



Report No. 0364/2014

Proficiency Testing Program
Organised by

Center for Laboratory Proficiency Testing, Department of Science Service,
Ministry of Science and Technology, Bangkok, Thailand

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

PTEN - W02 - 1401

28 April 2014

SUMMARY SHEET

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

Laboratory Code : W02 - 1401 - 028

Test	No. of results	Lab's result (mg/L)	MU (mg/L)	Assigned value (X) (mg/L)	Standard deviation for proficiency assessment ($\hat{\sigma}_p$) (mg/L)	Z-score
Arsenic (As)	94	0.026	-	0.031	0.010	-0.50
Cadmium (Cd)	115	0.030	-	0.029	0.005	0.20
Chromium (Cr)	107	0.042	-	0.041	0.005	0.20
Copper (Cu)	130	0.40	-	0.414	0.024	-0.58
Iron (Fe)	130	0.23	-	0.200	0.018	1.67
Manganese (Mn)	122	0.32	-	0.303	0.017	1.00
Nickel (Ni)	109	1.72	-	1.702	0.110	0.16
Lead (Pb)	123	0.21	-	0.197	0.017	0.76
Zinc (Zn)	121	1.71	-	1.717	0.144	-0.05

Note

- Assigned value (x)
 - For Cr, Cu, Fe, Mn, Ni, Zn : the assigned values are the consensus values from all participants in this round, calculated by using Algorithm A (ISO 13528:2005).
 - For As, Cd, Pb : the assigned values are the reference values from the reference laboratory (National Institute of Metrology, Thailand).
- Standard deviation for proficiency assessment ($\hat{\sigma}_p$) is the robust standard deviation of the results reported from all participants in this round, calculated by using Algorithm A (ISO 13528:2005).
- Each z-score marked with "A" is an outlier ($|z| \geq 3$) therefore, laboratory which is marked with "A" shall investigate result. Laboratory is also encouraged to review result which has an absolute z-score value between two and three (i.e. $2 < |z| < 3$) or marked with "W".
- This summary sheet should be read in conjunction with the final report.

Reported by

W- Aupaiboon

(Mrs. Wannee Aupaiboon)
Program Coordinator

Approved by

Rachada Hemapattawee

(Mrs. Rachada Hemapattawee)
Director of Center for Laboratory Proficiency Testing
Department of Science Service