Smokerlyzer® breath carbon monoxide (CO) devices

CE 2797

BRITISH TECHNOLOGY

Helping people to stop smoking, one breath at a time.

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Contents

What is carbon monoxide (CO)?

Carbon monoxide (CO), known as the silent killer, is a colourless, odourless, highly poisonous gas that is produced when fuels are burned incompletely. It is produced in car exhaust fumes, faulty gas boilers and tobacco smoke[1].

Oxygen is carried around the body by red blood cells and when you inhale smoke from a cigarette, the CO is absorbed into your blood through the lungs because CO binds with haemoglobin 200 times more readily than oxygen[2].

The CO binds with haemoglobin in the red blood cells to form carboxyhaemoglobin (COHb), preventing red blood cells from carrying oxygen[2].

A pack a day smoker can have a 3% to 6% COHb level in the blood, 2 packs a day, 6% to 10%, and 3 packs a day, as much as 20%[3].

What CO does to your body?

Heart:

To compensate for the shortage of oxygen, the heart has to work harder (beat faster) to get enough oxygen to all parts of the body. The heart itself receives less oxygen, increasing the risk of heart damage[4].

Circulation:

COHb causes the blood to thicken and arteries become coated with a thick fatty substance. This causes circulation problems and high blood pressure, with increased risk of a heart attack and stroke[5].

Breathing:

The reduced supply of oxygen means you can easily become out of breath when exercising, because there is little oxygen available for the increased demand. A lack of oxygen can also cause tiredness and a lack of concentration[6].

Pregnancy:

Oxygen is required by a foetus for healthy growth, but the supply of vital oxygen is reduced when the mother smokes. This increases the risk of low birthweight, birth defects and even Sudden Infant Death Syndrome. Clinical studies have established a direct link between an expectant mother's breath CO level and the amount of COHb in their unborn baby's blood[7].

Why monitor CO?

CO testing is a quick, non-invasive and cost-effective means of validating the smoking status of a significant number of clients[8].

Smoking is one of the most preventable causes of premature death in the world[9].

Tobacco kills up to half its users, which is more than 8 million people a year, including around 1.2 million non-smokers who have been exposed to second-hand smoke[10].

"Carbon monoxide devices offer tobacco treatment specialists an independent clinical tool which provides valuable evidence in identifying, educating, assessing and treating tobacco-dependent patients[11]".

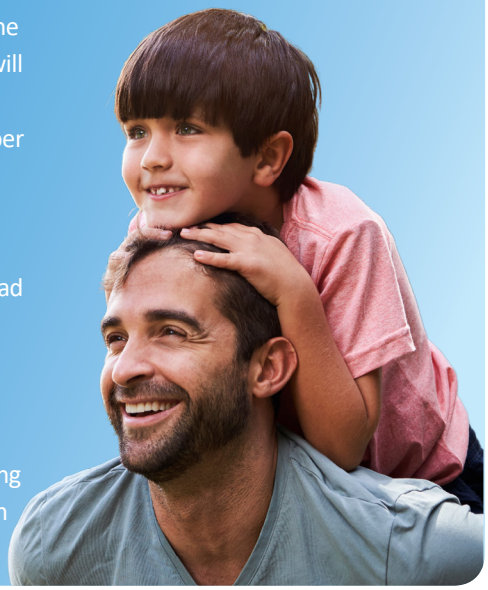
Monitoring patients' CO levels helps to work out their level of nicotine dependence; the more they smoke, the higher their reading will be, indicating a higher dependence on nicotine.

What is a Smokerlyzer®?

The Smokerlyzer® range consists of breath CO devices, which measure the amount of CO in exhaled breath to help people quit smoking. The more you smoke, the higher your CO reading will be.

The reading is given in ppm, which is the number of CO molecules in a million parts of air. The ppm reading can also tell you how much CO is in the blood (the COHb reading). %COHb is the percentage of red blood cells carrying CO instead of oxygen.

The amount of CO in an unborn baby's blood is referred to as %FCOHb (percentage of foetal COHb). Some of the Smokerlyzer® range can analyse %FCOHb as an incentive to stop smoking and comply with NICE guidelines for smoking in pregnancy.



Micro+™ Smokerlyzer®

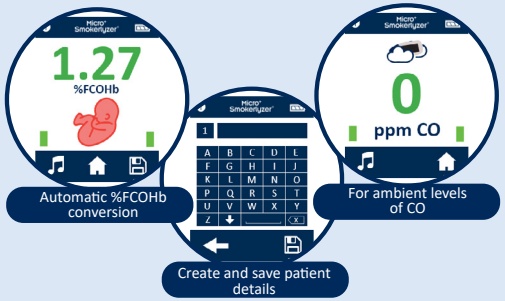
One CO device for all your smoking cessation needs.

FREE COdata+™ software

ANTIMICROBIAL TECHNOLOGY

Ideal for research, clinical trials and in-depth stop smoking advice delivered by:

- Stop smoking services
- General practices
- Schools
- Pharmacies
- Health Visitors
- Midwives
- Researchers



Features and benefits

- Automatic conversion to %FCOHb
- Easy to use interface
- Create and store patient details
- Large touchscreen
- Antimicrobial technology for improved infection control
- Familiar green, amber and red traffic light system, making CO levels instantly identifiable to patients
- Ambient CO monitoring
- Uses D-piece™ to filter out > 99% of airborne bacteria and > 97% of viruses[12]
- Single patient use SteriBreath™ Eco mouthpieces for excellent, low cost infection control
- PC interactive with COdata+™ software, free with the Micro+™ Smokerlyzer®

Technical specification for Micro+™

Concentration Range	0 - 500 ppm
Display	Full colour touchscreen
Detection Principle	Electrochemical sensor
Repeatability	≤ ± 5%
Accuracy	≤ ± 2 ppm / 5%*
Power	3 x AA (LR6 or equivalent) - up to 1000 minutes 1 x CR2032 Lithium coin cell
T_{90} Response Time	< 30 seconds
Operating Temperature	15 - 40ºC
Storage/Transport Temperature	0 - 50ºC
Operating/Storage/Transport Pressure	Atmospheric ± 10%
Operating Humidity	15 - 90% (non-condensing)
Storage/Transport Humidity	0 - 95% (non-condensing)
Sensor Operating Life	5 years
Sensor Sensitivity	1 ppm
Sensor Drift	< 5% per annum
Dimensions	Approx. 37 x 77 x 140 mm
Weight	Approx. 215 g (including batteries)
Materials	Case: Polycarbonate/ABS blend Anti-microbial additive OneBreath™: Polypropylene D-piece™: Polypropylene SteriBreath™ Eco: Paper
H_2 cross Interference	≤ 6%

*Whichever is greater

piCO™ Smokerlyzer®

CO monitoring made easy.

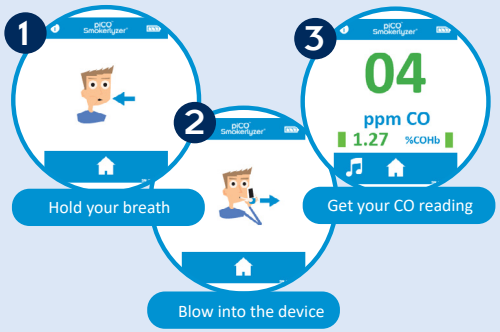
FREE COdata+™ software

ANTIMICROBIAL TECHNOLOGY

Ideal for in-depth stop smoking advice delivered by:

- Stop smoking services
- General practice
- Schools
- Pharmacies
- Health visitors

As easy as:



Features and benefits

- Easy to use interface
- Large touchscreen
- Antimicrobial technology for improved infection control
- Familiar green, amber and red traffic light system, making CO levels instantly identifiable to patients
- Uses D-piece™ to filter out > 99% of airborne bacteria and > 97% of viruses[12]
- Single patient use SteriBreath™ Eco mouthpieces for excellent, low cost infection control
- PC interactive with COdata+™ software, free with the piCO™ Smokerlyzer®

Technical specification for piCO™

Concentration Range	0 - 150 ppm
Display	Full colour touchscreen
Detection Principle	Electrochemical sensor
Repeatability	≤ ± 5%
Accuracy	≤ ± 2 ppm / 5%*
Power	3 x AA (LR6 or equivalent) - up to 1000 minutes 1 x CR2032 Lithium coin cell
T_{90} Response Time	< 30 seconds
Operating Temperature	15 - 40ºC
Storage/Transport Temperature	0 - 50ºC
Operating/Storage/Transport Pressure	Atmospheric ± 10%
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Dimensions	Approx. 37 x 77 x 140 mm
Weight	Approx. 215 g (including batteries)
Materials	Case: Polycarbonate/ABS blend Anti-microbial additive OneBreath™: Polypropylene D-piece™: Polypropylene SteriBreath™ Eco: Paper
H_2 cross Interference	≤ 6%

*Whichever is greater

piCO^baby™ Smokerlyzer®

CO monitoring for maternity made easy.

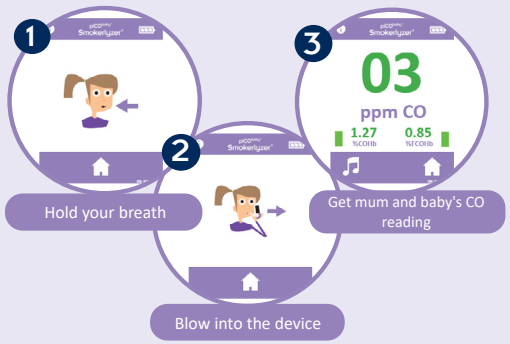
FREE COdata+™ software

ANTIMICROBIAL TECHNOLOGY

Ideal for in-depth stop smoking advice delivered by:

- Midwives
- Stop smoking services
- General practice
- Schools
- Pharmacies
- Health visitors

As easy as:



Features and benefits

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- Single patient use SteriBreath™ Eco mouthpieces for excellent, low cost infection control
- PC interactive with COdata+™ software, free with the piCO^baby™ Smokerlyzer®

Technical Specification for piCO^baby™

Concentration Range	0 - 150 ppm
Display	Full colour touchscreen
Detection Principle	Electrochemical sensor
Repeatability	≤ ± 5%
Accuracy	≤ ± 2 ppm / 5%*
Power	3 x AA (LR6 or equivalent) - up to 1000 minutes 1 x CR2032 Lithium coin cell
T_{90} Response Time	< 30 seconds
Operating Temperature	15 - 40ºC
Storage/Transport Temperature	0 - 50ºC
Operating/Storage/Transport Pressure	Atmospheric ± 10%
Operating Humidity	15 - 90% (non-condensing)
Storage/Transport Humidity	0 - 95% (non-condensing)
Sensor Operating Life	5 years
Sensor Sensitivity	1 ppm
Sensor Drift	< 5% per annum
Dimensions	Approx. 37 x 77 x 140 mm
Weight	Approx. 215 g (including batteries)
Materials	Case: Polycarbonate/ABS blend Anti-microbial additive OneBreath™: Polypropylene D-piece™: Polypropylene SteriBreath™ Eco: Paper
H_2 cross Interference	≤ 6%

*Whichever is greater

iCOquit® Smokerlyzer®

Single-Patient-Use CO device, to help patients quit smoking remotely, one breath at a time.

Portable, pocket-size, and with instant results, the iCOquit® is ideal for remote CO monitoring.

Your Personal CO Device

Features and Benefits

- Connects to a smartphone via Bluetooth®
- Monitor your quit smoking progress
- Quick breath test, instant results
- Patients can easily share their progress with Health Care Professionals
- Use anytime, anywhere
- Become smoke-free

The iCOquit® is also ideal for:

- Health professionals
- Pharmaceutical companies
- App Developers

Technical specification for iCOquit®

Gas Measured	Carbon Monoxide (CO)
Detection Principle	Electrochemical
Concentration Range	0 - 100 ppm
Monitoring Resolution	1 ppm
Monitoring Accuracy	± ≤ 3 ppm / ± ≤ 10% of reading*
Monitoring Repeatability	± ≤ 3 ppm / 5% (within 120 sec)*
Operating Lifetime	12 months
Display	Via the iCOquit® mobile application
Battery Life	12 months and battery is non-replaceable
Power	3 v Lithium-ion coin cell
T_{90} Response Time	< 30 seconds
Operating Temperature	15 - 35°C
Storage/Transport Temperature	0 - 50°C
Operating & Storage/Transport Humidity	10 - 90% RH non-condensing
Operating & Storage/Transport Pressure	912.0 – 1114.0 mbar
Dimensions	Less than 150 mm long x 30 mm diameter
Weight	Less than 100 g
Materials	Plastic casing: ABS and Polycarbonate
H_2 Cross Sensitivity	≤ 6%
Time required to warm/cool from the minimum/maximum storage temperature before use	15 minutes

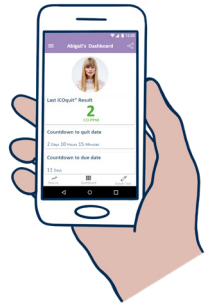
*Whichever is greater

iCOquit® Smokerlyzer®

For use with the iCOquit® app

Download on the App Store

GET IT ON Google Play



iCOquit® Smokerlyzer®

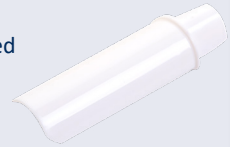
For use with the iCOquit® Mums to Be app

Consumables for piCO™, piCO^{baby}™ and Micro^{+}™

The SteriBreath™ Eco mouthpieces come in boxes of 200 mouthpieces, and each one is individually wrapped to ensure optimum infection control. The SteriBreath™ Eco mouthpiece is entirely made from paper and therefore it is 100% recyclable and 100% biodegradable, including its packaging.
Even better, all the materials are from sustainable sources.

Order code: STERIBREATH-ECO (200 per box)

The D-piece™ is used to attach a SteriBreath™ Eco mouthpiece to the device. The D-piece™ incorporates a one-way valve and an infection control fiter, which are proven to remove and trap > 99% of airborne bacteria and > 97% of viruses[12]. The D-piece™ should be changed every 30 days or visibly soiled, an automatic reminder will appear on the screen every 28 days.



Order code: D-PIECE-3 (12 per box)

The OneBreath™ mouthpiece is a single patient use bacterial filter mouthpiece and can be attached directly to the device to take a breath sample. The OneBreath™ incorporates a one-way valve and an infection control filter, which are proven to remove and trap > 99% of airborne bacteria and > 97% of viruses[12].

Order code: ONEBREATH-MP (250 per box)

COdata^{+}™

COdata^{+}™ is for use with the piCO™, piCO^{baby}™ and Micro^{+}™ Smokerlyzer®. It is a breath carbon monoxide (CO) monitoring software with a fully integrated patient database, enabling clinicians to keep up-to-date records on patients who have given breath CO samples. COdata^{+}™ can be connected to your device using a USB cable and allows you to print reports, save PDF reports, email results and export data to Microsoft Excel.

We also provide a range of calibration kits and replacement canisters at very competitive prices - please call for more information.

SDK by Bedfont® Scientific Ltd.

Designed for developers who want to bring accurate health monitoring and real-time data to their apps, our SDKs offer a direct link to Bedfont's trusted medical devices. Whether you're building an app for asthma management or personalised wellness, our SDKs provide secure, compliant, and straightforward connectivity. Give your users the power of clinical-grade insights with just a few lines of code. Turn your app into a health solution today!

An SDK is a Software Development Kit, a collection of tools, libraries, documentation, and code samples. Developers can use SDKs to build applications for specific platforms, frameworks, or programming languages. An SDK is designed to simplify and speed up development by providing all the components needed to create software for a particular environment.

iCOquit® Integration

If you're building an app for personalised wellness, our SDKs provide secure, compliant, and straightforward connectivity. Give your users the power of clinical-grade insights with just a few lines of code. Turn your app into a health solution today!

The iCOquit® SDK offers the following functionality for iOS and Android devices:

- Start test
- Get CO reading in ppm
- Get battery status
- Get firmware version
- Get usage

You can choose which of these functions to use.

For more information and to apply please visit:
https://www.bedfont.com/sdk/

References

1. Andrew H. Carbon Monoxide 'The Silent Killer' Feasibility Study 2009/2010. 1st ed. London: London Ambulance; 2017
2. Blumenthal I. Carbon monoxide poisoning [Internet]. PubMed Central (PMC). 2017 [cited 14 March 2017]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1281520/
3. How Carbon Monoxide Hurts Smokers [Internet]. Verywell Mind. 2019 [cited 21 August 2019]. Available from: https://www.verywellmind.com/carbonmonoxide-in-cigarette-smoke-2824730
4. Deanfield J, Shea M, Wilson R, Horlock P, De Landsheere C, Selwyn A. Direct effects of smoking on the heart: Silent ischemic disturbances of coronary flow. 2017.
5. Symptoms and Causes of Poor Circulation [Internet]. Healthline. 2017 [cited 14 March 2017]. Available from: http://www.healthline.com/health/poor-circulation-symptoms-causes?m=2#Overview1
6. Goldsmith, J. R. (1974) 'Carbon Monoxide and Smoking', The Lancet, 303(7868), p. 1232. doi:10.1016/s0140-6736(74)91048-4.
7. Gomez, C., Berlin, I., Marquis, P. and Delcroix, M. (2005) 'Expired air carbon monoxide concentration in mothers and their spouses above 5 ppm is associated with decreased foetal growth', Preventive Medicine, 40(1), pp. 10–15.
8. Croghan, E. (2011) 'Local stop smoking services: Service delivery and monitoring guidance 2011/2012', PsycEXTRA Dataset.
9. Health Effects| Tobacco Atlas [Internet]. Tobacco Atlas. 2018 [cited 21 August 2019]. Available from: http://tobaccoatlas.org/topic/health-effects/
10. Tabacco [Internet]. Who. int. 2019 [cited 21 August 2019]. Available from https://www.who.int/news-room/fact-sheets/detail/tabacco
11. Bittoun R. Carbon Monoxide Meter: The Essential Clinical Tool — the 'Stethoscope' — of Smoking Cessation. Journal of Smoking Cessation. 2008;3(2):69-70.
12. Public Health England. An Evaluation of Filtration Efficiencies Against Bacterial and Viral Aerosol Challenges. London: Public Health England; 2017.

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World leaders in breath analysis.

Visit www.bedfont.com/resources to view this document in other languages.

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