

Lessons learned from COVID-19 that can help in this year's wildfire season



We have learned much over the last 15 months, and additional lessons may take shape as we move toward a society less dominated by the microscopic organism with a crown that took so many by surprise. I suggest five take-home messages, each of which is actionable:

Mask wearing, despite the controversies that have arisen, is understood by most people to have been a key positive behavior offering protection from the virus, both for the wearer and those around them. This well-accepted practice can now be repurposed with N95 masks to keep out particles in wildfire smoke, becoming a powerful tool to reduce the respiratory and other

health threats from wildfire smoke.

2. Mental health consequences follow from disasters of all types, and these can be long-lasting impacts. However, the worst impacts can be mitigated by mental health services, and by communities and individuals being there for those in need, especially those who may not call out for help when they are experiencing a deeply depressive period, or suffering from post-traumatic stress. A broad expansion of the mental health workforce with training on mental trauma should include not only professional health care providers, but also para-professionals, nursing assistants and aides, teachers, school counselors, yoga and body work instructors, plus

- firefighters, trash collectors, farmworkers, domestic workers, store clerks, bus drivers, warehouse employees, restaurant workers, and a host of others who make our communities function.
- 3. Disparities will be exacerbated as a result of structural systems, economic inequities, and vast differentials in political capital, as the COVID-19 pandemic has laid bare. Access to testing and then vaccines was far slower in communities of color and other vulnerable segments of the population, leading to disproportionate deaths. Whereas large-scale activities by government, private, and non-profit organizations were eventually adopted in many locations, both testing and vaccine 'hesitancy' have been difficult to overcome in some communities of control. To build resilience, massive efforts need to be undertaken to protect the most vulnerable by redistributing wealth and advantages—these initiatives need to happen at levels that include the federal, state, regional and local agencies, as well as other institutional commitments NGO's, private entities, etc.
- 4. We're all in this together: literally and for the longrun. What happens to your neighbor does matter for you. So interdependent are we on the same ecosystems and the services they provide to the planet: weather systems, oceans, forests, tundra, rivers, etc., that only through collective action can we hope to meet and survive the enormous threats that climate change is bringing and to ensure the safety and health of everyone
- 5. Nature is formidable; complex; resilient, and beautiful. Nature is not to be conquered but to be respected. The more we try to rule the earth, the more Nature will reassert itself. Nature is both microscopic—or nano, pico-scopic—and operates on the largest of scales: mountain ranges, tectonic plates, magnetic fields, and fires covering millions of acres. Nature is plentiful, powerful, almost infinitely diverse, and always, always interconnected. As a species, we homo sapiens have barely begun to grasp our smallness in her midst. It's not too late.

Irva Hertz-Picciotto, Director UC Davis Environmental Health Sciences Center

Wildfires: Solving a terrible problem



O&A with Keith Bein

EHSC's film Waking Up to Wildfires features **Dr. Anthony Wexler** and **Dr. Keith Bein's** Rapid
Response Mobile Research Unit, which they're now readying to deploy in the field. Find out what Keith's been up to since we filmed, and what he hopes to learn from this year's wildfire season **in this new Q&A**.

Watch Keith and Tony's webisode Waking Up to Wildfires: Solving a Terrible Problem.

How to prepare

Scientists are expecting 2021 to be a bad year for wildfires. Below are resources and tips to help you prepare for this year's season.

- <u>CalFire's Ready for Wildfires</u> website has everything you need to plan, know and act, including an easy sign up for text message alerts about wildfires in your zip code.
- Wildfire communities rely on NIXLE to get localized emergency alerts.
- If you don't know already, learn the risk for wildfires in your area. Check out the National Interagency Fire Center's wildfire risk maps, which help firefighters

prepare for wildfires across the country.

- Purchase free standing air filters or outfit your AC with new ones. The CDC put
 together this useful guide on <u>wildfire air filtration systems</u> to help consumers
 understand how they're designed and rated, and which ones will do the best job
 protecting your body from wildfire particles.
- Prepare for an evacuation by having a <u>Go Bag</u> in your car, evacuation routes in mind and a place to stay with friends or relatives. Stock up on water, charge up extra batteries and if you're in a high-risk area, consider purchasing a back-up generator if you can.
- Stock up on N95 masks before they're gone from shelves!

Research updates



Wildfire research

Dr. Irva Hertz-Picciotto and her research team are updating their <u>Statewide Wildfire Survey</u>, which is now in its third year. The survey will relaunch in June to capture data from 2020's historic wildfire season. **Dr. Rebecca Schmidt** is continuing her <u>wildfire pregnancy study BSAFE</u>.

EHSC's Digital Strategist **Jennifer Biddle** and Editorial Assistant **Maddie Hunt** will be helping with recruitment for both projects through monthly social media campaigns running from June to November. Campaigns will focus on PTSD, preparedness, the science behind smoke waves, life after wildfires, celebrating first responders and giving back.

Wildfire map

Dr. Irva Hertz-Picciotto and **Jennifer Biddle** have been working with geographer **Dr. Mitchell Snyder** to create an <u>interactive wildfire map</u> of Northern California using WHAT-NOW data from the 2017-2019 wildfire seasons. The long-term plan with the map is to integrate video and graphic storytelling elements to help bring the data to life.



COVID-19 research

ORALE Project update

The <u>ÓRALE Project</u> is gaining steam. The team is getting the word out about free testing in farmworker communities across Fresno, Madera, Stanislaus and Yolo counties. Here's what the team has accomplished so far (February 6-June 16):

3,080 COVID-19 tests1,126 COVID-19 tests in the month of May alone148 ORALE testing events to date66 COVID-positive cases

ÓRALE's Communications/Social Media Manager **Clarisse Céspedes** created this <u>TikTok video to educate farmworkers</u> on the need for COVID testing even after being vaccinated. Within days, this little video had 78,000 views and 425 likes. That's Staff Research Associate (now TikTok star;)) Jasmine Montes in the video.

Science in the spotlight



A new project stemming from one of our Center's pilot projects began field work the last week of May. This project is a collaborative effort between <u>CSTAC</u> member <u>Jane Sellen</u> of <u>Californians for Pesticide</u> <u>Reform</u> and <u>Dr. Deborah Bennett</u>, with our community partner leading the effort.

This community-driven project measures a suite of over 25 pesticides in the air that locals may be exposed to. The pesticides include organophosphates, pyrethroids, fumigants and a variety of less studied compounds applied regionally with the potential to be an endocrine-disrupting compound or have neurotoxic effects.

Approximately 36 adult participants from nine agricultural communities in three San Joaquin counties will wear a backpack with a small pump and two air sampling tubes for three days (see it circled in the image above). Participants will turn the sampler on in the morning before they leave their house for the day and wear the backpack for 12-14 hours as they go about their daily activities.

Dr. Thomas Young, whose lab is part of our Center's Exposure Core, will analyze the samples. This study will help us understand if there is elevated pesticide exposure in communities living close to agricultural fields. The project is funded by the <u>California Air Resources Board</u> through its <u>AB 617</u> Community Air Grants program.

See our posts on **Twitter**, **Instagram** and **Facebook**. **Read the full article here**.

Updates from our cores

Community Engagement Core (CEC)

<u>Dr. Jonathan London</u>, Associate Professor in the Department of Human Ecology and the Co-director of the Center's Community Engagement Core, has three publications about

water justice in California released this month. <u>Disadvantaged unincorporated</u> <u>communities and the struggle for water justice in California</u> is a co-authored journal article about problems of access to safe drinking water in the San Joaquin Valley. These low-income communities – with mostly Latino residents – lie outside city boundaries and tend to lack basic infrastructure. London and his team found that as many as 150,000 residents in these communities may have unsafe drinking water, but that 66 percent live within 1 mile of a safe drinking water source, showing the prospects for California meeting its Human Right to Water policy.

Phoebe Seaton, Co-director of <u>Leadership Counsel for Justice and Accountability</u> and a member of the Center's Community Stakeholders Advisory Committee (CSTAC), is a co-author. The team also included the former Co-director of the Community Water Center **Laurel Firestone**, who was also a member of the CSTAC.

Integrative Health Sciences Facility Core (IHSFC)

Over the past year, the IHSFC has brought in 15 new grants, eight new collaborations and its research was associated with more than 50 publications. Other highlights include:

- A joint R01 proposal by **Dr. Bein**, **Dr. Lein** and **Dr. Van Winkle**: *Traffic-related air* pollution exacerbates AD-relevant phenotypes in a genetically susceptible rat model via neuroinflammatory mechanism(s)
- An Intellectual and Developmental Disability Research Center (IDDRC)
 Biospecimen Collection and Sharing Grant with **Dr. Schmidt** to collect
 biospecimens in a diverse population of women pregnant during the COVID-19
 pandemic and their newborn babies who enrolled in the B-SAFE wildfire pregnancy
 cohort study and the high-risk MARBLES autism sibling pregnancy cohort study.
- An R01 CHARGE Study Phase II: A Multifactorial Approach to Autism Etiology with Dr. Hertz-Picciotto, Dr. Bennett, Dr. Schmidt and Dr. Walker.
- A VA grant Defining Breath VOC Biomarkers to Improve Respiratory Health of Veterans Exposed to Environmental Toxicants with Dr. Kenyon, Dr. Harper, Dr. Davis, Dr. Bennett and Dr. Bein.
- **Dr. Schmidt** and **Dr. Ji** are collaborating on a new EHSC seed funded biospecimen collection in the B-SAFE wildfire pregnancy study, collecting nasal and fecal swabs for newborns exposed to wildfires in utero.
- Collaborations with Dr. Jelliffe and others on the HOPE COVID-19 study, which is currently recruiting women pregnant during the COVID pandemic and the entire UC Davis MIND Institute IDDRC with new seed funding to collect blood, delivery and other COVID-19-relevant biospecimens for existing cohorts and a local comparison group.



Video: Air, Water, Blood: The Power of Community-Engaged Research

It all started with an idea **Jonathan London** had for an epic story unfolding in California's Central Valley that could showcase something unique about our Center: Community-based participatory research. This 15-minute documentary short features **Dr. Clare Cannon's 2018 Pilot Project** in Kettleman City, California, a farmworker town of 1,500 and one of the birthplaces of California's Environmental Justice movement. From 2007 to 2010, a cluster of birth defects and infant deaths led to a state investigation that locals criticized for not involving the community or being thorough enough. Cannon proposed doing a pilot study to address these and other concerns residents still had.

This film chronicles Cannon's efforts and how her relationship with community members made her science stronger. The film also features mother-son duo **Maricela** and **Miguel Alatorre**, who are now on our Community Stakeholder Advisory Committee.

See the video here.

NIEHS news & events

Upcoming meetings and webinars

• Exposure pathways and environmental health disparities, June 28, 3-4:30 PM EST. Register here.

Recently published

- Chidambaran V, Zhang X, Pilipenko V, Chen X, Wronowski B, Geisler K, Martin LJ, Barski A, Weirauch MT, Ji H. <u>Methylation quantitative trait locus analysis of chronic postsurgical pain uncovers epigenetic mediators of genetic risk.</u>
 <u>Epigenomics</u>. 2021 Apr;13(8):613-630. doi: 10.2217/epi-2020-0424. Epub 2021 Apr 6. PMID: 33820434; PMCID: PMC8173520.
- Li W, Hu Y, Bischel HN. <u>In-Vitro and In-Silico Assessment of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Film-Forming Foam (AFFF) Binding to Human Serum Albumin. Toxics</u>. 2021 Mar 17;9(3):63. doi: 10.3390/toxics9030063. PMID: 33803062; PMCID: PMC8002870.
- Rodgers KM, Bennett D, Moran R, Knox K, Stoiber T, Gill R, Young TM, Blum A, Dodson RE. <u>Do flame retardant concentrations change in dust after older upholstered furniture is replaced?</u> Environ Int. 2021 Aug;153:106513. doi: 10.1016/j.envint.2021.106513. Epub 2021 Mar 23. PMID: 33770624; PMCID: PMC8154740.
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- Chidambaran V, Zhang X, Pilipenko V, Chen X, Wronowski B, Geisler K, Martin LJ, Barski A, Weirauch MT, Ji H. <u>Methylation quantitative trait locus analysis of chronic postsurgical pain uncovers epigenetic mediators of genetic risk</u>. Epigenomics. 2021 Apr;13(8):613-630. doi: 10.2217/epi-2020-0424. Epub 2021 Apr 6. PMID: 33820434.
- Barkoski JM, Philippat C, Tancredi D, Schmidt RJ, Ozonoff S, Barr DB, Elms W, Bennett DH, Hertz-Picciotto I. In utero pyrethroid pesticide exposure in relation to autism spectrum disorder (ASD) and other neurodevelopmental outcomes at 3 years in the MARBLES longitudinal cohort. Environ Res. 2021 Mar;194:110495. doi: 10.1016/j.envres.2020.110495. Epub 2020 Nov 18. PMID: 33220244; PMCID: PMC7946720.
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 10.1016/j.chemosphere.2020.129349. Epub 2021 Jan 8. PMID: 33429263; PMCID: PMC7969436.
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In a spirited but peaceful rally on May 26, 200 domestic workers protested at the State Capitol, giving testimonies and presenting a petition in support of SB 321 to Governor Newsom.

SB 321: Dignity, unity, power!

Senator María Elena Durazo is sponsoring <u>SB 321</u>, which will give California's domestic workers OHSA protections for the first time in our nation's history if it passes. Domestic workers have been excluded from these regulations since their inception in the 1930s. At the time, New Deal legislators bowed to pressure from Southern Dixiecrats to exclude domestic and agricultural workers who were mostly Black. Today, these workers in California are largely Latina and Filipina immigrants who clean houses and provide caregiving services to children, the elderly and the disabled. <u>Read this article by actor Lilly Tomlin on why she supports SB 321</u>.

Our Center has been collaborating with the <u>California Domestic Workers Coalition</u> (CDWC) on the <u>COVID Survey for Workers</u>. We're also making a documentary about CDWC members and SB 321 as it makes its way through the California legislature. The legislation passed through the Senate and will be heard in the Assembly's Labor Committee on June 22.

Announcements



Save the dates! The EHSC Annual Retreat is happening October 25 & 26 on Zoom and in person at UC Davis.

More details coming soon on our website.

July Science Seminar. Thursday, July 15, 12-1:00 PM with **Dr. Joanna Chiu**, Professor and (soon-to-be) Vice Chair of the Department of Entomology and Nematology and **Dr. Jill Silverman**, Associate Professor and Co-Director of the MIND Institute at UC Davis. Chiu is speaking on "Regulation of chromatin dynamics by light and the circadian clock." Silverman's presentation is TBD.

American Public Health Association (APHA) Film
Festival. Our Center is entering its two most recent video

projects (Waking Up to Wildfires and Air, Water, Blood: The Power of Community-Engaged Research) in the feature and short documentary categories of APHA's Film Festival. If selected, winners will present their film to a live audience of 20,000+ at APHA's annual conference. We'll keep you posted!

In the news

- The San Jose Mercury News interviewed Dr. Tanya Khemet Taiwo in <u>Gestational</u> <u>diabetes rates during pregnancy on the rise</u>
- KRON interviewed Dr. Jonathan London in <u>Disadvantaged communities hit</u> hardest by drought
- Inside Climate News interviewed **Dr. Jonathan London** in <u>California's relentless</u> droughts strain farming towns

What we're reading, listening to & watching this summer



Shosha Capps and Lisa Miller are reading <u>Getting to</u> the Heart of Science Communication: A Guide to <u>Effective Engagement</u> by Faith Kearn.

Jennifer Biddle is listening to the audiobook version of **Stamped From the Beginning** by Ibram X. Kendi.

Camille Burlaza is watching Loki.

José Lopez Garcia is reading <u>Cien Años de Soledad</u> by Gabriel Garcia Marquez.

Jasmine Montes is reading <u>Think Like a Monk</u>by Jay Shetty.

Sarina Rodriguez is reading <u>West of the West</u> by Mark Arax.

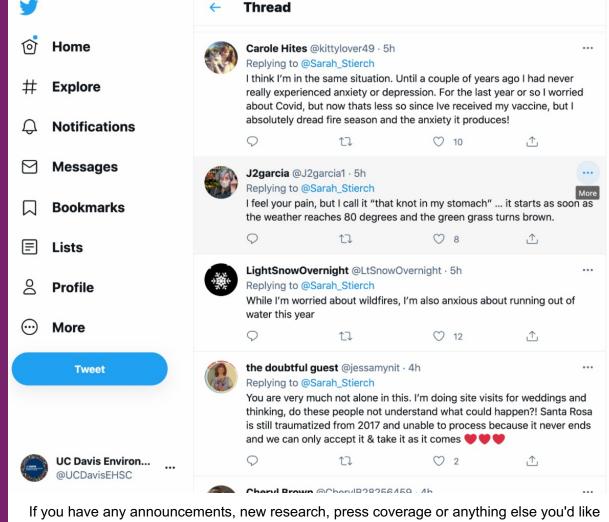
Ruth Williams is watching **The Oval**.

Peer review threads on Twitter

A new phenomenon on Twitter is the peer review thread. Science journalist Tara Haelle recently curated this list of interesting peer review threads. Check them out!

- "Health Nerd" <u>Gideon Meyerowitz-Katz</u> is one of the most prolific Twitter peer reviewers. Check out his threads about a <u>March 2021 study on whether staying</u> <u>at home prevents COVID-19 deaths</u> and a <u>January 2021 paper on lockdowns</u>
- Not a peer review exactly, but an <u>excellent thread on predatory publishers</u> from scientist <u>Elisabeth Bik</u>, who has <u>done</u> other <u>peer review threads</u>, including this <u>participatory one</u>
- A <u>thread</u> by demographer <u>Ilya Kashnitsky</u> on a truly awful JAMA Network Open paper on loss of life years from missing school during the pandemic
- A <u>thread</u> by epidemiologist <u>Nicola Low</u> about a study on viral load of SARS-CoV-2 in children
- A <u>thread</u> by epidemiologist and biostatistician <u>Zöe Hyde</u> about guidance on school opening from The Hospital for Sick Children in Toronto
- A <u>thread</u> by scientist <u>Antonella Succurro</u> about a paper from Nature Communications on academic mentorship
- Again not quite about peer review exactly, but a (somewhat ironic) <u>thread</u> about science-by-Twitter from science philosopher and evolutionary biologist <u>Yogi Jaeger</u>

More than 87 percent of the western United States is experiencing drought, with temperatures expected to reach record highs this year. To get a sense of the collective trauma people are experiencing as we head into another hot summer, <u>read Sarah</u> Stierch's full Twitter thread on wildfires here.



If you have any announcements, new research, press coverage or anything else you'd like to share with your EHSC colleagues or our community partners in this newsletter, please contact Jennifer Biddle (jsbiddle@ucdavis.edu). Thank you!

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