

Abstract Submitted  
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**The measurand problem in infrared breath alcohol testing** TED VOSK, Of Counsel Cowan, Kirk, Gaston — Measurements are made to determine the value of a quantity known as a measurand. The measurand is not always the quantity subject to measurement, however. Often, a distinct quantity will be measured and related to the measurand through a measurement function. When the identities of the measurand and the quantity actually measured are not well defined or distinguished, it can lead to the misinterpretation of results. This is referred to as the measurand problem. The measurand problem can present significant difficulties when the law and not science determines the measurand. This arises when the law requires that a particular quantity be measured. Legal definitions are seldom as rigorous or complete as those utilized in science. Thus, legally defined measurands often fall prey to the measurand problem. An example is the measurement of breath alcohol concentration by infrared spectroscopy. All 50 states authorize such tests but the measurand differs by jurisdiction. This leads to misinterpretation of results in both the forensic and legal communities due to the measurand problem with the consequence that the innocent are convicted and guilty set free. Correct interpretation of breath test results requires that the measurand be properly understood and accounted for. I set forth the varying measurands defined by law, the impact these differing measurands have on the interpretation of breath test results and how the measurand problem can be avoided in the measurement of breath alcohol concentration.

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