Frequently Asked Air Sampling Questions

Setting up the Sampler:

Q: How is the AirPrep Cub Sampler used?

A: The AirPrep Cub Sampler is used like a small, portable, high-flowrate air filter. While cleaning the air in the room, it collects the particles on an allergen-removal grade filter. The filter is replaceable and is used as a sample of the room air for analysis of any germs (viruses, bacteria, molds, and other particulates) present on it. These include COVID, the Flu, Measles, Whooping cough, or other illnesses. The detection of pathogens on the filter can be used to help inform decisions for mask wearing and other disease-prevention measures to improve the health and safety of those using the facility.

Q: Where should the AirPrep Cub Sampler be placed?

A: One or more AirPrep Cub Samplers can be placed in every HVAC zone of rooms or spaces to provide the best possible samples and detection information. Since they are small and lightweight, they can be put almost anywhere in a room. Try to place the samplers in areas where they can collect a sample of the average air in the room. One good place to put an AirPrep Cub Sampler is near the clean air return vent, which pulls air from the entire space toward it. Otherwise, place the sampler in an open space where air circulates.

Q: How long does it take to collect a good sample?

A: For routine monitoring, sample for four to six hours, or during hours of occupancy. Perform daily sampling and track results over time to ensure that maximum warning of rising levels can be observed. Samples can be collected in as little as two hours during times of high disease levels, which can enable same-day results if you are analyzing your samples onsite or nearby. The table below illustrates collection volumes when operating the sampler at full capacity (200 Liters per minute).

Collection time (hr)	Sample (m^3)	Monitored area
4	48	Room size
10	120	Work area
24	288	HVAC zone

Q: How well does the AirPrep Cub Sampler perform?

A: The AirPrep Cub Sampler collects a meter of air every five minutes. This results in collecting an average roomful of air in four hours. On batteries, the AirPrep Cub Sampler can operate at 200 LPM for up to four hours at the full flow rate, or continuously on wall power. Since the allergen filter is thick, it cannot clog (though build-up may slightly reduce flow rate over time), even in dusty areas that clog thin filters and substrate-based samplers using small jets of air. This has been demonstrated in Department of Defense testing.

Q: Is the AirPrep Cub Sampler noisy?

A: The AirPrep Cub Sampler uses a high-flowrate air filter and moves air, that generates sound. If needed, it can be set to operate at less than maximum flow, which reduces the noise.

Flow Rate	Decibel level
50 LPM	60.2
100 LPM	68.1
200 LPM	78.6

An optional sound dampening accessory, the Quiet Dock™ Kit is now available. The accessory provides significant sound reduction; important for using indoors in public spaces at the higher flow rate.

Flow Rate	Decibel level with the Quiet Dock™ Kit Accessory
50 LPM	51.2
100 LPM	58.3
200 LPM	68.3

Q: How loud is a 68 dB noise level?

A: 68 dB is roughly the noise produced by a normal conversation, and is generally considered to be a safe noise level that a person can be exposed to without experiencing harm or hearing loss.

Q: What noise level is considered a nuisance?

A: Everyone is different, and will have a different level of noise that they consider to be a nuisance.

However, the Control of Noise at Work Regulations 2005 set an exposure limit of 80 dB, and state that action must be taken to reduce exposure to noise above this level at work, such as providing employees with hearing protection and regular hearing tests. This is because hearing damage can occur when a person is exposed to a constant background noise of 80 - 90 dB.

Q: What is a safe noise level?

A: While 68 dB is generally considered to be a safe noise level, because it is equivalent to the noise produced by a normal conversation, the Control of Noise at Work Regulations 2005 state that an employee can be exposed to a noise level of up to 80 dB per 8 hour work day.

Q: What kinds of particles are collected?

A: Unlike substrate samplers that cannot collect particles smaller than 0.1 micron in diameter, the AirPrep Cub Sampler filter collects particles of all sizes; including those as small as nanoparticles, including the smallest viruses up to large pollen and other allergen particles. This has been demonstrated by the Department of Defense and other users.

Q: Can anyone use the AirPrep Cub Sampler?

A: Yes, with minimal training anyone can operate the sampler safely. It operates on batteries or low voltage and contact with the collected particles is prevented by the encapsulation of the filter in a polymer ring.

Q: How do I clean the sampler?

A: Cleaning is easy, although not normally required between samples. Any typical cleaning material or wipe can be used, such as 70% alcohol, bleach, or hydrogen peroxide.

Operation of the AirPrep Cub Sampler:

Q: Does the collection of particles involve impaction onto a substrate using small air jets?

A: No, unlike other sampler that use small air jets that are easily clogged by large particles, dust, and insects, the AirPrep Cub Sampler collects on a charged depth filter about an eighth-inch thick with a large surface area. The diameter of the filter is about 4 cm and it's welded into a plastic ring for easy loading without tools. The filter is similar to Filtrete® filter material and collects particles throughout the depth of the filter. It is thus virtually impossible to clog.

Q: How do I load and unload the filter? Do I need tools?

A: No tools are needed. Wearing gloves, simply twist the lid a quarter turn to the left and lift it off the body of the sampler to access the filter bay. Unwrap the filter and place it into the sampler. It can only fit in the correct orientation, and the filter can't be contaminated by handling since the filter is recessed in the mounting ring. Twist the lid back on a quarter of a turn to the right to lock the filter in place. When sampling is complete, removal of the filter is the reverse – unlock the lid, to remove the filter.

Q: How do I operate the sampler?

A: Please refer to the user manual for details. All operations of the sampler are controlled by the simple touch panel on the front of the unit.

Q: Does the sampler have a timer?

A: Yes, it can be set for 30 minutes, 1 hour, 2 hours, or continuously. Samples can be collected sequentially one after the other without waiting between samples, simply change out the filter for each consecutive sample.

Q: Can the sampling rate (flowrate) of the sampler be set by the user?

A: Yes, it can be set for 50, 100, or 200 liters per minute (LPM).

Q: Does changing the flowrate affect performance?

A: The sampler must be run longer at lower flowrates to collect the same volume of sample. The highest flowrate produces the highest collection rate, and thus enables the best detection capability.

Q: Does the AirPrep Cub Sampler need to be calibrated?

A: No, the flowrates are pre-calibrated by InnovaPrep.

Sample Collection Kits:

Q: What is the longest collection time recommended?

A: The Sampler can run without clogging in most indoor environments for several days or more. As the filter begins to load with particulates, the flow rate may decrease over time depending on the quality of the air.

Q: How soon do the filters need to be eluted and analyzed after sampling?

A: Samples should be analyzed within approximately 5 days to avoid sample degradation due to time.

Q: What is the kit shelf life?

A: The Elution Fluid Canisters are the only component that has a shelf life which is 14 months from manufacture date.

Q: What kinds of sample analysis can be used with AirPrep Cub samples?

A: The filter kit and sample recovered from the filter by the laboratory are suitable for classical microbiological methods but are assay-agnostic. The kit is designed for use with rapid methods such as polymerase chain reaction (PCR), genetic sequencing, immunoassay, electrochemical assay, microarrays, mass spectrometry (MS) and others. PCR and sequencing are commonly performed by customers and Department of Defense users.

Q: Can additional records/stickers be applied to the filter?

A: Yes, they can be added to the plastic filter housing. They must be smaller than 13 mm (1/2”) in one direction. Please see our Tracer Envelope Multipack with removable barcodes specifically for the AirPrep Cub Filters.

Q: Can any PCR device or method be used to analyze samples?

A: Yes, many manufactures supply PCR instruments and reagents, sequencers, and other biological identification kits. The AirPrep Cub Sampler is agnostic and compatible with all of them.

Q: Do you provide a method or protocol for sample analysis?

A: InnovaPrep’s rapid Filter & Elution Kit provides everything needed to recover the trapped material into a liquid sample of about 6 mL. The sample is then ready for any subsequent sample preparation and analysis workflows using existing methods and protocols.

Q: Can new COVID variants be detected through air monitoring?

A: Yes, the AirPrep Cub Sampler will collect all variants of all airborne pathogens, because filtration is an agnostic method of particle collection and the electrostatic depth filter captures particles of all sizes, including those less than 0.1 micron. As variants evolve, laboratory methods are evolving to identify new variants present in the environment and are supplied by many manufacturers. Genetic sequencing, such as adaptive nanopore sequencing, is one of the most powerful ways to analyze air samples for unknown or novel threats.

Q: Should I start/continue air monitoring for SARS-CoV-2 COVID?

A: This virus has continuously evolved and mutated to maintain itself in the human population and will continue to do so. Many people in the US and around the world are not vaccinated, including young children, who can become infected and spread the virus via aerosols without knowing they are infectious. Air monitoring is the only area-specific way to monitor the presence of infectious aerosols in a room or workspace without constantly testing all individuals present.

Contact customerservice@innovaprep.com for more information.