

# ISO 27368:2008-08 (E)

## Analysis of blood for asphyxiant toxicants - Carbon monoxide and hydrogen cyanide

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>2</b>
<b>4</b>	<b>Symbols and abbreviated terms .....</b>	<b>5</b>
<b>5</b>	<b>Blood samples .....</b>	<b>6</b>
5.1	General .....	6
5.2	Sample condition .....	6
5.3	Sample collection .....	6
5.4	Sample storage .....	7
5.5	Sample analysis .....	7
<b>6</b>	<b>Materials .....</b>	<b>7</b>
<b>7</b>	<b>Common quality analytical elements .....</b>	<b>7</b>
7.1	General .....	7
7.2	Qualitative, quantitative and confirmatory analyses .....	7
7.3	Replicate analyses .....	7
7.4	Analytical batch .....	8
7.5	Open controls .....	8
7.6	Calibrators .....	8
<b>8</b>	<b>Measurement of CO in blood as COHb .....</b>	<b>8</b>
8.1	COHb by whole-blood oximeters .....	8
8.2	COHb by palladium chloride reduction .....	10
8.3	COHb by visible spectrophotometry (using calibration curve) .....	12
8.4	COHb by visible spectrophotometry (with CO saturation) .....	14
8.5	COHb by visible spectrophotometry (without CO saturation) .....	16
8.6	COHb by headspace gas chromatography -- Nickel-hydrogen reduction and flame ionization detection .....	19
8.7	COHb by headspace gas chromatography -- Thermal conductivity detection .....	22
<b>9</b>	<b>Measurement of HCN in blood as CN - .....</b>	<b>23</b>
9.1	CN - by colourimetric method (p-nitrobenzaldehyde and o-dinitrobenzene) .....	23
9.2	CN - by visible spectrophotometry .....	25
9.3	CN - as HCN by headspace gas chromatography -- Nitrogen phosphorous detection .....	29
9.4	CN - by headspace gas chromatography -- Electron capture detection .....	31
9.5	CN - by spectrophotofluorimetry or high-performance liquid chromatography using a fluorescence detector .....	33
9.6	CN - by high-performance liquid chromatography-mass spectrometry .....	37
<b>Annex A (normative) Analytical report pro forma .....</b>		<b>41</b>
<b>Annex B (informative) Additional aspects of analytical methods .....</b>		<b>43</b>

<b>Annex C (informative) Interpretation of results .....</b>	<b>47</b>
<b>Bibliography .....</b>	<b>52</b>