AIR SAMPLING STRATEGY CHECKLIST

A practical planning and development tool

AIRPREP™ by INNOVAPREP

Step 1: Define the Objective

- ☐ General monitoring / baseline trends
- ☐ Pathogen or hazard surveillance
- ☐ Regulatory or compliance testing
- ☐ Event-based or outbreak response
- ☐ Success criteria defined:
  - Required LOD
  - Particle size range
  - Time-to-result
  - Downstream assay compatibility

Step 2: Understand the Target

- ☐ Target type: virus / bacteria / spores / pollen / PM / eDNA / chemical aerosol
- ☐ Expected prevalence: high / moderate / low
- ☐ Particle size range of interest
- ☐ Viability required or presence only?

Step 3: Characterize the Environment

- ☐ Indoor or outdoor
- ☐ Ventilation / ACH (if indoor)
- ☐ Wind, humidity, seasonality (if outdoor)
- ☐ Space size and airflow complexity
- ☐ Operational constraints (cleanroom, noise, power)

Step 4: Select Sampling Parameters

- ☐ Flow rate aligned with target abundance
- ☐ Sampling duration sufficient to meet LOD
- ☐ Total air volume calculated and documented

Step 5: Choose Collection Technology

- ☐ Collection mechanism captures target particle size
- ☐ Media compatible with downstream assays
- ☐ Performance suitable for expected particle load
- ☐ Cleanroom or environmental constraints addressed

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Step 6: Plan Deployment Strategy

- ☐ Sampler placed within zone of effectiveness
- ☐ Breathing-height placement for exposure studies
- ☐ Number of samplers sufficient for space size
- ☐ Avoidance of dead zones and exhaust bias

Step 7: Enhance Sensitivity (If Needed)

- ☐ Pooling across locations or time points
- ☐ Secondary concentration planned (e.g., CP Select™)
- ☐ Final assay volume aligned with detection limits

Step 8: Post-Collection Handling

- ☐ Inactivation requirements defined
- ☐ Proper storage (dry filters, cold/frozen eluates)
- ☐ Processing timeline validated

Step 9: Document and Interpret

- ☐ Environmental metadata recorded
- ☐ Results interpreted in spatial and temporal context
- ☐ Trends prioritized over single data points

Bottom Line

Effective air sampling aligns **objective, environment, sampler, and workflow**—not any single parameter in isolation.