

## **Air Pollution, Climate Change, and Health in India – Part 1**

**Narrator:** *This is Global Environmental Health chat, the podcast that explores environmental health issues that transcend national boundaries. This podcast is produced by the National Institute of Environmental Health Sciences.*

Like many countries, India faces several adverse impacts from climate change and poor air quality, which present significant challenges for public health. Today we will hear from two experts about the challenges of improving public health in India despite growing air pollution and climate change challenges, and importantly, how they and others are working to address these problems at the ground level.

Sujata Saunik is an Indian Administrative Service Officer from the Government of Maharashtra State in India who is currently a Takemi Fellow at the Harvard School of Public Health. She says that because India is a rapidly urbanizing country, air pollution has been increasing quickly as well.

**Saunik:** If you look at the scale that India has, its 1.3 billion people today and most of the states of India are the size of countries across the world. For example, Maharashtra is the size of Mexico.

That brings about challenges because everything else then gets scaled up, including air pollution. Its becoming a huge health challenge to bring about controlled measures so that it doesn't affect the public health of people at large.

**Narrator:** In addition to increased air pollution, India faces many challenges associated with climate change, such as increases in vector-borne diseases and extreme heat in some areas. According to Saunik, one of the largest challenges to protecting human health is the availability of environmental and health data.

**Saunik:** You cannot improve something that you cannot measure, that is the most important point. We know that data-driven insights are the most cost-effective way of helping. But making public policy decisions that work at scale and really bringing evidence to the table to convince the policy makers and approvers is something that I cannot emphasize enough.

**Narrator:** In addition to public health and environmental data, Saunik says that involving communities and stakeholders at all levels is critical to addressing health challenges. Saunik used several successful approaches in her role as the former secretary for the Department of Health and Family Welfare for the state of Maharashtra in India.

**Saunik:** One of the actions that we took was developing the first heat action plan for Nagpur, in Maharashtra. Nagpur traditionally faces very severe summer and the temperatures go up beyond 47 degrees Centigrade. So with the help of the NRDC that is the National Resource Defense Council and the Indian Institute of Public Health, we did a conference and a year-long program to develop a key action plan where all departments were encouraged to look at how they would handle extreme temperatures, and we also started mapping the flow of patients who were coming in with heat stroke symptoms. That was something that was very fruitful, it led to a whole series of other plans being formed in other cities of Maharashtra.

**Narrator:** In another example, Saunik used community based approaches to improve sanitation in villages, and to encourage children to recycle plastic waste in their communities. With the help of community leadership in local villages, Saunik also oversaw the installment of reverse osmosis drinking water plants so that people could have access to clean drinking water.

Saunik says that engaging and involving the communities is crucial to improving health in the face of India's many challenges.

**Saunik:** When people started to see the difference that it made to their own health by participating in the advisories we were using to warn people for extreme high temperature, and when people saw the effect that it brought to the quality of their lives, that is when the magic started to happen. That is when the people started to follow the advisories that were being given and became participants taking care of their own health. So, it is extremely important to have these kinds of examples set out for more and more people and citizens to participate.

**Narrator:** Saunik stressed that her experience working in public health and public service highlighted the importance of avoiding silos of scientific discipline or economic sector. Instead, she emphasized the need to meet community needs in an integrated manner, combining collaborations with the community, other organizations, and international partners, such as the National Institute of Environmental Health Sciences (NIEHS). By partnering with groups like NIEHS that have technical capacity and cutting-edge tools, groups and agencies within India can begin to build their own capacity to advance environmental research to protect human health.

We turn now to another example of an important partnership with NIEHS that led to the development of an initiative aimed at understanding and addressing the impacts of climate change on health.

Meena Sehgal is a Fellow at the Energy Resources Institute (TERI) in New Delhi India. She says that as an incredibly diverse and growing country, India faces unique challenges associated with climate change.

**Sehgal:** The challenges which Indian environments face are both in rural areas and urban areas. There has been a recurrence of floods, and there are areas in the country which are more prone to vector borne diseases like malaria, dengue, and chikungunya. Climate change is likely to impact transmission windows of vector borne diseases.

Another challenge is that the summers are hotter and they come earlier. The areas of extreme heat are more intense in urban cities. The temperatures can soar as high as 116 degrees F; such temperatures are associated with mortality, cardiovascular diseases, and respiratory diseases.

**Narrator:** Sehgal says that the impacts of climate change are further complicated by the fact that the nutrition status of the population in India is poor. On average, 3 out of 10 children are under nourished and half of all children are anemic. As a result, she notes that the impacts of climate change on this vulnerable population can be particularly catastrophic. First, it poses a risk to much needed food security, since Indian agriculture depends on weather and climate related patterns. Second, it increases the prevalence of diseases to which undernourished people are more vulnerable, including increases in vector borne diseases, those associated with impacts to the limited sanitation and clean water infrastructure, and direct health impacts associated with extreme temperatures.

To address the issues of climate change and health impacts in India, an initiative called Understanding Climate Change and Health Associations in India (UCHAI) began in 2015.

**Sehgal:** UCHAI began with interactions among U.S. researchers, Dr. John Balbus from NIEHS, interacting with different Indian researchers over the years. UCHAI began its activities with a capacity building workshop on climate change and health effects.

**Narrator:** The first UCHAI meeting engaged diverse stakeholders, including researchers, health professionals, governmental and non-governmental organizations, and academic institutions. The participants discussed the complexity of climate change impacts in India, as well as the need for multidisciplinary approaches to address these problems. The workshop, which served as the first step in creating a Community of Practice to promote resilience in India, has become robust, focusing on outreach, communication, training, and capacity building.

**Sehgal:** We've been using traditional methods, such as workshops and meetings, and newer communication methods, such as WhatsApp communities, short videos, websites, and webinars. We've trained environmental researchers through workshops, brought together policy makers in discussions through our webinars, and we continue to inform people at large through the UCHAI website.

We are trying to build state-level partnerships for developing early warning systems based on weather forecasts for small areas – this is urgently needed for timely interventions, preventing breeding sites, and disease outbreaks.

**Narrator:** Sehgal says that NIEHS has been a large supporter of the UCHAI initiative, using its resources and vast knowledge to help build capacity on the ground in India, and to create a platform for an international network that can work together address the severe environmental health problems facing the country.

Together, UCHAI supporters and participants have helped develop a community of practice that bridges traditional silos and brings together multidisciplinary expertise. The initiative enables participants to share ideas, discuss challenges, weigh interventions, and build local capacity to protect human health.

Thanks to today's experts, Sujata Saunik and Meena Sehgal for joining us.

Stay tuned for part two of our podcast series on air pollution, climate change, and health in India! In the second part of our series, we will hear from two representatives from NIEHS who have built partnerships aimed at growing a community of practice and a community of research in India to continue making strides in protecting human health in the face of the unique challenges facing the country.

You can learn more about climate change, air pollution, and health in India by visiting our website at [www.niehs.nih.gov/geh](http://www.niehs.nih.gov/geh).

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