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Low-Cost Sensors for Healthier Indoor Air Quality in Impacted Communities

Pat Wong, Manager, Building and Indoor Environments Section, Research Division

White Paper: Low-Cost Sensors for Healthier Indoor Air Quality in Impacted Communities

- Impacted communities are facing more challenges in achieving healthier IAQ.
- Readings from indoor low-cost sensors (LCS) could inform people about their indoor environment and motivate actions to reduce indoor air pollution.
- Use of LCS in impacted communities for indoor air quality is still limited, partially due to lack of access to resources such as funding, guidance, and technical support.

White Paper: Low-Cost Sensors for Healthier Indoor Air Quality in Impacted Communities

- Develop a white paper and guidance document to facilitate the use of LCS for monitoring IAQ in impacted communities
- Key tasks
  1. Conduct a market survey and comparative analysis of LCS for indoor applications
  2. Provide an overview of research efforts characterizing IAQ using LCS, including those performed in impacted communities
  3. Conduct stakeholder interviews with IAQ researchers, users of low-cost sensors, sensor manufacturers, and representatives from impacted communities
- Project Period: 4/1/2023 - 3/31/2024

Expected deliverable: White paper

- Summary table of market available LCS for IAQ monitoring.
  - Technical specifications, performance evaluations, uncertainty, maintenance requirements, cost, and other relevant supporting resources.
- A searchable webpage listing the specifications of all LCS to assist in sensor selection for the public.
- Summary of research studies using LCS for IAQ measurements, especially those done in impacted communities.
  - Study locations, population, LCS used, air pollutant levels measured, lessons learned, how occupant behaviors impact IAQ through activity or mitigation measures
- Summary of challenges faced by impacted communities in using LCS for IAQ monitoring, resources needed to narrow the gaps and improve IAQ, and recommendations for future research studies and development of LCS.

Expected deliverable: Guidance document for the public

- A streamlined table of low-cost sensors available for IAQ monitoring with included technical specifications, manufacturer, model number, unit price, and measured pollutants and parameters.
- A step-by-step instruction about sensor selection, setup, deployment, and maintenance.
- A detailed description about how to handle data from LCS, such as data storage, data cleaning, QA/QC, data interpretation, and decision making based on monitoring data.
- A description of typical indoor air pollution scenarios, such as wildfire events and emissions from appliances and consumer products, with accompanying information on major air pollutant concerns, special considerations for IAQ monitoring, methods to reduce exposures.
- A compilation of resources such as links to the federal guidance on LCS, fact sheets about indoor air, and guidelines for indoor air pollutants.

Timeline and contact

- Objective 1:
  - Review and Summary of LCS Technologies — 31 September 2023
- Objective 2:
  - Overview of IAQ Assessments with LCS — 30 November 2023
- Objective 3:
  - Interviews and Recommendations for LCS IAQ Monitoring — 30 November 2023
- Draft Paper — 15 December 2023
- Final Report — 31 March 2024

Contract manager: Qunfang (Zoe) Zhang
(QunfangZoe.Zhang@arb.ca.gov

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