



How might we reduce the chance of contracting respiratory diseases in industrial manufacturing sites?

Problem Description:

There are **high concentrations of PM (particulate matter)** in manufacturing environments, causing **respiratory diseases**. Many small companies and warehouses do not have the same level of safety measures as larger companies.



According to the CDC, well-established healthcare protection programs lead to **25% savings** in health care costs.

Current Solutions:

- Bringing in environmental health and safety consultants:
 - **After** employees have fallen ill.
 - When companies want to change their production process
 - **Not time efficient.**



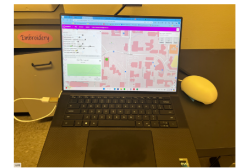
Labor turnover takes from **1.5 to 2** times the worker's annual salary.



UVP: PREVENTATIVE, not reactive

Our solution, a sensor system that reports concentration of PM and recommends PPE based on access to a database, takes a **proactive approach** to prevent workers from getting sick instead of **intervening after casualties have already occurred**.

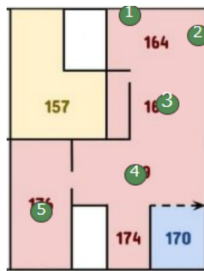
PurpleAir running in MILL (experiment)



Our First User: The MILL at Georgia Tech

Location	AVG Concentration ($\mu\text{g} / \text{m}^3$)
1- dry cabinet	0.217
2- heat press	0.113
3- proc. table	0.156
4- meas. table	0.06
5- char. table	0.301

176: Main Lab (merged with 164, 167, 169, & 174)
 170: X-ray Room (enter through Main Lab)
 *157: Microscopy Lab



The space is safe, no current PPE recommendations.

Legend

- **Safe (PM Concentration: 0-12)**
No current PPE recommendations for general population; may have some recommendations for at-risk individuals
- **Safe, approaching slightly unsafe (PM Concentration: 13-35)**
No current PPE recommendations for general population; recommendations for at-risk individuals
- **Slightly unsafe (PM Concentration: 36-55)**
Follow link provided to catalog for personalized recommendations.
- **Unsafe (PM Concentration: 56-150)**
Follow link provided to catalog for personalized recommendations; check engineering controls.
- **Dangerous (PM Concentration: 151-250)**
Very high PM concentration levels, follow link provided to catalog for personalized recommendations; check engineering controls.

Experiment summary:

- **Prediction:** The processing area would have the highest concentration of PM 2.5.
- **Findings:** The characterization area, not processing, had the highest PM concentration.
- **Key insight:** One cannot assume that an area is safe unless it has been proven to be so.

Our Plan



We plan to target Georgia Tech's **various makerspaces** such as the MILL, AE Makerspace, The Hive, and the Invention Studio as our **first adopters**. These environments are a good proxy to actual manufacturing environments.

Pricing

\$200

Per air quality monitor, or \$150 for 10 or more monitors

\$180

Yearly Subscription Fee

\$45/hr

Installation Fee