

Pollutant Exposure of People Employed in Blue-Collar Jobs.

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Aim

Monitoring pollutant exposure and health effect on daily wage workers that includes:

1. Construction workers
2. Stone Quarry workers
3. Delivery agents
4. Kitchen Cooks

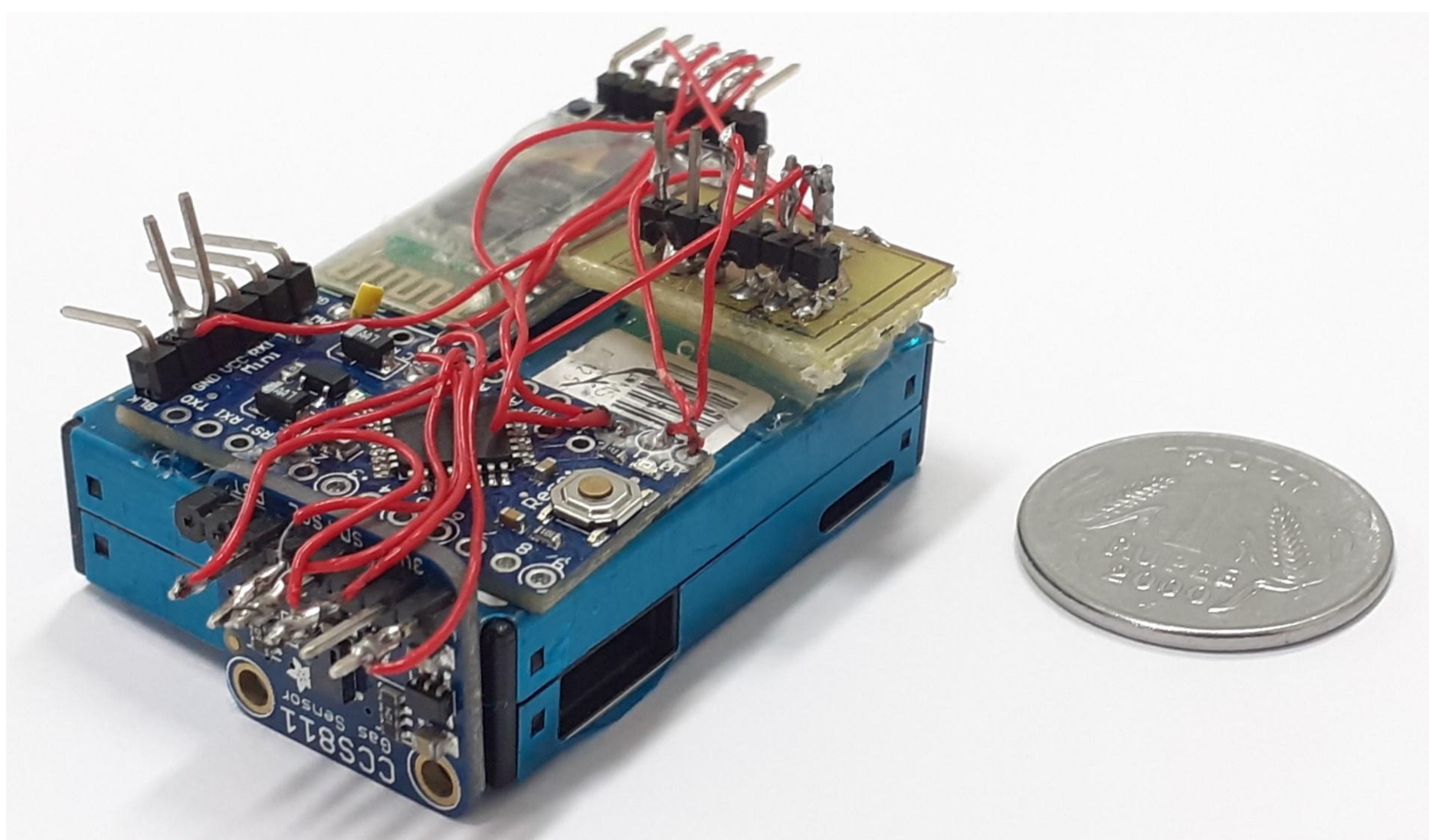
Motivation

- Daily wage earners work in extreme environment with their wards present in the same environment.
- Their health conditions due to pollution are often ignored and mostly unknown.
- Basic health condition can be improved if sources and effects of pollution are identified in these extreme work places

Proposed Approach

Wearable Monitoring:

- Our wearable prototype (PMS7003 based) monitors air pollution
- Challenges:
 - Powering these wearables without adding weight
 - Could look into energy harvesting
 - How to communicate?
 - Bluetooth, LORa some options

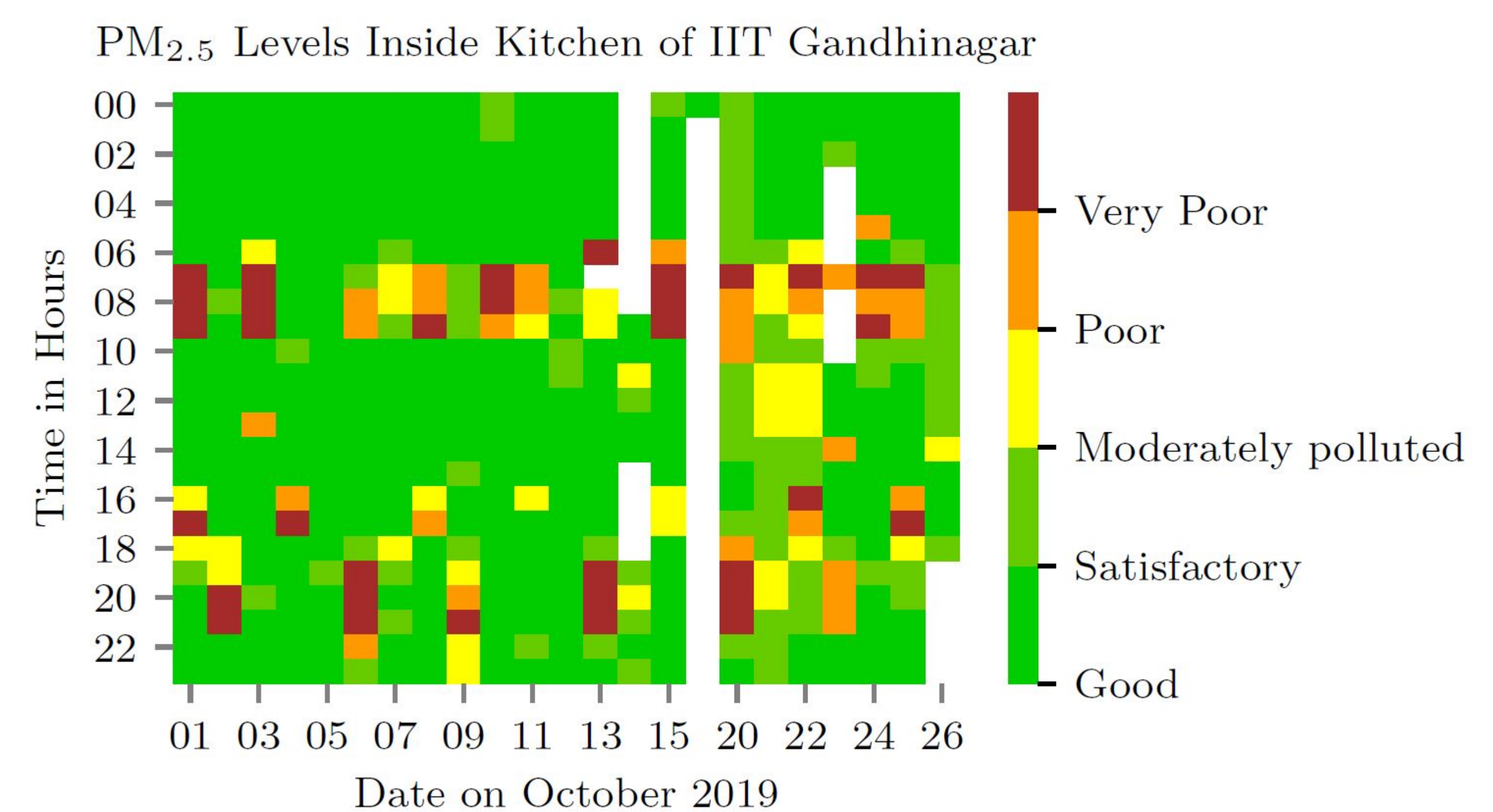


Monitoring Health Effects:

- We plan to use spirometer to collect lung function data.
- Spirometry data will be followed by detailed cohort survey

Preliminary Analysis

Experiment 1: Cooking



- The heat map above represents the pollution level in a Kitchen building with 22 people.
- Pollution rises as cooking activity pick up.

Experiment 2: Welding

- We observed PM_{2.5} readings in excess of 1000ug/m³ in the vicinity of welding.
- While the workers shielded their eyes, they do not shield their nose!

Future Proposed Study (Feedback Solicited)

- Creating a database of health effects and pollution exposure of 5 categories of job workers across 4 different age groups across 2 genders.
- Separate database for rural, urban and semi urban areas
- Hopefully, will lead to stringent norms and policies