

Proficiency Testing Program

Organised by

Center for Laboratory Proficiency Testing

Department of Science Service,

Ministry of Higher Education, Science, Research and Innovation, Thailand

Heavy metals (As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Se and Zn) in water

PTEN - W02 - 2001

25 March 2020

SUMMARY SHEET

Laboratory Name : Technical Training and Support Service,  
Center for Scientific and Technological Equipment, Walailak University

Laboratory Code : W02 - 2001 - 152

Test Item (mg/L)	Number of results	Assigned value ( $X_{pt}$ )	Standard deviation for proficiency assessment ( $\sigma_{pt}$ )	Lab's result		z-score
				Value	MU	
Arsenic (As)	129	0.658	0.066	0.68	-	0.33
Cadmium (Cd)	146	0.092	0.014	0.092	-	0.00
Chromium (Cr)	144	0.678	0.068	0.71	-	0.47
Copper (Cu)	169	0.587	0.066	0.60	-	0.20
Iron (Fe)	190	0.401	0.040	0.40	-	-0.03
Manganese (Mn)	173	0.578	0.058	0.58	-	0.03
Nickel (Ni)	137	0.088	0.013	0.090	-	0.15
Lead (Pb)	156	0.686	0.069	0.68	-	-0.09
Selenium (Se)	109	0.400	0.040	0.41	-	0.25
Zinc (Zn)	164	0.582	0.058	0.58	-	-0.03

Note

- Assigned values ( $X_{pt}$ ) are the robust averages of the results reported by the participants in this round, calculated by using Algorithm A (ISO 13528: 2015).
- Standard deviations for proficiency assessment ( $\sigma_{pt}$ ) are the target standard deviations by perception from expert judgement.
- MU is measurement uncertainty at 95% confidence level.
- Each z-score marked with "A" is an outlier ( $|z| \geq 3.0$ ). Therefore, laboratory which is marked with "A" shall investigate the result. Laboratory is also encouraged to review the result which has an absolute z-score value between two and three ( $2.0 < |z| < 3.0$ ) marked with "W".
- This summary sheet shall be read in conjunction with the final report.

Reported by



(Miss Sukanya Pondet)  
Program Coordinator

Approved by



(Mrs. Wanee Aupaiboon)  
Head of Center for Laboratory Proficiency Testing  
Department of Science Service