



**Name of the Knowhow:** High-Volume PM<sub>1</sub> Impactor Sampler

**Summary:** Particulate matter suspended in air and having an aerodynamic size 1 micrometer or less, called PM<sub>1</sub>. The climate effect of these particles is widely studied. These tiny inhalable particles are dangerous as they can go deep into the lungs and may directly mix with the blood. So apart from size, the study of their chemistry and biology are also essential for our health point of view. For which the PM<sub>1</sub> material is needed to be collected in the ambient air. Therefore, a perfect PM<sub>1</sub> sampler is needed to know the ambient concentration and further to analyze the chemical constituents of PM<sub>1</sub>. Generally, for chemical and biological analyses of PM, a high-volume sampler is required. Therefore, a "High-Volume PM<sub>1</sub> Impactor Sampler" technology, indigenously designed and developed at CSIR-NPL. The impactor is designed in such a way that it can be retrofitted onto a high-volume air sampler. Also, it is an extension of CSIR-NPL's high-volume PM<sub>10</sub> and PM<sub>2.5</sub> technologies. All these 3 particle size segregators can be fitted onto one high-volume sampler, where a filter size of 8 inch × 10 inch is used with a flow rate of 1130 lpm.

**Applications:** Air monitoring for PM<sub>1</sub> health risk assessment, source apportionment study, combustion emission studies, indoor air quality, climate and CCN studies, etc.

**Novelty features:** Impactor design

**Advantages:** Stable cutoff, minimized particle losses, bouncing and re-entrainment problems. Also suitable for high particle mass loading and RH conditions (Indian all-weather condition).

**Readiness level of the Technology:**

| Idea | Concept Definition | Proof of Concept | Prototype | Lab Validation | Technology Development | Technology Demonstration | Technology Integrated | Market Launch |
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**IPR related details:** Nil

**Year of Introduction:** 2025

**Broad Area/Category:** Environment

**User Industries:** Air quality instrumentation, environmental equipment manufacturing, etc.