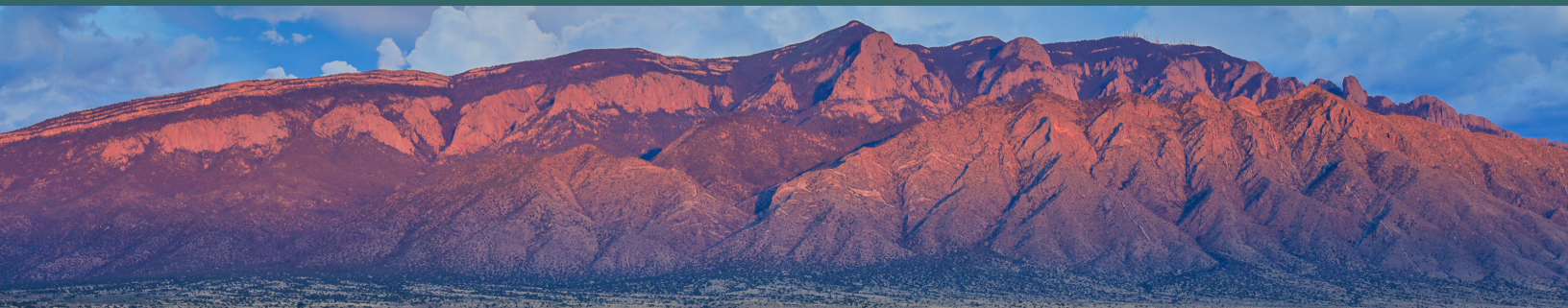# NM-INSPIRES NEWSLETTER

Summer 2025

From the Director's Desk

Welcome to the first edition of the NM-INSPIRES newsletter! We're excited to share a new platform to bring together updates, achievements, and research highlights from across our Center. Each issue will focus on an environmental contaminant of concern to New Mexico communities and spotlight the impactful work of our investigators. Through this newsletter, we aim to strengthen connections among researchers and community partners, and highlight the resources and opportunities available through our Translational Research Services Core, Community Engagement Core, Pilot Program, BioAnalytical Chemistry Core, and Biostatistical and Data Science Core. We're especially proud to feature our early-stage investigators and graduate students and look forward to celebrating their contributions in every edition. As the temps climb here in Albuquerque, wishing you a fruitful season filled with discovery, and time to chill!

– Dr. Sarah Blossom, NM-INSPIRES Center Director,
* COP Associate Dean of Research*

EVENTS

Thirsty4Thought:
Wood- & wildfire smoke focus
First week in August 2025
more details soon!

43rd Annual Meeting of the Mountain West Society of Toxicology
August 21-22, 2025
Albuquerque, NM

2025 NM-INSPIRES Annual Retreat
26-27 September, 2025
Albuquerque, NM

12th Conference on Metal Toxicity and Carcinogenesis
October 26 - 29, 2025
Port Jefferson, Long Island, NY
Hosted by Stony Brook Cancer Center and Stony Brook University

Contaminant Focus:
Wood- & Wildfire Smoke

IN THIS ISSUE:

- In the News
- Research Updates
- Early Stage Investigator Highlights
- Graduate Student Spotlight
- Core Support for Wood- & Wildfire Smoke Research
- Wood- & Wildfire Smoke Resources from the CEC
- Other NM-INSPIRES News
- Congratulations!

In the News

Study finds industrial air pollution contributes to NM's low birthweight

"... researchers at The University of New Mexico have linked industrial air pollution to the state's above-average rates of babies born with low birthweight in a study published in the Journal of Environmental Management."

New UNM Research Shows Wildfire Smoke Impacts on the Brain

"... a new paper published in the Journal of Neuroinflammation by University of New Mexico Health Sciences scientists gives new cause for alarm, finding that wildfire smoke can trigger inflammation in the brain that persists for a month or more."

Research Updates from the Biostatistics and Data Sciences Core & Pilot Program

The Biostatistics and Data Sciences Core (BDSC) has led a Pilot Project investigating the **Wildfire-Related Air Pollution Exposure and its Associations with Respiratory Diseases in the United States**. In this pilot project, we are examining the relationship between wildfire-related air pollution and asthma exacerbations using a case-crossover design, utilizing data from the NIH All of Us Research Program. Preliminary findings indicate that short-term exposure to wildfire-related air pollution within one week **significantly increased the risk of asthma exacerbation** during the warm season (April–August) from 2006 to 2019 in the All of Us cohort. Elevated risks were particularly observed among individuals residing in the eastern U.S., adults aged 18 and older, females, and non-Hispanic white populations.

Early Stage Investigator Highlight

Dr. Mijung Oh (Postdoctoral Fellow, Zychowski Lab) recently delivered a poster presentation entitled **"Ovarian Hormone Deficiency Exacerbates Wildfire Smoke-Induced Immune and Metabolic Dysregulation in the Hematopoietic Niche"** at the Southwest Developmental Biology Conference in Albuquerque. **Congratulations, Dr. Oh for a great presentation!**

Ph.D. Candidate Yanhong Huang from the UNM Department of Geography & Environmental Studies has led the data analysis efforts for the pilot project, which include GIS data collection, programming exposure assessment models, and statistical analysis of the association between wildfire-related air pollution and health outcomes. Yanhong is **mentored by Drs. Luo and Gong**. She is preparing a manuscript titled **"Impact of Wildfire-Related PM2.5 on Breast Cancer Incidence in New Mexico".**

Early Stage Investigator Highlight

Have you met Dr. Sebastian Medina yet? No stranger to UNM, Sebastian was successfully recruited back to the College of Pharmacy, with support from the NM-INSPIRES Admin Core, in 2024. You may be aware of his research expertise in arsenic toxicity and anemia, but did you know he is also committed to addressing the consequences of wildfire disasters? In his capacity as a member of the Mora County Post-Fire Placemaking and Disaster Recovery initiative, he supported local leaders in discussions about the feasibility of monitoring air, water, and soil quality in the aftermath of the 2022 fires as a key element in assessing longterm environmental and health impacts. He also works with the New Mexico Forest & Watershed Restoration Institute in the County Post-Fire Placemaking and Disaster Recovery initiative, where he supported local leaders in discussions about the feasibility of monitoring air, water, and soil quality in the aftermath of the 2022 fires as a key element in assessing long-term environmental and health impacts. He also works with the New Mexico Forest & Watershed Restoration Institute in outreach and education efforts. With these community perspectives, Sebastian collaborated with Dr. Shuguang Leng (TRSC) from the UNMCCC to recruit participants for a community-engaged research project focused on understanding the long-term effects of woodsmoke exposure.

Photo courtesy of Jim Weber, Santa Fe New Mexican via AP file. Obtained from NBC news.com article: A flare-up near Cleveland in Mora County, N.M. , darkens the sky where firefighters battled the Hermits Peak/Calf Canyon fire on May 4, 2022.

What's more, Sebastian partnered with Dr. Humairat Rahman of New Mexico State University to explore shared interests in the cardiopulmonary impacts of wildfire-derived particulate matter exposure. With support from the **BACC** to analyze filters from experimental woodsmoke exposures, they are developing protocols to analyze samples from community-deployed air quality monitors in the Airwise project. **Five members of NM-INSPIRES, including Sebastian, are on the newly funded UNM CHANGES Center Leadership Team** and two members lead projects within CHANGES (Drs. Leng & Lavin). This new NIH-funded center enables access to cutting-edge tools to protect the health of communities in New Mexico experiencing wildfires, droughts, and other climate related challenges. **NM-INSPIRES members Drs. Campen, Zychowski, Leng, Lavin, Medina** and others are actively building a strong research focus on how wildfires and airborne particulates affect human health through currently funded projects and developing collaborative initiatives. These research efforts are supported through partnerships with other research centers, regional partners and community organizations with the goal of better equipping communities to face future challenges posed by airborne contaminants and wildfire events.

Graduate Student Spotlight

The NM-INSPIRES Newsletter team asked three promising graduate students what INSPIRES their wood- & wildfire smoke research. Here's what they told us (from left to right):

Crystal Cevering, PhD Student, Biomedical Sciences
Co-Mentors: Dr. Sarah Blossom & Dr. Matt Campen
"I'm a first year PhD student studying how exposure to woodsmoke may influence autoimmune diseases, specifically multiple sclerosis, which could help us better understand the rising trends in autoimmunity. I'm excited to work on research that's increasingly relevant as wildfires become more frequent and widespread."

Brenna Baird, PhD Candidate, Pharmaceutical Sciences
Mentor: Dr. Matt Campen
"Being from the rural southwest, I have always held an interest in serving underrepresented communities, especially those who face adverse health consequences from circumstances beyond their control. Researching the pollutants that cause those outcomes has been very enlightening, and I always enjoy translating our findings back to those communities. My research focuses on the neurological outcomes of wildfire smoke exposure. I also explore interventions that may dampen the neuroinflammatory response, like dietary modulation and molecular therapeutics."

Ember Suh, PhD Student, Biomedical Sciences & METALS Superfund Research Program Trainee
Mentor: Dr. Matt Campen
"I was inspired to do research because of my undergraduate research experience and career interest in the toxicology field. I currently study neurometabolomic changes from woodsmoke exposure and from aging in mice. I also study neuroinflammatory responses in mice following exposure to woodsmoke containing low and high levels of metals."

Need support on Wood- or Wildfire smoke Studies?
Breathe easy… the NM-INSPIRES Cores are here for you!

Contact the Biostatistical and Data Science Core **(BDSC)** for support with statistical and geospatial data analysis for examining the health impacts of wildfire smoke exposures. They can also assist with assessments of exposure to air pollution attributable to wildfires.

Click here to Request BDSC Services.

Take action to stay safe for fire season!

Get Ready Before Fire Season — Go to *www.ready.gov* to be prepared | Gather 3 Days of supplies; food, water, and medicines for each person (and pet) | Get N95 or KN95 masks | Make a plan with emergency routes in case you need to leave

When Smoke is Coming, Stay Alert! — Follow local alerts and news — Stay indoors and bring in pets — If authorities call to stay indoors — If you have to go outside, take it easy

Keep Indoor Air Clean

DO
- Close all windows and doors
- Turn off swamp coolers
- Use AC (air conditioners) with filters that recirculate air

DON'T
- Use gas, propane, or woodburning stoves and furnaces
- Smoke or vape
- Burn candles or incense
- Fry or broil food
- Vacuum

If authorities order an evacuation, don't wait. Leave immediately!!!

The Community Engagement Core (**CEC**) is here to support you in communicating your research to the wide range of communities we serve across New Mexico. We work with researchers and communities to enhance multi-directional environmental communication and environmental health literacy using culture-centered, participatory processes.

Click here to Request CEC Services

Did you know… the Translational Research Services Core (**TRSC**) has *in vivo* translational resources for characterizing inorganic components and gasses in woodsmoke? Sure enough, the TRSC offers investigators access to cutting-edge translational equipment, including a real-time inhalation system -- the gold-standard for rodent *in vivo* toxicology studies! This system provides unique flexibility to test regionally sourced particulate matter (PM), wood, and/or biomass to conduct in-house mechanistic studies using whole-body exposure chambers. Using the resources in BioAnalytical Chemistry Core (**BACC**) and the support of **Drs. Rui Liu** and **Jim Feng**, we can conduct inductively coupled plasma mass spectrometry (ICP-MS) on filters obtained from filtered air (FA) and woodsmoke (WS)-chamber conditions, collected in real-time!

Curious to learn more & discuss a potential future study?

Click here to Request TRSC Services   Click here to Request BACC Services

Wood- & Wildfire Smoke Resources from the Community Engagement Core

PROTECT YOURSELF AND YOUR RELATIVES FROM WILDFIRE SMOKE!

TAKE ACTION TO STAY SAFE FOR FIRE SEASON!

Do

GET READY FOR FIRE SEASON
- Gather supplies: food, water, and medicines—enough for everyone.
- Plan your emergency routes to get out.

WHEN YOU KNOW SMOKE IS COMING
- Wear a mask. N95 masks are best.
- Stay indoors.
- Avoid difficult physical activities, especially outdoors.
- Seal all windows and doors!
- Fire news? Check radio or phone.

Don't
- Fry or boil food
- Turn on any fan or air-condition.
- Burn candles or incense.
- Vacuum. Give it a mini vacation!
- Use gas, propane, or wood-burning stoves and furnaces.
- Smoke cigarettes
- Wait to leave until you see fire.

⚠️ Wildfire smoke can harm everyone—people, pets, and livestock!

➕ It can hurt your lungs, heart, brain and general health.

NM INSPIRES New Mexico Integrative Science Program Incorporating Research in Environmental Sciences (NM-INSPIRES)

Supported by the National Institute of Environmental Health Sciences (NIEHS) under Award Number 1P30ES032755.

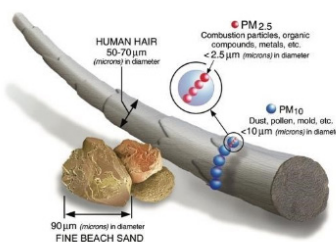### TIME TO GEAR UP! LET'S PROTECT OURSELVES AND OUR LOVED ONES.

Version 2a. 2/2024.

Check out the CEC's Wildfire Smoke flyer !

Curious about the health risks of air pollution? Learn more here.

Tiny Particles, Big Impact! Reviewing Health risks of PM2.5 and PM10

Air pollution is an environmental hazard that impacts our health in ways we might not realize. One of the main types of air pollution is particulate matter (PM) in the form of PM2.5 and PM10. Here's what you need to know:

What are PM2.5 and PM10?

HUMAN HAIR 50-70μm (microns) in diameter

PM2.5 Combustion particles, organic compounds, metals, etc. < 2.5 μm (microns) in diameter

PM10 Dust, pollen, mold, etc. < 10 μm (microns) in diameter

90 μm (microns) in diameter FINE BEACH SAND

PM2.5: These are super fine particles less than 2.5 micrometers in diameter. They're so small that you could fit about 30 of them across the width of a single human hair!

PM10: They are slightly larger than PM2.5. These particles are less than 10 micrometers in diameter, but they're still small enough to get into your lungs.

Where do these particles come from?

- Vehicles: Car and truck emissions are a major source
- Factories: Industrial processes release particles into the air
- Construction Sites: Building and demolition can kick up dust
- Mining: Dust can be released from tailings piles, open-pits, mine entrances, and access roads
- Nature: Wildfires and dust storms contribute too

Santa Ana Copper Mine, Silver City, NM

Community Air Quality Symposium

In case you missed this great event organized and hosted by the CEC last year, you can still watch the recordings from the excellent presenters sharing a range of community-based air quality projects across the state.

Click here to access the video recordings.

Other NM-INSPIRES News

We kicked off the Memorial Day Weekend with the second **Thirsty 4 Thought (T4T) event**, a collaboration between the NM-INSPIRES TRSC and the UNM ARID Institute. This lively event focused on the theme "**Living in a Plastic World**", and was held May 22nd at the Painted Lady Bed & Brew. There was bingo! There was trivia! There were 3-minute Thesis talks! And there were informal presentations from Center members - a good time was had by all!

And stay tuned for more details soon on the **upcoming T4T, focusing on wood- & wildfire smoke, taking place the first week of August.**

Also, at the end of the month of May we said a heart-felt farewell to NM-INSPIRES' Sr. Program Manager Theresa Champion – we thank her for her instrumental contributions in navigating the many aspects of getting the Center up and running these first three years, and wish her all the best in her future endeavors!

Discover powerfully simple digital PCR

Finally, on June 10th, the NM-INSPIRES TRSC hosted a **Digital PCR Lunch & Learn Workshop**. Keep an eye out for TRSC learning opportunities, and let them know if you have ideas for future trainings!

Visit our website to learn more about NM-INSPIRES:
https://hsc.unm.edu/pharmacy/research/areas/nm-inspires/

Interested in becoming an NM-INSPIRES Member?
https://hsc.unm.edu/pharmacy/research/areas/nm-inspires/membership.html

Congratulations !

Dr. Laurie G. Hudson, NM-INSPIRES Deputy Director, **honored as 2025 UNM Rainforest Innovation Fellow!** Here's an excerpt from the announcement text: "Dr. Hudson's pioneering research has significantly advanced ovarian cancer treatment, uncovering new therapeutic strategies, including the potential of R-ketorolac as an anti-cancer drug. Her collaborations have led to breakthroughs in understanding cancer mechanisms and targeting GTPases. Supported by long-term funding, her work continues to influence cancer research, providing critical insights into disease progression and improving patient outcomes across multiple cancer types. Read "**An Innovator's Journey**" to learn more about Dr. Hudson's exciting path that led her to new collaborations and research opportunities that have aimed to expand the understanding of cellular mechanisms that drive cancer causation and progression." **Click here to see a video** of Laurie talking about this important work!

Birthday Shout-Outs

While no one wrote in to share birthdays this time around, two members of the NM-INSPIRES Newsletter team have summer birthdays!

**June 20th:
Marena Montera**

**June 30th:
Dr. Bethany Jorgensen**

Dr. Sarah Blossom, NM-INSPIRES Center Director, is the new **Associate Dean for Research** for UNM's College of Pharmacy. Way to go, Sarah!

New Publications

Huang Y, Lin Y, Lavin RP, Luo L, Luo M, Leng S, Mullen NM, Hawley K, Gong X. **Industrial air pollution and newborn hearing screening failure**. J Hazard Mater. 2025 Apr 10;492:138241. doi: 10.1016/j.jhazmat.2025.138241. Epub ahead of print. PMID: 40233453.

Lin Y., Hridoy A.E.H., Wang Z., Luo L., Ma X., Liu Z., John M., Fan C., Ruberto I., Gong X., Shi X., **Associations between rocky mountain spotted fever and veterinary care access, climatic factors and landscape in Arizona**. Geospatial Health Journal, Accepted