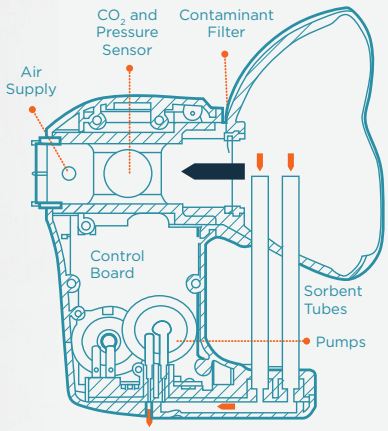
Reliable Breath Collection Using the ReCIVA™ Sampler

Sorbent tubes ensure reproducible collection of volatile biomarkers

Exhaled volatile organic compounds (VOCs) are indicative of a broad range of pathological and physiological processes. These VOC biomarkers are used in various applications including early detection of disease in asymptomatic subjects, therapy stratification, monitoring of therapy response, and monitoring of disease activity.



Sampling VOCs from breath has seen limited adoption in clinical research and practise, as current industry standard Tedlar® bags have limited reliability and reproducibility for sample collection, transport and storage. To overcome these limitations Owlstone Medical has developed the ReCIVA breath sampler as a reliable, cost effective and comfortable solution. As a result, breath sampling is seeing increased adoption in clinical research and practise.

The ReCIVA breath sampler uses industry-standard sorbent tube technology and provides reliable and reproducible collection of breath samples. Independent studies have demonstrated the limitations of Tedlar bags with respect to VOC sampling (*Beauchamp et al., J. Breath Res.* ***2*** *(2008) 046001*).

Factor	Tedlar Bags	ReCIVA (sorbent tube)		
		Feature	Advantage	Benefit
Sample retention	Significant losses within timescales of 10 mins to 6 hours.	Steel tube securely sealed.	No losses over 2 weeks.	Reliable results and can biobank sample.
Sample contamination	Ingress from ambient air through bag. Artefacts from bag itself. Variations introduced during sample preparation.	Steel tube can be securely sealed.	Minimal contamination.	Reliable results and can biobank sample.
Water interference	Water condensation on inner surface of bag adsorbs sample, potentially compromising sample VOCs.	Hydrophobic sorbents used.	Sorbents minimize water collected in sample.	Samples are easier to analyse.
Breathing data	Single exhalation captured with no additional data or differentiation between different parts of breath.	CO_2 and pressure sensors.	Multiple breaths captured along with associated CO_2 and pressure data, including upper/lower breath fraction data.	Advanced data analysis possible.
Logistics	Bulky bags cannot practically be transported in bulk quantities. Analysis at point of care is required. Bags are relatively fragile.	Small form factor. Strong steel tube.	Multiple tubes can easily be transported for remote analysis.	Reduced transport costs and increased sample stability.
Ease of use	Difficult to use for patients with respiratory problems.	Pump and ergonomic mask.	Positive air pressure in mask means patient can breathe at normal rate.	Comfortable and can be used by all patients.
Sample volume	Limited by size of bag.	Adsorbent material in tube.	High sample volume concentrated in tube.	Increased sensitivity to low-level VOCs.