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Estimated Measurement Uncertainty – mandated by ISO17025 for results where known guidelines exist.

Envirolab Services will use a combination of either control charts, proficiency testing data and method validation to evaluate the uncertainty of measurement. This data is used to evaluate bias and precision of the measurement process. Note, the values used to calculate the estimated measurement uncertainty are generally ≥10*PQL (reporting limits) and therefore measurement uncertainty estimates only reflect these concentration ranges. Theoretically, as results approach the PQL the statistical error will increase.

The measurement uncertainty interval determined is at the 95% confidence interval which is common practice, labelled as $MU_{95\%}$. A table of Measurement Uncertainty ***Estimates*** relating to Chemistry tests in **Water** with regulatory limits are given below:-

	PQL (mg/L)	**Estimated $MU_{95\%}$ at ≥10*PQL**
INORGANICS		
Alkalinity	5	18%
Anions (Cl^-, F^-, SO_4^{2-})	1, 0.1, 1	14-22%
Cyanides (Per/Syd)	0.004	11-18%
Colour	5 Pt/Co or HZU	15%
NOx/NH_3	0.005	11-13%
pH	0.1 pH units	±0.2 pH units
Sulphide Low Level (Perth)	0.01	20%
TDS/TSS	5	13%
Turbidity	0.1 NTU	≤10%
METALS	Various - sub µg/L to mg/L	10-20%
ORGANICS (Per/Syd)		
VOCs	Various - sub µg/L to sub mg/L	20-35%
HAAs		15-24%
Phenols - substituted		50-70%
Trace Pesticides		20-40%
Benzo(a)pyrene		45%
TBT		24%

Note: where a range exists the use of the higher percentage would be the most conservative – please contact the lab for analyte specific $MU_{95\%}$.

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For example: - If a level of 30mg/L is found for Chloride, then statistically there is 95% confidence that the true result lies between 23-37mg/L (conservatively ±22% at $MU_{95\%}$).

Estimated $MU_{95\%}$ is calculated from the following equation:-

$$U_{X(95\%)} = 2((s_X^2 + B^2)^{1/2})$$

Where:

$U_{X(95\%)}$ Measurement Uncertainty with 95% level of confidence.

s_X Standard Deviation of multiple observations.

B Bias, the deviation between the average value of the multiple measurements and the true value being measured

For further information contact the laboratory, see the website for contact details https://www.envirolab.com.au/

CURRENT AS OF October 2026