Air Monitoring Network Expansion – Mobile Monitoring Platform Strategy Document

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Introduction

As part of the Department of Pesticide Regulation's (DPR) mandate for the continuous evaluation of registered pesticides, DPR initiated the Air Monitoring Network (AMN) in 2011 to measure pesticide concentrations in ambient air in several California agricultural communities. Through weekly air sampling for 35 pesticides and 5 breakdown products, data collected by the AMN assists DPR in assessing potential health risks, developing measures to mitigate those risks, and evaluating the effectiveness of current regulatory requirements. DPR received funding in the 2024 Budget Act to expand its network of ambient air monitoring by adding four permanent monitoring stations, growing the network from four stations in 2025 to a total of ten long-term stations and one mobile monitoring platform by the end of 2027.

Site Selection

After the expansion of the AMN to 10 permanent sites, DPR will have monitoring locations that represent a variety of areas across the state. These sites represent diverse crop types, fumigation methods, use patterns, soil conditions, and weather conditions. However, there remain areas across California that will require additional evaluation. The goal of the mobile monitoring station is to evaluate those areas. Those areas could include, but are not limited to:

- Counties with an existing AMN station that have diverse cropping and pesticide use patterns.
    - For example, if an AMN site is located in an area that is primarily surrounded by orchard and vine crops, DPR may consider another area of that same county that is surrounded by row crops.
- Communities that ranked in the top 50 for fumigant and/or organophosphate use in the 2025 AMN expansion protocol that were not selected.
- Communities that require additional analysis and investigation. Communities that require additional investigation will be determined via high detections from modeling or external studies (e.g. AB617 community air monitoring studies).

The selection of a community may be a mix of the potential criteria listed above. DPR is committed to providing a transparent process for how decisions are made and communicating those decisions in a timely manner. Therefore, a protocol detailing each study will be released for every mobile monitoring deployment, which will discuss the reasons for this specific mobile monitoring deployment. Objectives will vary for each study, and data will be analyzed based on the study objectives. A separate report will be released for each mobile monitoring deployment.

Mobile Monitoring Capabilities

DPR is proposing to use the mobile monitoring platform at locations throughout California that require evaluation for a specific period. The new mobile monitoring platform will have all the technical rigor and capability of a long-term AMN station but will provide the flexibility to be deployed to selected study locations for short-term deployments. It will be equipped with standard sampling instrumentation used in the AMN, as well as a weather tower and possibly a MiTAP (Tricorntech Corporation) machine capable of semi-real-time monitoring for soil fumigants.

The standard sampling instrument for collecting volatile organic compound (VOC) samples (methyl bromide and 1,3-dichloropropene) is a Nutech 2703 sampler. The ambient air is drawn through a 1/16” polytetrafluoroethylene (PTFE, Teflon) tubing into a 6-L stainless steel canister at a flow rate of 3 mL/min ±10%. Chloropicrin and MITC are collected using SKC AirChek Connect Pumps (part # 220-4000) to pull ambient air into SKC glass sorbent tubes. Chloropicrin is collected at a flow rate of 50 mL/min ±10% in sorbent tubes containing XAD-4 resin (part # 226-175). MITC is collected at a flow rate of 1.5 L/min ±10% in sorbent tubes containing Anasorb coconut shell charcoal (part #226-16-02). The other 36 chemicals get collected using a Flite4 Air Pump (part # 901-4011) at a flow rate of 15 L/min ±10%. The ambient air is drawn through a custom-built Teflon cartridge containing XAD-4 sorbent material. The flow rates are verified and calibrated using Alicat flow meters (Alicat Scientific Mass Flow Meters MB-100SCCM and MB-20SLPM). The mobile monitoring station will also be equipped to take quality control samples, including trip blanks and duplicate (co-located) samples at a rate of at least 10% of primary samples.

Once the mobile monitoring platform is deployed, staff will visit the station weekly to collect 24-hour samples of ambient air following established AMN protocols. Chain of custody forms, field data sheets, and sample labels including the study number and unique sample identification numbers will be used for each sampling event. The presence of an on-site weather tower will allow staff to confirm observations using modeling methods and to further evaluate exposure risks.

Continuous hourly sampling for soil fumigants will be performed automatically by MiTAPs, if included. It is still under consideration whether MiTAPs will be used for long-term studies. DPR is still analyzing the MiTAP results and will release a report on findings at a later date.

Siting Criteria

DPR will follow U.S. EPA siting criteria when placing the mobile monitoring station. Once a community is selected for monitoring, an appropriate location must be identified that satisfies certain requirements to ensure results are representative of ambient air.

DPR evaluates prospective monitoring locations to ensure compliance with U.S. EPA's ambient air siting criteria. Monitoring sites must meet the following minimum criteria:

- 2 to 15 meters above the ground
- At least 1 meter horizontal and vertical distance from supporting structures
- At least 20 meters from trees
- Distance from obstacles should be at least twice the obstacle height
- Unobstructed airflow for at least 270 degrees around the sampling site

Sites must also satisfy certain access requirements, including:

- Accessibility for personnel conducting sampling
- Availability of electricity
- Safety and protection of equipment from loss or tampering

DPR scientists will evaluate prospective sites to ensure they meet these requirements before deploying the mobile monitoring station.