

Burning sugarcane possible cause of mystery kidney disease in agricultural workers

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The burning of sugarcane and rice husks may be releasing a toxicant causing a mysterious kidney disease in agricultural workers, according to a paper in the [American Journal of Kidney Diseases](#).

An ongoing epidemic of [chronic kidney disease](#) has been observed among manual laborers in hot agricultural communities throughout the world, including along the Pacific coast of Central America, India and Sri Lanka. While heat stress and [climate change](#) have contributed to this epidemic, researchers have identified tiny silica particles released from sugarcane ash that can be inhaled or ingested through contaminated drinking water that cause chronic kidney damage.

"To date, there are no studies we are aware of that have identified a toxicant that can cause chronic kidney disease which is actually present in kidney tissues of patients suffering from this unknown disease," says Jared Brown, Ph.D., professor at the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences and one of the senior authors. "These data provide an important clue to the mystery and suggests that in addition to [heat stress](#) from climate change that toxicants from sugarcane ash could be contributing to the disease."

University of Colorado Anschutz Medical Campus worked with doctors at Hospital Rosales in San Salvador, El Salvador to evaluate patients suffering from this mysterious chronic kidney disease.

The authors found significantly more silica particles in the kidney tissue of patients with this particular disease compared to patients with other known kidney diseases.

The study suggests the disease could result from exposure to sugarcane ash, which contains amorphous silica nanoparticles. This process may also be linked to people who work in [rice paddies](#), as the burning of the rice paddies, which is also commonly done, can also lead to the release of silica-containing ash.

"While this data is preliminary, we can determine that the burning of sugarcane may not only be contributing to climate change, but it may

have a role in the epidemic that has been affecting [agricultural workers](#)," says Richard Johnson, MD, CU Anschutz School of Medicine professor and one of the senior authors.

"This disease is identified as one of the first newly recognized diseases resulting specifically from a warming climate. Now we know toxicants are also involved. Hopefully this work will spur efforts to focus on sugarcane burning as a potential risk factor for the development of this mysterious kidney disease in workers and people who live adjacent to sugarcane fields."

More information: Keegan L. Rogers et al, Silica Nanoparticles and Mesoamerican Nephropathy: A Case Series, *American Journal of Kidney Diseases* (2023). [DOI: 10.1053/j.ajkd.2023.06.010](https://doi.org/10.1053/j.ajkd.2023.06.010)

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