

ToxCO®

Saving lives one breath at a time.™

Quick Start Guide v1



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1. What is a ToxCO[®]?

The ToxCO[®] is a hand-held, breath carboxyhemoglobin (COHb) monitor, which is **FDA cleared** for determining CO poisoning.

- Designed for healthcare professionals such as EMTs, firefighters, paramedics, ER personnel, etc.
- Rugged monitor case included
- Provides clinical accuracy in the field
- Engineered to preform in extreme temperatures
- Breath test take seconds with instant results; triage large groups quickly for CO poisoning
- Instantly determine CO poisoning with 3 sampling options:



Direct Sampling:
exhale into disposable
mouthpiece



Facemask Sampling:
for unconscious
patients



Ambient Mode:
always on ambient
CO monitoring

- Instant on—test immediately
- Simple to use color touch screen, works with gloves
- Low maintenance & 5 year warranty
- Tag readings with names or identifying information e.g. badge #, patient id, etc.
- Automatically logs last 1,000 readings with time & date
- Interacts with included ToxCOdata[™] database software for tracking and accountability

2. Accessory Identification



7. SteriBreath[™] Eco
Mouthpiece
Single Use



3. D-piece[™]
One way valve
replaced monthly



12. Face Mask & Sampling System
Single Use



13. Calibration Kit
ToxCO[®] required
calibration every 6 months

3. ToxCO[®] Monitor Layout

1. Display
2. Power Button
3. D-piece[™] One way valve
4. D-piece[™] Port
5. Exhaust port—**Do not cover with labels**
6. USB connector for use with ToxCOdata[™] Software
7. SteriBreath[™] Mouthpiece
8. Battery Compartment—3 AA Batteries
9. Battery Compartment Opening Clip
10. Reset Button
11. Programming Switch
12. Facemask & Sampling System
13. 50ppm CO Calibration Kit





4. What is carbon monoxide (CO)?

Carbon monoxide is a toxic, odorless, colorless, tasteless gas.¹ It is formed from incomplete combustion of organic material at high temperatures with an insufficient oxygen supply.³ When inhaled, CO competes successfully with oxygen in the bloodstream to form carboxyhemoglobin (COHb). This starves the body tissues of the oxygen vital for repair, regeneration and general living.

CO can remain in the bloodstream for up to 24 hours, depending on a range of factors including physical activity, gender and inhalation intensity⁹. The half-life is about 5 hours with no treatment (normal environmental conditions), 1.5 hours if 100% oxygen is given and 0.58 hours if hyperbaric oxygenation at 100% oxygen is given.⁸

Breath carbon monoxide is measured in parts per million (ppm) and blood carboxyhemoglobin in percentages (%COHb). The two measurements are compatible and convertible, CO relating to lung/breath and COHb to blood gas.

The monitor displays %COHb, but can also display in ppm if selected in the settings.

- %COHb reading shows the percentage of vital oxygen that has been replaced in the bloodstream.⁷
- CO ppm readings indicate the levels of poisonous inhaled CO

Clinical research has demonstrated that 'the concentration of carbon monoxide in end-expired air after breath holding correlates closely with carboxyhemoglobin concentration.'³

5. Typical CO levels for individuals

Description	Regular Daily (Non-Pregnant) Smoker (%COHb)	Pregnant Smokers (%COHb)
Non-Smoker	0 – 1.59%	0 – 1.11%
Moderate Smoker	1.75 – 2.07%	1.27 – 1.59%
Heavy Smoker	2.23%+	1.75%+

The “non-smoker ranges” are based on published data, while the other ranges provided are only meant to be guides of the typical expected levels.

CO CHART: Why do I need to understand Smoker and Non-smoker CO levels?

- It's important to establish a baseline of the typical levels that you should anticipate seeing on “non-CO poisoned” individuals, and to do this, you'll need to know what you can expect to see on smokers and non-smokers alike.
- The “non-smoker ranges” are based on published research data, while the other smoking ranges provided are only meant to be guides of the typical expected levels in smokers. You should expect to see smoker and non-smoker CO levels fluctuate within the described ranges from day to day and throughout the day.
- Smokers' CO levels can be a slightly more volatile depending on recent smoking or if they've smoked a substance like marijuana or cigars. Expect to see CO levels that might be consistent with CO poisoning in extremely heavy smokers (2+ packs per day), as well as in marijuana and cigar smokers.
- Pregnant smokers have slightly lower CO levels because research has demonstrated that the fetus absorbs some of the mother's CO, as illustrated below.
- Keep in mind that while a smoker might be testing at levels that indicate CO poisoning, they may be tolerating those higher levels without any signs or symptoms because their bodies may have become accustomed to those high levels of CO.



6. How to perform a breath test.



1. Turn on the ToxCO® by pressing & releasing the button on top of the monitor.



2. Insert a D-piece™ & SteriBreath™ mouthpiece into the monitor.



3. Press the Breath Test icon when ready to begin a test.



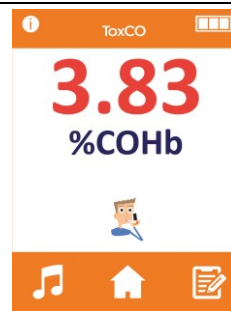
4. Instruct patient to take a deep breath and hold.



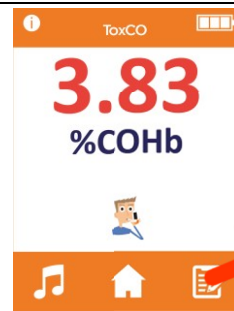
5. Patient should hold their breath during the 15 second countdown period.



6. At the end of the countdown when you hear the third beep instruct the patient to place mouth on the mouthpiece and exhale all of the air out of their lungs.



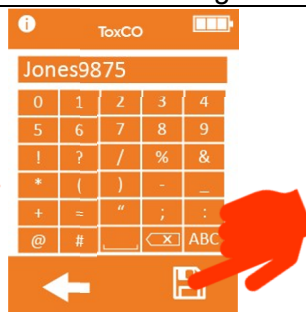
7. ToxCO® will display the reading in %COHb. The test is finished when the three icons appear at the bottom of screen.



8. Write down the result or to tag the result touch the **Tag icon.**
Note: The monitor auto logs the last 1000 results



9. Enter any identifying information of your choice. To enter numbers press the **Number icon.**



10. To save the result press the **Save icon.**



11. After saving the results the ToxCO® will return you the home screen. To review the log press the **Log icon.**



12. Press the **Breath Test icon to review or edit the tagged results .**

7. How to perform a face mask test.

Note: The appropriate size face mask should be used to avoid leaks around mask cushion.



1. Turn on the ToxCO[®] by pressing & releasing the button on top of the monitor.



2. Attach a face mask sampling system in conjunction with the D-piece[™]



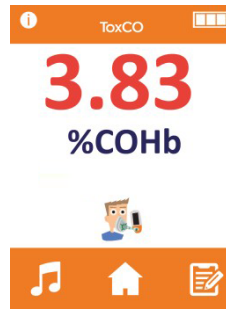
3. Press the **Mask Test** icon when ready to begin a test.



4. Place facemask over patient's mouth and instruct patient to inhale and exhale normally



5. Sampling will last 60 seconds as the %COHb levels rise and then hold at the peak level.



6. ToxCO[®] will display the reading in %COHb. The test is finished when the three icons appear at the bottom of screen.



7. Write down the reading or to tag the reading touch the **Tag** icon.
Note: The monitor auto logs the last 1000 readings



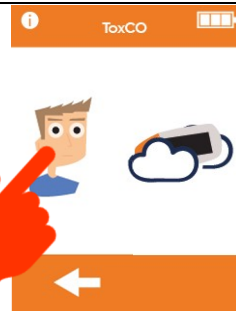
8. Enter any identifying information of your choice. To enter numbers press the **Number** icon.



9. To save the reading press the **Save** icon.



10. After saving the ToxCO[®] will return you the home screen. To review the log press the **Log** icon.



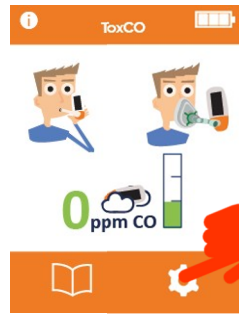
11. Press the **Breath Test** icon to review or edit the tagged results .



8. How to adjust the Mouthpiece & Facemask Alarm Thresholds.



1. Turn on the ToxCO[®] by pressing & releasing the button on top of the monitor.



2. Press the traffic light icon.

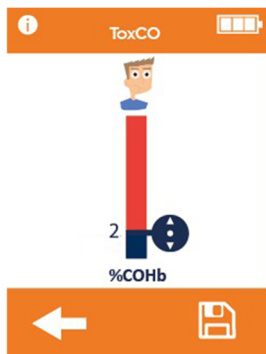


3. Press the ambient icon to adjust the threshold.



4. Drag the indicator up or down to the desired %COHb level & release. **Press save icon** to lock in changes.

Mouthpiece & Facemask Default Alarm Thresholds



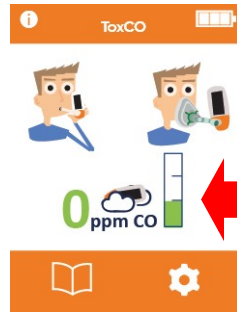
Color	Description	Reading %COHb
Blue	Normal Reading	< 2 %COHb
Red	Abnormal CO level on breath requiring further investigation	≥ 2 %COHb

9. How to use the ambient monitoring feature.

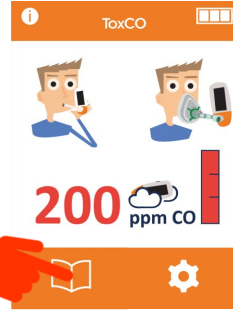
Note: The ambient air can be tested to check for **CO** in the environment using the **ToxCO®**, alerting users to high **CO** levels in the atmosphere. Once switched on the device will start to sample immediately and the real-time reading will be shown on the home screen at all times, updating every second.



1. Turn on the ToxCO® by pressing & releasing the button on top of the monitor.



2. The home screen will display the real time ambient CO levels.

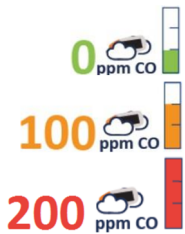


3. When a CO threshold is breached, the monitor will log this event and continue to log the live reading every minute. The logging will continue for 8 hours or until the monitor is switched off.

You can access the log by clicking book icon and then pressing the ambient icon.



Note: Ambient alarm thresholds are preset as per Acute Exposure Guideline Levels (AEGL's)



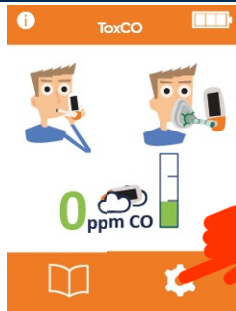
The **CO** levels are separated into Green, Amber and Red levels.

Color	ppm	Audible alert
Green	< 100	None
Amber	100-199	1 short beep every 2 seconds
Red	≥ 200	3 short beeps every 3 seconds

Both thresholds can be reduced so that they are triggered at lower levels but cannot be increased to be triggered at higher levels.

When an alarm is triggered, the device will automatically start to log in the history each minute for 8 hours or until the monitor is switched off, so that incidents can be pinpointed to a time and date.

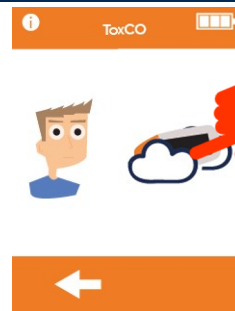
How to adjust the ambient alarm thresholds.



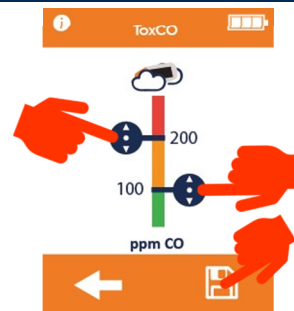
1. Turn on the ToxCO® by pressing & releasing the button on top of the monitor & then **press the gears** icon.



2. Press the traffic light icon.



3. Press the ambient icon to adjust the threshold.



3. Drag either of the two indicators up or down to the desired ppm level & release. **Press save icon** to lock in changes.

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10A. Calibration Tips



Figure A

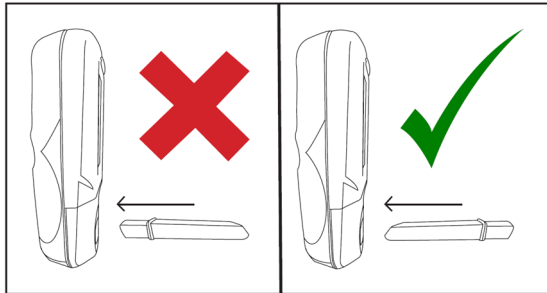


Figure B

1. coVita calibration instructional videos can be found under the support section of www.covita.net.
2. You must calibrate every **6 months** to correct for sensor drift using **50 ppm Carbon Monoxide (CO)** calibration gas. On occasion your ToxCO[™] may prompt you for an intermittent calibration.
3. Your ToxCO[™] has built in calibration reminders to prompt you to calibrate every **6 months**.
4. Be sure to identify your **flow meter-regulator** for correct instructions.
5. Remove **flow meter-regulator** from can for proper storage and replace dust cap. (You may hear a pop and this is normal.)
6. Ensure that the cali-adaptor tubing has **no kinks** while the gas is flowing.
7. Be sure you are using the compatible cali-adaptor tubing and D-piece to avoid issues with calibrating.
8. Be sure you are inserting the D-piece into the monitor correctly. The circle opening must be facing you. **(Figure A & B)**
9. **Never** block the air/vent hole on the ToxCO[™] with labels etc.

10B. Required Parts



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- A. **50 ppm Carbon Monoxide (CO)** Calibration Can
- B. Fixed Flow 1 lpm meter-regulator
- C. Cali-adaptor Tubing
- D. D-Piece
- E. **ToxCO[®] CO** Monitor

10C. Calibration Kit Set Up

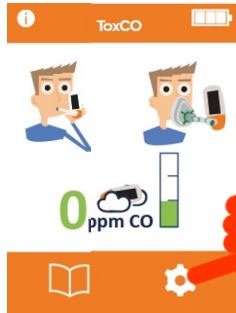


1. Remove white or black dust cap from can of gas
2. Ensure the control valve on the flow meter-regulator is in the off position.
3. Screw the regulator-flow meter onto the gas can (some slight pressure may be required). This can be done by screwing the gas can into the valve.
4. Attach the small end of the tubing onto the regulator-flow meter.
5. Insert the larger end of the cali-adaptor tubing into the D-piece. Ensure a tight fit.
6. Verify the gauge on the regulator-flow meter is registering gas (arrow is not on zero)

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10D. Perform Calibration

IMPORTANT: Do not connect the cali-adaptor or D-piece to the monitor until after the monitor zeros (Step 5)



1. Press Gear Icon



2. Press Calibration Icon to begin auto-zero process



3. Monitor will display hour glass while **zeroing**



4. Assemble calibration kit (already done) then press the arrow



5. Insert D-piece with the cali-adaptor attached into monitor, then **press the arrow**



6. Turn on the gas, then **press the arrow**



7. Hour glass will display as the monitor is calibrating



8. Calibration is successful when a **check mark** is received. ****IMPORTANT**** Must press the **check mark** to lock in the calibration.

10E. Additional Screens & Tips



Failed Calibration Screen
You must perform a reset on the monitor.
Please see section F.



Monitor temperature is too **hot**. You must turn off the monitor for a minimum of 5 minutes before calibrating



Monitor temperature is too **cold**. You must move your monitor to a room temperature environment before calibrating



Calibration reminder to prompt you to calibrate every **6 months**.
Press the arrow to start calibrating.

10F. Reset & Calibration

IMPORTANT: Do not connect the cali-adaptor or D-piece to the monitor until after the monitor zeros (Step 5)



1. Turn on your monitor. Be sure the D-piece is removed from monitor until step 5.



2. Using an opened paper clip, press/hold the reset button located in the battery compartment in for **30 seconds** until the monitor beeps & turns off and then release.



3. Turn on your monitor and the hour glass will appear while automatically zeroing



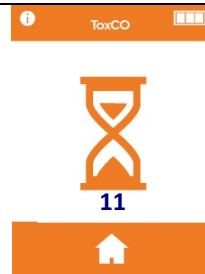
4. Assemble calibration kit (already done) then press the arrow



5. Insert D-piece with the cali-adaptor attached into monitor, then press the arrow



6. Turn the gas on, then press the arrow



7. An hour glass & numbers will display as the monitor is calibrating.



8. Calibration is successful when a check mark is received. ****IMPORTANT**** Must press the check mark to lock in the calibration.

10G. Additional Screens & Tips



Failed Calibration Screen Allow 5 minutes with D-piece removed from monitor and then try calibrating again.



Monitor temperature is too **hot**. You must turn off the monitor for a minimum of 5 minutes before calibrating



Monitor temperature is too **cold**. You must move your monitor to a room temperature environment before calibrating



Calibration reminder to prompt you to calibrate every **6 months**. Press the arrow to start calibrating.



11. References

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ToxCO®



Instantly determine levels of CO Poisoning.™



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