

Measurement Uncertainty

Predicate Questions

1. Are breath alcohol measurements perfect?

No, the test results are accurate and reliable—not perfect.

2. Do all measurement results have uncertainty?

Yes

3. Briefly, what is meant by the concept of measurement uncertainty?

All measurements are approximations. There are limitations in our methods and in our technology. There are a number of random and fixed factors that can influence a particular measurement result. We can quantify the effect of these factors. We call this quantity the” measurement uncertainty.”

4. Is it a problem that breath alcohol measurement results have uncertainty?

No

5. Why not?

Because we can reliably estimate it, evaluate its impact, and insure it is minimal.

6. How is the measurement uncertainty for the result determined for breath tests?

The Toxicology Lab Division analyzed the factors that contribute to variation in the test results. From this analysis, the state toxicologist approved an algorithm for calculating measurement uncertainty for breath tests. Using this algorithm and the data collected for this breath instrument and the defendant’s breath test, we can compute a 99% confidence interval for the individual’s true mean breath alcohol concentration.

7. I'm showing you Exhibit _____, what is that?

This is the measurement uncertainty calculation for the breath test in this case.

8. Are you familiar with this calculation?

Yes, I independently reviewed the underlying data for the calculation, confirmed the algorithm is approved by the state toxicologist, and performed the calculation to obtain the confidence interval in this case. My analysis confirms the information on this document is correct.

9. What is the 99% confidence interval estimate in this particular case?

The 99% confidence interval is: _____ to _____ g/210L

10. What is the meaning or interpretation of the confidence interval in this particular case?

Accounting for the random and fixed variations that affect breath test measurements, we are 99% confident that this range brackets the defendant's true mean breath alcohol concentration.

11. The prosecution moves to admit _____, the MU calculation.