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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 $\geq 10 \times \text{PQL}$ (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 $\text{MU}_{95\%}$. A table of Measurement Uncertainty Estimates relating to Microbiology tests with regulatory limits are given below:-

Description	Units	Regulatory Limit (ADWG)	PQL	Estimated $\text{MU}_{95\%}$ at $\geq 10 \times \text{PQL}$
E.Coli	CFU/100mL	<1	1	26%
Faecal Enterococci	CFU/100mL	<1	1	17%
Thermotolerant Coliforms	CFU/100mL	<1	1	25%

For example: -

If a level of 50 CFU/100mL is found for E. Coli, then statistically there is 95% confidence that the true result lies between 37-63 CFU/100mL ($\pm 26\%$ at $\text{MU}_{95\%}$).

Estimated $\text{MU}_{95\%}$ is calculated from the following equation:-

$$U_{X(95\%)} = 2((s_x^2)^{1/2}) = 2s_x$$

Where:

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

s_x Standard Deviation of multiple observations.

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

CURRENT AS OF AUGUST 2026