FAQ: Air Quality Monitoring in Indore

- **Why are you collecting air quality information? What's the goal?**

  o People living in upcoming metropolitan centres like Indore are becoming more aware about the overall environment and therefore interested to know about the air they breathe.

  o We (Clean Air Catalyst- Indore) collect air quality information to study and understand the composition and levels of various pollutants in the city's ambient air. The goal is to better understand the sources of air pollution, its impact on the lives of the people, and devise strategies aimed at improving the air quality to protect those most affected by the pollution and improve public health and the environment.

  o By monitoring air quality, we (Clean Air Catalyst - Indore) can identify trends and patterns in air pollution levels, determine which pollutants are most prevalent, and assess the impact of human activities and natural phenomena on air quality.

  o The strategies could be advocating use of cleaner technologies or changing land use of an area with high pollution levels.

- **How many monitors are in place and where are they?**
  - Three Clean Air Catalyst sites - Government High School, Bicholi Hapsi (Background), Public Health Engineering office, Musakhedi (Slum residential), Malav Kanya Higher Secondary School, Moti Tabela (Supersite)
  - Under the phase one monitoring plan of the CAC project, real time stationary air quality monitoring equipment are deployed in three locations i.e., the supersite, slum, and background sites as mentioned above. At the supersite, the CO analyser, Black Carbon Aethalometer, and BAM for PM2.5 are in a weather-proof enclosure, the PM2.5 filter sampler SASS, integrated (multi-pollutant) sensor system Personal Air Monitor (PAM) and the meteorological station are deployed outdoors. The other two locations have the PM2.5 BAM and meteorological stations deployed outdoors.

- **How were these locations chosen?**
  - Before choosing the locations, we collected background information about the area like emission source details, demography, population density, land use pattern, meteorological and topographical information. We sought existing or previous air quality information of the area and combined it with activity analysis to choose the best ward for the Supersite, Slum, and Upwind Rural Site. CPCB guidelines for site selection were considered.
  - The Supersite is a representative urban exposure site with estimated equal contributions from all sources like vehicular activities, construction, DG sets and household emissions sources and not dominant by a particular emission source.
  - The background location is in a rural upwind area which is far from industrial and commercial activities. The slum neighbourhood site is in a densely populated residential area of low-income people.

- **How can these monitors drive clean air action–how does that work?**
  - Air quality monitors play a critical role in driving clean air action by providing real-time data on air pollution levels, which can be used to take decisions and actions aimed at improving air quality. Here are some ways in which air quality monitors can drive clean air action:
  - Monitoring and tracking pollution levels: Air quality monitors provide data on the levels of various pollutants in the air, allowing authorities and communities to track trends and identify areas with high levels of pollution. This information can be used to prioritize clean air initiatives and target interventions where they are most needed.
  - Identifying sources of pollution: Air quality monitoring data can help to identify the sources of pollution, including both human activities (such as emissions from transportation and industry) and natural phenomena. This information can inform strategies for reducing emissions and improving air quality.
  - Raising awareness: Air quality monitoring data can be made publicly available, helping to raise awareness of air pollution and its impacts on health and the environment. This can encourage individuals, businesses, and communities to take action to reduce their own contributions to air pollution and to advocate for clean air policies.

- ○ Informing policy and regulation: Air quality monitoring data can inform the development of air quality policies and regulations, such as standards for emissions from industry and transportation, and policies aimed at reducing exposure to pollutants.
- ○ Evaluating the effectiveness of interventions: Air quality monitoring data can be used to evaluate the effectiveness of clean air interventions, such as the implementation of cleaner technologies or changes in land use practices. This information can inform ongoing efforts to improve air quality and protect public health.
- ○ Overall, air quality monitors play a critical role in driving clean air action by providing real-time information on air pollution levels, helping to identify sources of pollution, raising awareness, informing policy, and evaluating the effectiveness of interventions.

- **How will you ensure that the information collected by this equipment is accurate?**
  - ○ The quality of data is paramount to ensure credibility and validity of CAC findings. Air quality monitoring activities undertaken by CAC will follow quality assurance/quality control procedures according to a Quality Assurance Plan. The approach for conducting quality research will adopt the high standard set forth by CPCB and generally follow closely the quality assurance project plans (QAPPs) guidance developed by US EPA's National Risk Management Research Laboratory. An effective QA/QC program will be maintained and will ensure that all complementary measurement data generated for internal and external use shall meet specific data quality objectives. The calibration protocol of CPCB for the CAAQM system will be followed throughout the project at each site.

- **What are you measuring in the air specifically? How do these pollutants impact health?**
  - ○ PM2.5, black carbon, and carbon monoxide are being measured along with meteorological parameters.
  - ○ **Health impacts:**
    - ■ **Particulate matter (PM10, PM2.5)**

Particulate matter (PM) is made up of small airborne particles like dust, soot and drops of liquids. Coarse particulate matter (PM10, particles less than 10 microns in diameter) is known to cause nasal and upper respiratory tract health problems. Fine particles (PM2.5, particles less than 2.5 microns in diameter) penetrate deeper into the lungs and cause heart attacks, strokes, asthma, and bronchitis, as well as premature death from heart ailments, lung disease and cancer. Studies show that higher PM2.5 exposure can restrict growth of babies in the womb and decrease lung function growth among young children.

- **Black carbon (BC)**

  Black carbon is one of the components of particulate matter and comes from burning fuel (especially diesel, wood, and coal). Most air pollution regulations focus on PM2.5, but exposure to black carbon is a serious health threat as well. Populations with higher exposures to black carbon over a long period are at a higher risk for heart attacks and stroke. In addition, black carbon is associated with hypertension, asthma, chronic obstructive pulmonary disease, bronchitis, and a variety of types of cancer.

  Carbon monoxide (CO)

- Carbon monoxide is dangerous because it attaches to the part of your blood that carries oxygen. This makes it hard for your blood to bring enough oxygen to your body's organs. When you breathe in too much carbon monoxide, you may feel tired, have a headache, feel confused, or get dizzy because your brain is not getting enough oxygen. If the levels of carbon monoxide get too high, you could become very sick and even die.

- **Why is it important to have more data on particulate matter?**
  - Particulate matter (PM) is a type of air pollution made up of tiny particles suspended in the air. It is important to have more data on PM because it has been linked to a range of adverse health effects, including respiratory and cardiovascular disease, stroke, and lung cancer. Particulate matter is a dominant

pollutant among the factors affecting the air quality of Indian cities. It has a high weightage in determining the air quality index of any city.

- ○ Having more data on PM levels and exposure can help to better understand the extent and distribution of these health impacts and chalk out strategies to mitigate them. For example, data on PM levels can be used to identify high-risk populations and locations, and to guide the development of targeted interventions to reduce exposure.

- ○ In addition, more data on PM can help to improve our understanding of the sources of particulate pollution, including both human activities (such as emissions from transportation and industry) and natural phenomena. This information can be used to develop strategies for reducing PM emissions and improving air quality, such as through the implementation of cleaner technologies and more sustainable land use practices.

- ○ Overall, having more data on particulate matter is important for protecting public health and the environment, and for advancing our understanding of air pollution and its impacts.

- **What are Indore's air quality goals?**
  - ○ In the present situation, when it is known that air pollution adversely affects human health, the goal of every developing city is "clean air." This becomes even more important in the context of Indore, which has been the cleanest city in the entire country for six consecutive years in terms of cleanliness (sanitation). Indore is among the 131 non-attainment cities chosen by the NCAP program, with a target to cut down their ambient air pollution by 30 to 40 percent by 2024. In this context, the responsibility of the cleanest city in the country increases further.

- **Why should the average Indore citizen care about this?**

  The average citizen of Indore should care about air quality because air pollution has serious impacts on human health and well-being. Prolonged exposure to poor air quality can lead to respiratory problems, cardiovascular disease, and other serious health issues. It can also harm the environment, reduce visibility, and impact the quality of life in general. By caring about air quality, citizens can

work together to reduce pollution, improve public health, and make their city a cleaner, healthier place to live.

- **How are the Catalyst efforts different from earlier efforts to measure air quality in Indore?**

    MPPCB is currently monitoring the real-time air quality at one location in Indore, Chhoti Gwaltoli. However, considering the area and population size of Indore, the city requires more monitoring stations to accurately represent its air quality. The Clean Air Catalyst project's real-time air quality monitoring system (supersite) not only monitors PM2.5 and Carbon monoxide (CO) along with meteorological parameters, but also Black Carbon, which is a component of Particulate matter. Black Carbon not only affects human health, but also has an impact on climate change, leading to global warming. The project is not only monitoring air quality, but also assessing the impact of pollution on human health and climate change in order to provide solutions to mitigate air pollution.

- What will happen to the data gathered from the monitors when the Catalyst concludes?

    The data will be provided to the public, after taking robust quality checks, through the OpenAQ platform which shares air quality data from several countries and is open to public usage.