

EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 3, Czech Hydrometeorological Institute, Praha (Czech Republic)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	11.275	11	10.819	0.768	0.593	S
H2		0.85	0.8	0.768	0.152	0.535	S
H3		9.373	9	8.923	0.562	0.8	S
H4		1.541	1.5	1.439	0.218	0.467	S
H1	Cd	0.749	0.7	0.7	0.051	0.973	S
H2		0.115	0.1	0.095	0.021	0.953	S
H3		1.002	0.9	0.885	0.075	1.571	S
H4		0.104	0.09	0.088	0.012	1.314	S
H1	Cr	8.003	8.5	8.26	0.647	-0.397	S
H2		0.826	0.9	0.885	0.101	-0.592	S
H3		4.301	4.5	4.464	0.55	-0.296	S
H4		0.535	0.6	0.6	0.072	-0.901	S
H1	Cu	15.04	15	14.817	1.167	0.191	S
H2		0.842	0.85	0.848	0.203	-0.032	S
H3		12.825	12.5	12.362	1.011	0.458	S
H4		1.002	1	0.979	0.148	0.158	S
H1	Ni	8.934	9	8.971	0.453	-0.083	S
H2		0.793	0.8	0.801	0.112	-0.064	S
H3		12.095	12	11.965	1.008	0.129	S
H4		1.079	1.1	1.061	0.156	0.115	S
H1	Pb	23.935	25	24.381	1.704	-0.262	S
H2		1.921	2	1.886	0.278	0.123	S
H3		18.995	19.5	19.396	1.202	-0.334	S
H4		0.872	0.9	0.902	0.118	-0.254	S
H1	Zn	153.05	130	128.515	5.494	4.465	Q
H2		11.975	10	10.135	1.777	1.036	S
H3		161.1	135	135.287	7.75	3.331	Q
H4		10.665	9	9.387	1.107	1.155	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 4, Aarhus University, Department of Environmental Science (Denmark)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10	11	10.819	0.768	-1.067	S
H2		< 1.500	0.8	0.768	0.152		B
H3		8.4	9	8.923	0.562	-0.93	S
H4		< 1.500	1.5	1.439	0.218	-3.166	U
H1	Cd	0.6	0.7	0.7	0.051	-1.957	S
H2		< 0.350	0.1	0.095	0.021		B
H3		0.85	0.9	0.885	0.075	-0.463	S
H4		< 0.350	0.09	0.088	0.012		B
H1	Cr	8.6	8.5	8.26	0.647	0.526	S
H2		< 2.000	0.9	0.885	0.101		B
H3		4.4	4.5	4.464	0.55	-0.117	S
H4		< 2.000	0.6	0.6	0.072		B
H1	Cu	13.9	15	14.817	1.167	-0.786	S
H2		< 2.500	0.85	0.848	0.203		B
H3		11.3	12.5	12.362	1.011	-1.051	S
H4		< 2.500	1	0.979	0.148		B
H1	Ni	9.6	9	8.971	0.453	1.388	S
H2		< 3.000	0.8	0.801	0.112		B
H3		13.7	12	11.965	1.008	1.721	S
H4		< 3.000	1.1	1.061	0.156		B
H1	Pb	25.1	25	24.381	1.704	0.422	S
H2		< 3.000	2	1.886	0.278		B
H3		19.6	19.5	19.396	1.202	0.169	S
H4		< 3.000	0.9	0.902	0.118		B
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 5, Finnish Meteorological Institute. Air Quality Department (Finland)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.19	11	10.819	0.768	0.483	S
H2		0.81	0.8	0.768	0.152	0.276	S
H3		9.09	9	8.923	0.562	0.296	S
H4		1.51	1.5	1.439	0.218	0.325	S
H1	Cd	0.723	0.7	0.7	0.051	0.462	S
H2		0.102	0.1	0.095	0.021	0.336	S
H3		0.92	0.9	0.885	0.075	0.474	S
H4		0.093	0.09	0.088	0.012	0.427	S
H1	Cr	8.7	8.5	8.26	0.647	0.681	S
H2		0.92	0.9	0.885	0.101	0.345	S
H3		4.54	4.5	4.464	0.55	0.137	S
H4		0.61	0.6	0.6	0.072	0.136	S
H1	Cu	15.58	15	14.817	1.167	0.654	S
H2		0.89	0.85	0.848	0.203	0.207	S
H3		12.84	12.5	12.362	1.011	0.473	S
H4		1.03	1	0.979	0.148	0.347	S
H1	Ni	9.32	9	8.971	0.453	0.77	S
H2		0.84	0.8	0.801	0.112	0.351	S
H3		12.28	12	11.965	1.008	0.313	S
H4		1.13	1.1	1.061	0.156	0.438	S
H1	Pb	25.25	25	24.381	1.704	0.51	S
H2		2.023	2	1.886	0.278	0.492	S
H3		19.79	19.5	19.396	1.202	0.327	S
H4		0.909	0.9	0.902	0.118	0.06	S
H1	Zn	134.6	130	128.515	5.494	1.107	S
H2		10.4	10	10.135	1.777	0.149	S
H3		137.1	135	135.287	7.75	0.234	S
H4		9.2	9	9.387	1.107	-0.169	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 6, SGS Multilab (France)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.11	11	10.819	0.768	0.379	S
H2		0.83	0.8	0.768	0.152	0.407	S
H3		9.34	9	8.923	0.562	0.741	S
H4		1.54	1.5	1.439	0.218	0.463	S
H1	Cd	0.69	0.7	0.7	0.051	-0.187	S
H2		0.09	0.1	0.095	0.021	-0.233	S
H3		0.89	0.9	0.885	0.075	0.073	S
H4		0.08	0.09	0.088	0.012	-0.622	S
H1	Cr	7.57	8.5	8.26	0.647	-1.066	S
H2		0.77	0.9	0.885	0.101	-1.142	S
H3		4	4.5	4.464	0.55	-0.845	S
H4		0.48	0.6	0.6	0.072	-1.662	S
H1	Cu	13.91	15	14.817	1.167	-0.777	S
H2		0.72	0.85	0.848	0.203	-0.63	S
H3		11.58	12.5	12.362	1.011	-0.774	S
H4		0.83	1	0.979	0.148	-1	S
H1	Ni	8.18	9	8.971	0.453	-1.746	S
H2		0.68	0.8	0.801	0.112	-1.078	S
H3		11.14	12	11.965	1.008	-0.818	S
H4		0.99	1.1	1.061	0.156	-0.457	S
H1	Pb	23.25	25	24.381	1.704	-0.664	S
H2		1.78	2	1.886	0.278	-0.382	S
H3		18.01	19.5	19.396	1.202	-1.154	S
H4		0.78	0.9	0.902	0.118	-1.036	S
H1	Zn	132.5	130	128.515	5.494	0.725	S
H2		11.93	10	10.135	1.777	1.01	S
H3		135	135	135.287	7.75	-0.037	S
H4		10.69	9	9.387	1.107	1.177	S

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 8, Umweltbundesamt, Langen (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11	11	10.819	0.768	0.235	S
H2		0.813	0.8	0.768	0.152	0.295	S
H3		9.05	9	8.923	0.562	0.225	S
H4		1.505	1.5	1.439	0.218	0.302	S
H1	Cd	0.715	0.7	0.7	0.051	0.305	S
H2		0.103	0.1	0.095	0.021	0.384	S
H3		0.918	0.9	0.885	0.075	0.447	S
H4		0.091	0.09	0.088	0.012	0.266	S
H1	Cr	8.07	8.5	8.26	0.647	-0.293	S
H2		0.847	0.9	0.885	0.101	-0.379	S
H3		4.27	4.5	4.464	0.55	-0.354	S
H4		0.556	0.6	0.6	0.072	-0.611	S
H1	Cu	14.77	15	14.817	1.167	-0.04	S
H2		0.936	0.85	0.848	0.203	0.434	S
H3		12.52	12.5	12.362	1.011	0.156	S
H4		1.01	1	0.979	0.148	0.212	S
H1	Ni	8.67	9	8.971	0.453	-0.664	S
H2		0.785	0.8	0.801	0.112	-0.14	S
H3		11.61	12	11.965	1.008	-0.352	S
H4		1.054	1.1	1.061	0.156	-0.048	S
H1	Pb	24.35	25	24.381	1.704	-0.018	S
H2		1.962	2	1.886	0.278	0.273	S
H3		18.97	19.5	19.396	1.202	-0.355	S
H4		0.876	0.9	0.902	0.118	-0.22	S
H1	Zn	134.2	130	128.515	5.494	1.035	S
H2		11.11	10	10.135	1.777	0.549	S
H3		140.5	135	135.287	7.75	0.673	S
H4		9.5	9	9.387	1.107	0.102	S

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Laboratory 10, Institute for Atmospheric Physics (Hungary)

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H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.69	0.7	0.7	0.051	-0.187	S
H2		0.09	0.1	0.095	0.021	-0.233	S
H3		0.868	0.9	0.885	0.075	-0.222	S
H4		0.075	0.09	0.088	0.012	-1.025	S
H1	Cr	-999	8.5	8.26	0.647		B
H2		-999	0.9	0.885	0.101		B
H3		-999	4.5	4.464	0.55		B
H4		-999	0.6	0.6	0.072		B
H1	Cu	-999	15	14.817	1.167		B
H2		-999	0.85	0.848	0.203		B
H3		-999	12.5	12.362	1.011		B
H4		-999	1	0.979	0.148		B
H1	Ni	-999	9	8.971	0.453		B
H2		-999	0.8	0.801	0.112		B
H3		-999	12	11.965	1.008		B
H4		-999	1.1	1.061	0.156		B
H1	Pb	26.485	25	24.381	1.704	1.235	S
H2		1.829	2	1.886	0.278	-0.206	S
H3		21.844	19.5	19.396	1.202	2.037	S
H4		1.36	0.9	0.902	0.118	3.894	U
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 13, C.N.R. Istituto Inquinamento Atmosferico (Italy)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	9.59	11	10.819	0.768	-1.6	S
H2		0.5	0.8	0.768	0.152	-1.763	Q
H3		7.83	9	8.923	0.562	-1.944	S
H4		1.11	1.5	1.439	0.218	-1.512	Q
H1	Cd	0.61	0.7	0.7	0.051	-1.76	S
H2		0.09	0.1	0.095	0.021	-0.233	S
H3		0.075	0.9	0.885	0.075	-10.831	U
H4		0.08	0.09	0.088	0.012	-0.622	S
H1	Cr	7.59	8.5	8.26	0.647	-1.035	S
H2		0.81	0.9	0.885	0.101	-0.745	S
H3		4.05	4.5	4.464	0.55	-0.754	S
H4		0.54	0.6	0.6	0.072	-0.832	S
H1	Cu	14	15	14.817	1.167	-0.7	S
H2		0.75	0.85	0.848	0.203	-0.482	S
H3		11.7	12.5	12.362	1.011	-0.655	S
H4		0.89	1	0.979	0.148	-0.596	S
H1	Ni	8.5	9	8.971	0.453	-1.04	S
H2		0.8	0.8	0.801	0.112	-0.006	S
H3		11.4	12	11.965	1.008	-0.56	S
H4		1.08	1.1	1.061	0.156	0.118	S
H1	Pb	23.1	25	24.381	1.704	-0.752	S
H2		1.8	2	1.886	0.278	-0.31	S
H3		18	19.5	19.396	1.202	-1.162	S
H4		0.78	0.9	0.902	0.118	-1.036	S
H1	Zn	129	130	128.515	5.494	0.088	S
H2		9.4	10	10.135	1.777	-0.414	S
H3		136	135	135.287	7.75	0.092	S
H4		7.9	9	9.387	1.107	-1.343	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- B – Blank: You reported either no value or the detection limit

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<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 15, Norwegian Institute for Air Research NILU (Norway)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.5	11	10.819	0.768	-0.416	S
H2		0.8	0.8	0.768	0.152	0.21	S
H3		8.8	9	8.923	0.562	-0.219	S
H4		1.5	1.5	1.439	0.218	0.279	S
H1	Cd	0.67	0.7	0.7	0.051	-0.58	S
H2		0.1	0.1	0.095	0.021	0.241	S
H3		0.88	0.9	0.885	0.075	-0.061	S
H4		0.09	0.09	0.088	0.012	0.185	S
H1	Cr	8.1	8.5	8.26	0.647	-0.247	S
H2		0.9	0.9	0.885	0.101	0.147	S
H3		4.3	4.5	4.464	0.55	-0.299	S
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	14.7	15	14.817	1.167	-0.1	S
H2		0.85	0.85	0.848	0.203	0.01	S
H3		12.3	12.5	12.362	1.011	-0.061	S
H4		1	1	0.979	0.148	0.145	S
H1	Ni	9	9	8.971	0.453	0.064	S
H2		0.82	0.8	0.801	0.112	0.173	S
H3		12	12	11.965	1.008	0.035	S
H4		1.1	1.1	1.061	0.156	0.246	S
H1	Pb	25	25	24.381	1.704	0.363	S
H2		2	2	1.886	0.278	0.409	S
H3		19.5	19.5	19.396	1.202	0.086	S
H4		0.5	0.9	0.902	0.118	-3.416	Q
H1	Zn	123	130	128.515	5.494	-1.004	S
H2		10	10	10.135	1.777	-0.076	S
H3		128	135	135.287	7.75	-0.94	S
H4		9.2	9	9.387	1.107	-0.169	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

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- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 20, Swedish Environmental Research Institute IVL, Gothenburg (Sweden)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	-999	11	10.819	0.768		B
H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.7	0.7	0.7	0.051	0.01	S
H2		0.095	0.1	0.095	0.021	0.004	S
H3		0.9	0.9	0.885	0.075	0.206	S
H4		0.085	0.09	0.088	0.012	-0.218	S
H1	Cr	8.4	8.5	8.26	0.647	0.217	S
H2		0.8	0.9	0.885	0.101	-0.845	S
H3		4.4	4.5	4.464	0.55	-0.117	S
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	14.3	15	14.817	1.167	-0.443	S
H2		0.8	0.85	0.848	0.203	-0.236	S
H3		13.5	12.5	12.362	1.011	1.126	S
H4		0.9	1	0.979	0.148	-0.529	S
H1	Ni	8.5	9	8.971	0.453	-1.04	S
H2		0.75	0.8	0.801	0.112	-0.452	S
H3		12	12	11.965	1.008	0.035	S
H4		0.95	1.1	1.061	0.156	-0.713	S
H1	Pb	24	25	24.381	1.704	-0.224	S
H2		1.9	2	1.886	0.278	0.05	S
H3		20	19.5	19.396	1.202	0.502	S
H4		0.9	0.9	0.902	0.118	-0.016	S
H1	Zn	125	130	128.515	5.494	-0.64	S
H2		9	10	10.135	1.777	-0.639	S
H3		130	135	135.287	7.75	-0.682	S
H4		8	9	9.387	1.107	-1.253	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 24, Serbian Environmental Protection Agency (Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.7	11	10.819	0.768	1.147	S
H2		< 1.000	0.8	0.768	0.152		B
H3		10.2	9	8.923	0.562	2.27	S
H4		1.3	1.5	1.439	0.218	-0.639	S
H1	Cd	-999	0.7	0.7	0.051		B
H2		-999	0.1	0.095	0.021		B
H3		-999	0.9	0.885	0.075		B
H4		-999	0.09	0.088	0.012		B
H1	Cr	6.5	8.5	8.26	0.647	-2.72	Q
H2		< 1.000	0.9	0.885	0.101		B
H3		3.5	4.5	4.464	0.55	-1.754	Q
H4		< 1.000	0.6	0.6	0.072		B
H1	Cu	13.2	15	14.817	1.167	-1.386	S
H2		< 1.000	0.85	0.848	0.203		B
H3		10.7	12.5	12.362	1.011	-1.644	S
H4		< 1.000	1	0.979	0.148	-3.223	Q
H1	Ni	9.4	9	8.971	0.453	0.947	S
H2		< 1.000	0.8	0.801	0.112		B
H3		< 1.000	12	11.965	1.008	-11.369	U
H4		< 1.000	1.1	1.061	0.156	-3.591	U
H1	Pb	-999	25	24.381	1.704		B
H2		-999	2	1.886	0.278		B
H3		-999	19.5	19.396	1.202		B
H4		-999	0.9	0.902	0.118		B
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

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- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 31, Slovak Hydrometeorological Institute (Slovakia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.2	11	10.819	0.768	-0.806	S
H2		0.77	0.8	0.768	0.152	0.013	S
H3		8.36	9	8.923	0.562	-1.002	S
H4		1.43	1.5	1.439	0.218	-0.042	S
H1	Cd	0.63	0.7	0.7	0.051	-1.367	S
H2		0.09	0.1	0.095	0.021	-0.233	S
H3		0.81	0.9	0.885	0.075	-0.998	S
H4		0.07	0.09	0.088	0.012	-1.428	S
H1	Cr	8.5	8.5	8.26	0.647	0.371	S
H2		0.96	0.9	0.885	0.101	0.741	S
H3		4.6	4.5	4.464	0.55	0.246	S
H4		0.62	0.6	0.6	0.072	0.274	S
H1	Cu	14.1	15	14.817	1.167	-0.614	S
H2		0.72	0.85	0.848	0.203	-0.63	S
H3		11.8	12.5	12.362	1.011	-0.556	S
H4		0.85	1	0.979	0.148	-0.866	S
H1	Ni	9.02	9	8.971	0.453	0.108	S
H2		1.01	0.8	0.801	0.112	1.869	Q
H3		11.7	12	11.965	1.008	-0.262	S
H4		1.33	1.1	1.061	0.156	1.717	Q
H1	Pb	22.5	25	24.381	1.704	-1.104	S
H2		1.88	2	1.886	0.278	-0.022	S
H3		18.6	19.5	19.396	1.202	-0.663	S
H4		0.78	0.9	0.902	0.118	-1.036	S
H1	Zn	125	130	128.515	5.494	-0.64	S
H2		11	10	10.135	1.777	0.487	S
H3		129.5	135	135.287	7.75	-0.747	S
H4		10.1	9	9.387	1.107	0.644	S

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^x EMEP quality norm; the letters in the column indicates:

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- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 33, Environmental Pollution Observ. Centre (Latvia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11	11	10.819	0.768	0.235	S
H2		0.75	0.8	0.768	0.152	-0.119	S
H3		9	9	8.923	0.562	0.136	S
H4		1.2	1.5	1.439	0.218	-1.099	Q
H1	Cd	0.7	0.7	0.7	0.051	0.01	S
H2		0.07	0.1	0.095	0.021	-1.182	Q
H3		0.65	0.9	0.885	0.075	-3.138	Q
H4		0.08	0.09	0.088	0.012	-0.622	S
H1	Cr	8	8.5	8.26	0.647	-0.401	S
H2		1	0.9	0.885	0.101	1.138	S
H3		4.5	4.5	4.464	0.55	0.065	S
H4		0.7	0.6	0.6	0.072	1.38	S
H1	Cu	15	15	14.817	1.167	0.157	S
H2		0.8	0.85	0.848	0.203	-0.236	S
H3		12	12.5	12.362	1.011	-0.358	S
H4		0.9	1	0.979	0.148	-0.529	S
H1	Ni	9	9	8.971	0.453	0.064	S
H2		0.9	0.8	0.801	0.112	0.887	S
H3		10.5	12	11.965	1.008	-1.452	S
H4		1.1	1.1	1.061	0.156	0.246	S
H1	Pb	23	25	24.381	1.704	-0.811	S
H2		2	2	1.886	0.278	0.409	S
H3		19	19.5	19.396	1.202	-0.33	S
H4		0.9	0.9	0.902	0.118	-0.016	S
H1	Zn	130	130	128.515	5.494	0.27	S
H2		10	10	10.135	1.777	-0.076	S
H3		120	135	135.287	7.75	-1.972	S
H4		10	9	9.387	1.107	0.554	S

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 34, Ministry of Environment and Urbanisation (Turkey)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	11.429	11	10.819	0.768	0.794	S
H2		0.819	0.8	0.768	0.152	0.335	S
H3		9.523	9	8.923	0.562	1.066	S
H4		1.548	1.5	1.439	0.218	0.5	S
H1	Cd	0.773	0.7	0.7	0.051	1.445	S
H2		0.11	0.1	0.095	0.021	0.716	S
H3		0.977	0.9	0.885	0.075	1.236	S
H4		0.099	0.09	0.088	0.012	0.911	S
H1	Cr	9.499	8.5	8.26	0.647	1.916	S
H2		1	0.9	0.885	0.101	1.138	S
H3		5.075	4.5	4.464	0.55	1.11	S
H4		0.659	0.6	0.6	0.072	0.813	S
H1	Cu	16.785	15	14.817	1.167	1.686	S
H2		0.828	0.85	0.848	0.203	-0.098	S
H3		13.832	12.5	12.362	1.011	1.454	S
H4		0.988	1	0.979	0.148	0.064	S
H1	Ni	9.707	9	8.971	0.453	1.625	S
H2		0.787	0.8	0.801	0.112	-0.122	S
H3		13.2	12	11.965	1.008	1.225	S
H4		1.147	1.1	1.061	0.156	0.547	S
H1	Pb	26.975	25	24.381	1.704	1.522	S
H2		2.121	2	1.886	0.278	0.844	S
H3		21.038	19.5	19.396	1.202	1.366	S
H4		0.939	0.9	0.902	0.118	0.315	S
H1	Zn	135.901	130	128.515	5.494	1.344	S
H2		11.474	10	10.135	1.777	0.754	S
H3		141.011	135	135.287	7.75	0.739	S
H4		9.896	9	9.387	1.107	0.46	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 36, Hydrometeorological Institute of Slovenia (Slovenia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.8	11	10.819	0.768	-0.025	S
H2		0.798	0.8	0.768	0.152	0.197	S
H3		8.83	9	8.923	0.562	-0.166	S
H4		1.5	1.5	1.439	0.218	0.279	S
H1	Cd	0.681	0.7	0.7	0.051	-0.364	S
H2		0.101	0.1	0.095	0.021	0.289	S
H3		0.883	0.9	0.885	0.075	-0.021	S
H4		0.102	0.09	0.088	0.012	1.153	S
H1	Cr	8.45	8.5	8.26	0.647	0.294	S
H2		0.882	0.9	0.885	0.101	-0.032	S
H3		4.36	4.5	4.464	0.55	-0.19	S
H4		0.581	0.6	0.6	0.072	-0.265	S
H1	Cu	14.7	15	14.817	1.167	-0.1	S
H2		0.786	0.85	0.848	0.203	-0.305	S
H3		12.1	12.5	12.362	1.011	-0.259	S
H4		0.94	1	0.979	0.148	-0.26	S
H1	Ni	8.85	9	8.971	0.453	-0.267	S
H2		0.77	0.8	0.801	0.112	-0.274	S
H3		11.6	12	11.965	1.008	-0.362	S
H4		1.07	1.1	1.061	0.156	0.054	S
H1	Pb	23.2	25	24.381	1.704	-0.693	S
H2		1.87	2	1.886	0.278	-0.058	S
H3		18	19.5	19.396	1.202	-1.162	S
H4		0.858	0.9	0.902	0.118	-0.373	S
H1	Zn	124	130	128.515	5.494	-0.822	S
H2		9.77	10	10.135	1.777	-0.205	S
H3		129	135	135.287	7.75	-0.811	S
H4		8.86	9	9.387	1.107	-0.476	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 38, Estonian Environmental Research Centre, Tallinn (Estonia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.8	11	10.819	0.768	-0.025	S
H2		0.85	0.8	0.768	0.152	0.539	S
H3		8.65	9	8.923	0.562	-0.486	S
H4		1.58	1.5	1.439	0.218	0.647	S
H1	Cd	0.67	0.7	0.7	0.051	-0.58	S
H2		0.1	0.1	0.095	0.021	0.241	S
H3		0.9	0.9	0.885	0.075	0.206	S
H4		0.09	0.09	0.088	0.012	0.185	S
H1	Cr	8.16	8.5	8.26	0.647	-0.154	S
H2		0.85	0.9	0.885	0.101	-0.349	S
H3		4.25	4.5	4.464	0.55	-0.39	S
H4		0.58	0.6	0.6	0.072	-0.279	S
H1	Cu	15	15	14.817	1.167	0.157	S
H2		1.58	0.85	0.848	0.203	3.607	U
H3		12.4	12.5	12.362	1.011	0.037	S
H4		1.38	1	0.979	0.148	2.704	Q
H1	Ni	8.23	9	8.971	0.453	-1.635	S
H2		0.55	0.8	0.801	0.112	-2.238	Q
H3		11.1	12	11.965	1.008	-0.857	S
H4		0.9	1.1	1.061	0.156	-1.033	Q
H1	Pb	23.5	25	24.381	1.704	-0.517	S
H2		1.98	2	1.886	0.278	0.337	S
H3		19.4	19.5	19.396	1.202	0.003	S
H4		0.84	0.9	0.902	0.118	-0.526	S
H1	Zn	125	130	128.515	5.494	-0.64	S
H2		9.67	10	10.135	1.777	-0.262	S
H3		128	135	135.287	7.75	-0.94	S
H4		8.7	9	9.387	1.107	-0.62	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

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U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 39, Environmental Monitoring Laboratory, Institute of Environmental Protection (Poland)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11	11	10.819	0.768	0.235	S
H2		0.7	0.8	0.768	0.152	-0.448	S
H3		9	9	8.923	0.562	0.136	S
H4		1.3	1.5	1.439	0.218	-0.639	S
H1	Cd	0.7	0.7	0.7	0.051	0.01	S
H2		0.08	0.1	0.095	0.021	-0.708	S
H3		0.9	0.9	0.885	0.075	0.206	S
H4		0.08	0.09	0.088	0.012	-0.622	S
H1	Cr	8.5	8.5	8.26	0.647	0.371	S
H2		0.8	0.9	0.885	0.101	-0.845	S
H3		4.5	4.5	4.464	0.55	0.065	S
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	15	15	14.817	1.167	0.157	S
H2		0.8	0.85	0.848	0.203	-0.236	S
H3		13	12.5	12.362	1.011	0.631	S
H4		0.9	1	0.979	0.148	-0.529	S
H1	Ni	9	9	8.971	0.453	0.064	S
H2		0.9	0.8	0.801	0.112	0.887	S
H3		12	12	11.965	1.008	0.035	S
H4		1	1.1	1.061	0.156	-0.393	S
H1	Pb	26	25	24.381	1.704	0.95	S
H2		2	2	1.886	0.278	0.409	S
H3		20	19.5	19.396	1.202	0.502	S
H4		0.9	0.9	0.902	0.118	-0.016	S
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

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- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 48, Flemish Environment Agency (Belgium)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.08	11	10.819	0.768	0.339	S
H2		< 1.000	0.8	0.768	0.152		B
H3		9.36	9	8.923	0.562	0.776	S
H4		1.61	1.5	1.439	0.218	0.784	S
H1	Cd	0.67	0.7	0.7	0.051	-0.58	S
H2		< 0.300	0.1	0.095	0.021		B
H3		0.93	0.9	0.885	0.075	0.608	S
H4		< 0.300	0.09	0.088	0.012		B
H1	Cr	8.42	8.5	8.26	0.647	0.248	S
H2		< 2.000	0.9	0.885	0.101		B
H3		4.56	4.5	4.464	0.55	0.174	S
H4		< 2.000	0.6	0.6	0.072		B
H1	Cu	15.36	15	14.817	1.167	0.465	S
H2		< 4.000	0.85	0.848	0.203		B
H3		13.09	12.5	12.362	1.011	0.72	S
H4		< 4.000	1	0.979	0.148		B
H1	Ni	8.94	9	8.971	0.453	-0.068	S
H2		< 4.000	0.8	0.801	0.112		B
H3		12.22	12	11.965	1.008	0.253	S
H4		< 4.000	1.1	1.061	0.156		B
H1	Pb	25.43	25	24.381	1.704	0.615	S
H2		2.03	2	1.886	0.278	0.517	S
H3		19.65	19.5	19.396	1.202	0.211	S
H4		< 1.000	0.9	0.902	0.118		B
H1	Zn	129.5	130	128.515	5.494	0.179	S
H2		12.71	10	10.135	1.777	1.449	Q
H3		138.9	135	135.287	7.75	0.466	S
H4		12.71	9	9.387	1.107	3.002	Q

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^x EMEP quality norm; the letters in the column indicates:

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- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 110, Thüringer Landesanstalt für Landwirtschaft TTL, Jena (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.3	11	10.819	0.768	-0.676	S
H2		0.7	0.8	0.768	0.152	-0.448	S
H3		8.74	9	8.923	0.562	-0.326	S
H4		1.32	1.5	1.439	0.218	-0.548	S
H1	Cd	0.63	0.7	0.7	0.051	-1.367	S
H2		< 0.100	0.1	0.095	0.021	-2.131	Q
H3		0.85	0.9	0.885	0.075	-0.463	S
H4		< 0.100	0.09	0.088	0.012		B
H1	Cr	8.45	8.5	8.26	0.647	0.294	S
H2		0.88	0.9	0.885	0.101	-0.052	S
H3		4.53	4.5	4.464	0.55	0.119	S
H4		0.54	0.6	0.6	0.072	-0.832	S
H1	Cu	14.9	15	14.817	1.167	0.071	S
H2		0.91	0.85	0.848	0.203	0.306	S
H3		12.8	12.5	12.362	1.011	0.433	S
H4		1	1	0.979	0.148	0.145	S
H1	Ni	9.1	9	8.971	0.453	0.285	S
H2		0.85	0.8	0.801	0.112	0.44	S
H3		12.5	12	11.965	1.008	0.531	S
H4		1.08	1.1	1.061	0.156	0.118	S
H1	Pb	25.7	25	24.381	1.704	0.774	S
H2		2.2	2	1.886	0.278	1.128	S
H3		20.8	19.5	19.396	1.202	1.168	S
H4		0.91	0.9	0.902	0.118	0.069	S
H1	Zn	123	130	128.515	5.494	-1.004	S
H2		9.97	10	10.135	1.777	-0.093	S
H3		131	135	135.287	7.75	-0.553	S
H4		8.63	9	9.387	1.107	-0.684	S

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 112, Niedersächsische Forstliche Versuchsanstalt NVF (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	-999	11	10.819	0.768		B
H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.67	0.7	0.7	0.051	-0.58	S
H2		0.1	0.1	0.095	0.021	0.241	S
H3		0.87	0.9	0.885	0.075	-0.195	S
H4		0.09	0.09	0.088	0.012	0.185	S
H1	Cr	8.39	8.5	8.26	0.647	0.201	S
H2		0.93	0.9	0.885	0.101	0.444	S
H3		4.49	4.5	4.464	0.55	0.046	S
H4		0.66	0.6	0.6	0.072	0.827	S
H1	Cu	14.64	15	14.817	1.167	-0.152	S
H2		2.52	0.85	0.848	0.203	8.24	U
H3		12.32	12.5	12.362	1.011	-0.042	S
H4		1	1	0.979	0.148	0.145	S
H1	Ni	9.01	9	8.971	0.453	0.086	S
H2		0.83	0.8	0.801	0.112	0.262	S
H3		12.28	12	11.965	1.008	0.313	S
H4		1.16	1.1	1.061	0.156	0.63	S
H1	Pb	24.46	25	24.381	1.704	0.046	S
H2		1.76	2	1.886	0.278	-0.454	S
H3		19.32	19.5	19.396	1.202	-0.064	S
H4		0.82	0.9	0.902	0.118	-0.696	S
H1	Zn	131.5	130	128.515	5.494	0.543	S
H2		11.4	10	10.135	1.777	0.712	S
H3		138.1	135	135.287	7.75	0.363	S
H4		9.27	9	9.387	1.107	-0.105	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 113, Fachhochschule Eberswalde (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.85	11	10.819	0.768	0.04	S
H2		< 4.000	0.8	0.768	0.152		B
H3		9.285	9	8.923	0.562	0.643	S
H4		< 4.000	1.5	1.439	0.218		B
H1	Cd	0.632	0.7	0.7	0.051	-1.328	S
H2		< 0.400	0.1	0.095	0.021		B
H3		0.82	0.9	0.885	0.075	-0.864	S
H4		< 0.400	0.09	0.088	0.012		B
H1	Cr	9.055	8.5	8.26	0.647	1.229	S
H2		0.828	0.9	0.885	0.101	-0.567	S
H3		4.805	4.5	4.464	0.55	0.619	S
H4		0.659	0.6	0.6	0.072	0.813	S
H1	Cu	9.475	15	14.817	1.167	-4.578	U
H2		< 4.000	0.85	0.848	0.203		B
H3		6.58	12.5	12.362	1.011	-5.72	U
H4		< 4.000	1	0.979	0.148		B
H1	Ni	9.4	9	8.971	0.453	0.947	S
H2		< 2.000	0.8	0.801	0.112		B
H3		12.5	12	11.965	1.008	0.531	S
H4		< 2.000	1.1	1.061	0.156		B
H1	Pb	30.25	25	24.381	1.704	3.444	Q
H2		4.73	2	1.886	0.278	10.224	U
H3		24.75	19.5	19.396	1.202	4.455	Q
H4		< 4.000	0.9	0.902	0.118		B
H1	Zn	134	130	128.515	5.494	0.998	S
H2		10.8	10	10.135	1.777	0.374	S
H3		143.5	135	135.287	7.75	1.06	S
H4		10.015	9	9.387	1.107	0.568	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 114, C.N.R. Istituto Italiano di Idrobiologia (Italy)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.3	11	10.819	0.768	-0.676	S
H2		0.5	0.8	0.768	0.152	-1.763	Q
H3		8.7	9	8.923	0.562	-0.397	S
H4		0.7	1.5	1.439	0.218	-3.395	U
H1	Cd	0.7	0.7	0.7	0.051	0.01	S
H2		0.1	0.1	0.095	0.021	0.241	S
H3		0.9	0.9	0.885	0.075	0.206	S
H4		0.1	0.09	0.088	0.012	0.991	S
H1	Cr	8.5	8.5	8.26	0.647	0.371	S
H2		0.9	0.9	0.885	0.101	0.147	S
H3		4.6	4.5	4.464	0.55	0.246	S
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	13.5	15	14.817	1.167	-1.129	S
H2		0.8	0.85	0.848	0.203	-0.236	S
H3		11.5	12.5	12.362	1.011	-0.853	S
H4		1	1	0.979	0.148	0.145	S
H1	Ni	9	9	8.971	0.453	0.064	S
H2		0.8	0.8	0.801	0.112	-0.006	S
H3		12.4	12	11.965	1.008	0.432	S
H4		1.2	1.1	1.061	0.156	0.886	S
H1	Pb	25	25	24.381	1.704	0.363	S
H2		1.8	2	1.886	0.278	-0.31	S
H3		20	19.5	19.396	1.202	0.502	S
H4		1	0.9	0.902	0.118	0.834	S
H1	Zn	126	130	128.515	5.494	-0.458	S
H2		9.5	10	10.135	1.777	-0.357	S
H3		135	135	135.287	7.75	-0.037	S
H4		9.2	9	9.387	1.107	-0.169	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 117, Standortserkundung/Bodenmonitoring Forsten, Graupa (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	-999	11	10.819	0.768		B
H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.625	0.7	0.7	0.051	-1.465	S
H2		0.069	0.1	0.095	0.021	-1.229	Q
H3		0.749	0.9	0.885	0.075	-1.814	Q
H4		0.063	0.09	0.088	0.012	-1.993	Q
H1	Cr	6.837	8.5	8.26	0.647	-2.199	Q
H2		0.483	0.9	0.885	0.101	-3.987	Q
H3		3.873	4.5	4.464	0.55	-1.076	S
H4		0.25	0.6	0.6	0.072	-4.842	U
H1	Cu	15.427	15	14.817	1.167	0.523	S
H2		0.617	0.85	0.848	0.203	-1.138	Q
H3		12.83	12.5	12.362	1.011	0.463	S
H4		0.767	1	0.979	0.148	-1.425	S
H1	Ni	9.26	9	8.971	0.453	0.638	S
H2		0.767	0.8	0.801	0.112	-0.301	S
H3		13.093	12	11.965	1.008	1.119	S
H4		0.977	1.1	1.061	0.156	-0.54	S
H1	Pb	22.187	25	24.381	1.704	-1.288	S
H2		1.687	2	1.886	0.278	-0.716	S
H3		17.563	19.5	19.396	1.202	-1.526	S
H4		0.727	0.9	0.902	0.118	-1.487	S
H1	Zn	127.9	130	128.515	5.494	-0.112	S
H2		12.1	10	10.135	1.777	1.106	S
H3		131.17	135	135.287	7.75	-0.531	S
H4		10.5	9	9.387	1.107	1.006	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

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U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 118, Forstliche Versuchs-und Forschungsanstalt (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	9.8	11	10.819	0.768	-1.327	S
H2		0.9	0.8	0.768	0.152	0.868	S
H3		7.7	9	8.923	0.562	-2.175	S
H4		1.5	1.5	1.439	0.218	0.279	S
H1	Cd	0.65	0.7	0.7	0.051	-0.974	S
H2		0.08	0.1	0.095	0.021	-0.708	S
H3		0.83	0.9	0.885	0.075	-0.73	S
H4		0.07	0.09	0.088	0.012	-1.428	S
H1	Cr	8	8.5	8.26	0.647	-0.401	S
H2		0.9	0.9	0.885	0.101	0.147	S
H3		4.3	4.5	4.464	0.55	-0.299	S
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	13.8	15	14.817	1.167	-0.871	S
H2		0.7	0.85	0.848	0.203	-0.729	S
H3		11.3	12.5	12.362	1.011	-1.051	S
H4		0.8	1	0.979	0.148	-1.203	S
H1	Ni	8.2	9	8.971	0.453	-1.702	S
H2		0.6	0.8	0.801	0.112	-1.792	Q
H3		10.8	12	11.965	1.008	-1.155	S
H4		0.9	1.1	1.061	0.156	-1.033	Q
H1	Pb	23.6	25	24.381	1.704	-0.459	S
H2		0.9	2	1.886	0.278	-3.545	U
H3		18.3	19.5	19.396	1.202	-0.913	S
H4		< 1.500	0.9	0.902	0.118		B
H1	Zn	115.6	130	128.515	5.494	-2.351	S
H2		8.2	10	10.135	1.777	-1.089	S
H3		119.7	135	135.287	7.75	-2.011	S
H4		7.1	9	9.387	1.107	-2.066	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

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Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 120, Landwirtschaftliche Untersuchungs- und Forschungsanstalt LUFA (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	10.954	11	10.819	0.768	0.175	S
H2		0.769	0.8	0.768	0.152	0.006	S
H3		8.794	9	8.923	0.562	-0.23	S
H4		1.509	1.5	1.439	0.218	0.32	S
H1	Cd	0.702	0.7	0.7	0.051	0.049	S
H2		0.116	0.1	0.095	0.021	1.001	S
H3		0.939	0.9	0.885	0.075	0.728	S
H4		0.086	0.09	0.088	0.012	-0.138	S
H1	Cr	8.655	8.5	8.26	0.647	0.611	S
H2		0.922	0.9	0.885	0.101	0.365	S
H3		4.48	4.5	4.464	0.55	0.028	S
H4		0.627	0.6	0.6	0.072	0.371	S
H1	Cu	15.592	15	14.817	1.167	0.664	S
H2		0.893	0.85	0.848	0.203	0.222	S
H3		12.855	12.5	12.362	1.011	0.488	S
H4		1.041	1	0.979	0.148	0.421	S
H1	Ni	9.348	9	8.971	0.453	0.832	S
H2		0.816	0.8	0.801	0.112	0.137	S
H3		12.447	12	11.965	1.008	0.478	S
H4		1.146	1.1	1.061	0.156	0.54	S
H1	Pb	25.413	25	24.381	1.704	0.605	S
H2		2.041	2	1.886	0.278	0.557	S
H3		19.901	19.5	19.396	1.202	0.42	S
H4		0.929	0.9	0.902	0.118	0.23	S
H1	Zn	131.36	130	128.515	5.494	0.518	S
H2		10.26	10	10.135	1.777	0.07	S
H3		134.44	135	135.287	7.75	-0.109	S
H4		9.21	9	9.387	1.107	-0.16	S

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U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 121, Landeslabor Schleswig-Holsteinmwelt (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	10.8	11	10.819	0.768	-0.025	S
H2		0.78	0.8	0.768	0.152	0.078	S
H3		8.6	9	8.923	0.562	-0.575	S
H4		1.42	1.5	1.439	0.218	-0.088	S
H1	Cd	0.76	0.7	0.7	0.051	1.19	S
H2		0.12	0.1	0.095	0.021	1.19	S
H3		0.96	0.9	0.885	0.075	1.009	S
H4		0.11	0.09	0.088	0.012	1.798	S
H1	Cr	7.2	8.5	8.26	0.647	-1.638	Q
H2		0.83	0.9	0.885	0.101	-0.547	S
H3		4.35	4.5	4.464	0.55	-0.208	S
H4		0.52	0.6	0.6	0.072	-1.108	S
H1	Cu	15.1	15	14.817	1.167	0.243	S
H2		0.61	0.85	0.848	0.203	-1.172	Q
H3		12.7	12.5	12.362	1.011	0.334	S
H4		0.74	1	0.979	0.148	-1.607	Q
H1	Ni	9.24	9	8.971	0.453	0.594	S
H2		0.97	0.8	0.801	0.112	1.512	S
H3		13.9	12	11.965	1.008	1.919	Q
H4		1.2	1.1	1.061	0.156	0.886	S
H1	Pb	26.9	25	24.381	1.704	1.478	S
H2		2.13	2	1.886	0.278	0.877	S
H3		20.7	19.5	19.396	1.202	1.085	S
H4		0.99	0.9	0.902	0.118	0.749	S
H1	Zn	123	130	128.515	5.494	-1.004	S
H2		10.8	10	10.135	1.777	0.374	S
H3		152	135	135.287	7.75	2.156	S
H4		9.03	9	9.387	1.107	-0.322	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 124, Laboratorium voor Bondemkunde, Gent (Belgium)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	< 15.000	11	10.819	0.768		B
H2		< 15.000	0.8	0.768	0.152		B
H3		< 15.000	9	8.923	0.562		B
H4		< 15.000	1.5	1.439	0.218		B
H1	Cd	< 2.000	0.7	0.7	0.051		B
H2		< 2.000	0.1	0.095	0.021		B
H3		< 2.000	0.9	0.885	0.075		B
H4		< 2.000	0.09	0.088	0.012		B
H1	Cr	8.4	8.5	8.26	0.647	0.217	S
H2		< 2.000	0.9	0.885	0.101		B
H3		4.7	4.5	4.464	0.55	0.428	S
H4		< 2.000	0.6	0.6	0.072		B
H1	Cu	14.4	15	14.817	1.167	-0.357	S
H2		< 2.000	0.85	0.848	0.203		B
H3		11.9	12.5	12.362	1.011	-0.457	S
H4		< 2.000	1	0.979	0.148		B
H1	Ni	8.8	9	8.971	0.453	-0.377	S
H2		< 2.000	0.8	0.801	0.112		B
H3		11.8	12	11.965	1.008	-0.163	S
H4		< 2.000	1.1	1.061	0.156		B
H1	Pb	25.6	25	24.381	1.704	0.715	S
H2		< 5.000	2	1.886	0.278		B
H3		19.7	19.5	19.396	1.202	0.253	S
H4		< 5.000	0.9	0.902	0.118		B
H1	Zn	128.4	130	128.515	5.494	-0.021	S
H2		10.7	10	10.135	1.777	0.318	S
H3		134.2	135	135.287	7.75	-0.14	S
H4		9	9	9.387	1.107	-0.349	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 125, Bayerisches Landesamt für Umweltschutz, Augsburg (Germany)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	13.2	11	10.819	0.768	3.1	Q
H2		0.945	0.8	0.768	0.152	1.163	S
H3		10.4	9	8.923	0.562	2.625	Q
H4		1.75	1.5	1.439	0.218	1.427	Q
H1	Cd	0.785	0.7	0.7	0.051	1.681	S
H2		0.106	0.1	0.095	0.021	0.526	S
H3		0.963	0.9	0.885	0.075	1.049	S
H4		0.101	0.09	0.088	0.012	1.072	S
H1	Cr	9.09	8.5	8.26	0.647	1.283	S
H2		0.931	0.9	0.885	0.101	0.454	S
H3		4.62	4.5	4.464	0.55	0.283	S
H4		0.626	0.6	0.6	0.072	0.357	S
H1	Cu	16.8	15	14.817	1.167	1.699	S
H2		1.02	0.85	0.848	0.203	0.848	S
H3		13.5	12.5	12.362	1.011	1.126	S
H4		1.17	1	0.979	0.148	1.29	S
H1	Ni	9.53	9	8.971	0.453	1.234	S
H2		0.835	0.8	0.801	0.112	0.307	S
H3		12.2	12	11.965	1.008	0.234	S
H4		1.13	1.1	1.061	0.156	0.438	S
H1	Pb	26.5	25	24.381	1.704	1.243	S
H2		2.06	2	1.886	0.278	0.625	S
H3		19.8	19.5	19.396	1.202	0.336	S
H4		0.922	0.9	0.902	0.118	0.171	S
H1	Zn	161	130	128.515	5.494	5.912	Q
H2		12.5	10	10.135	1.777	1.331	S
H3		162	135	135.287	7.75	3.447	Q
H4		11.1	9	9.387	1.107	1.548	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 132, Comision Chilena de Energia Nuclear (Chile)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	< 1.000	11	10.819	0.768		B
H2		< 1.000	0.8	0.768	0.152		B
H3		< 1.000	9	8.923	0.562		B
H4		< 1.000	1.5	1.439	0.218		B
H1	Cd	< 1.000	0.7	0.7	0.051		B
H2		< 1.000	0.1	0.095	0.021		B
H3		< 1.000	0.9	0.885	0.075		B
H4		< 1.000	0.09	0.088	0.012		B
H1	Cr	8.2	8.5	8.26	0.647	-0.092	S
H2		< 5.000	0.9	0.885	0.101		B
H3		4.4	4.5	4.464	0.55	-0.117	S
H4		< 5.000	0.6	0.6	0.072		B
H1	Cu	15.7	15	14.817	1.167	0.757	S
H2		< 5.000	0.85	0.848	0.203		B
H3		13.4	12.5	12.362	1.011	1.027	S
H4		< 5.000	1	0.979	0.148		B
H1	Ni	9.7	9	8.971	0.453	1.609	S
H2		< 5.000	0.8	0.801	0.112		B
H3		13.5	12	11.965	1.008	1.523	S
H4		< 5.000	1.1	1.061	0.156		B
H1	Pb	23	25	24.381	1.704	-0.811	S
H2		< 5.000	2	1.886	0.278		B
H3		18	19.5	19.396	1.202	-1.162	S
H4		< 5.000	0.9	0.902	0.118		B
H1	Zn	122	130	128.515	5.494	-1.186	S
H2		9.5	10	10.135	1.777	-0.357	S
H3		126	135	135.287	7.75	-1.198	S
H4		8.4	9	9.387	1.107	-0.891	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 141, Marine Division, Global Environment and Marine Department, Japan Meteorological Agency, Tokyo (Japan)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	-999	11	10.819	0.768		B
H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.688	0.7	0.7	0.051	-0.226	S
H2		0.092	0.1	0.095	0.021	-0.138	S
H3		0.842	0.9	0.885	0.075	-0.57	S
H4		0.08	0.09	0.088	0.012	-0.622	S
H1	Cr	-999	8.5	8.26	0.647		B
H2		-999	0.9	0.885	0.101		B
H3		-999	4.5	4.464	0.55		B
H4		-999	0.6	0.6	0.072		B
H1	Cu	-999	15	14.817	1.167		B
H2		-999	0.85	0.848	0.203		B
H3		-999	12.5	12.362	1.011		B
H4		-999	1	0.979	0.148		B
H1	Ni	-999	9	8.971	0.453		B
H2		-999	0.8	0.801	0.112		B
H3		-999	12	11.965	1.008		B
H4		-999	1.1	1.061	0.156		B
H1	Pb	-999	25	24.381	1.704		B
H2		-999	2	1.886	0.278		B
H3		-999	19.5	19.396	1.202		B
H4		-999	0.9	0.902	0.118		B
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 145, Estonian Environmental Research Centre, Tartu laboratory (Estonia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.1	11	10.819	0.768	0.366	S
H2		0.801	0.8	0.768	0.152	0.216	S
H3		9.01	9	8.923	0.562	0.154	S
H4		1.52	1.5	1.439	0.218	0.371	S
H1	Cd	0.713	0.7	0.7	0.051	0.265	S
H2		0.099	0.1	0.095	0.021	0.189	S
H3		0.899	0.9	0.885	0.075	0.193	S
H4		0.09	0.09	0.088	0.012	0.209	S
H1	Cr	8.79	8.5	8.26	0.647	0.82	S
H2		0.888	0.9	0.885	0.101	0.028	S
H3		4.37	4.5	4.464	0.55	-0.172	S
H4		0.57	0.6	0.6	0.072	-0.417	S
H1	Cu	16.3	15	14.817	1.167	1.271	S
H2		< 1.000	0.85	0.848	0.203		B
H3		12.7	12.5	12.362	1.011	0.334	S
H4		1.02	1	0.979	0.148	0.279	S
H1	Ni	9.63	9	8.971	0.453	1.455	S
H2		0.815	0.8	0.801	0.112	0.128	S
H3		12	12	11.965	1.008	0.035	S
H4		1.13	1.1	1.061	0.156	0.438	S
H1	Pb	26.3	25	24.381	1.704	1.126	S
H2		1.99	2	1.886	0.278	0.373	S
H3		19.6	19.5	19.396	1.202	0.169	S
H4		0.907	0.9	0.902	0.118	0.043	S
H1	Zn	128	130	128.515	5.494	-0.094	S
H2		9.45	10	10.135	1.777	-0.386	S
H3		131	135	135.287	7.75	-0.553	S
H4		8.61	9	9.387	1.107	-0.702	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 146, Cellule de Recherche en Environnement et Biotechnologies Public Research Center- Gabriel Lippm (Luxembourg)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	10.85	11	10.819	0.768	0.04	S
H2		0.806	0.8	0.768	0.152	0.249	S
H3		9.066	9	8.923	0.562	0.254	S
H4		1.516	1.5	1.439	0.218	0.353	S
H1	Cd	0.684	0.7	0.7	0.051	-0.305	S
H2		0.1	0.1	0.095	0.021	0.241	S
H3		0.897	0.9	0.885	0.075	0.166	S
H4		0.089	0.09	0.088	0.012	0.104	S
H1	Cr	8.204	8.5	8.26	0.647	-0.086	S
H2		0.9	0.9	0.885	0.101	0.147	S
H3		4.333	4.5	4.464	0.55	-0.239	S
H4		0.616	0.6	0.6	0.072	0.219	S
H1	Cu	14.48	15	14.817	1.167	-0.289	S
H2		0.72	0.85	0.848	0.203	-0.63	S
H3		12.42	12.5	12.362	1.011	0.057	S
H4		0.917	1	0.979	0.148	-0.414	S
H1	Ni	8.829	9	8.971	0.453	-0.313	S
H2		0.782	0.8	0.801	0.112	-0.167	S
H3		11.97	12	11.965	1.008	0.005	S
H4		1.128	1.1	1.061	0.156	0.425	S
H1	Pb	25.34	25	24.381	1.704	0.563	S
H2		1.999	2	1.886	0.278	0.406	S
H3		19.96	19.5	19.396	1.202	0.469	S
H4		0.911	0.9	0.902	0.118	0.077	S
H1	Zn	135	130	128.515	5.494	1.18	S
H2		10.8	10	10.135	1.777	0.374	S
H3		143.2	135	135.287	7.75	1.021	S
H4		9.607	9	9.387	1.107	0.199	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 165, Institute of Meteorology and Hydrology, Ha Noi city (Vietnam)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	8.8	11	10.819	0.768	-2.629	Q
H2		0.66	0.8	0.768	0.152	-0.711	S
H3		7.04	9	8.923	0.562	-3.348	Q
H4		0.88	1.5	1.439	0.218	-2.569	U
H1	Cd	0.81	0.7	0.7	0.051	2.173	Q
H2		0.07	0.1	0.095	0.021	-1.182	Q
H3		0.43	0.9	0.885	0.075	-6.081	U
H4		0.09	0.09	0.088	0.012	0.185	S
H1	Cr	9.32	8.5	8.26	0.647	1.639	S
H2		0.98	0.9	0.885	0.101	0.94	S
H3		7.02	4.5	4.464	0.55	4.647	U
H4		0.66	0.6	0.6	0.072	0.827	S
H1	Cu	9.72	15	14.817	1.167	-4.368	U
H2		1.84	0.85	0.848	0.203	4.889	U
H3		14.88	12.5	12.362	1.011	2.491	Q
H4		1.8	1	0.979	0.148	5.533	U
H1	Ni	7.44	9	8.971	0.453	-3.379	Q
H2		1.3	0.8	0.801	0.112	4.459	U
H3		8.39	12	11.965	1.008	-3.545	U
H4		0.84	1.1	1.061	0.156	-1.416	Q
H1	Pb	32.73	25	24.381	1.704	4.9	U
H2		1.17	2	1.886	0.278	-2.575	Q
H3		22.31	19.5	19.396	1.202	2.425	S
H4		1.59	0.9	0.902	0.118	5.849	U
H1	Zn	123.1	130	128.515	5.494	-0.986	S
H2		6.48	10	10.135	1.777	-2.057	Q
H3		110.6	135	135.287	7.75	-3.185	Q
H4		9.94	9	9.387	1.107	0.5	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 166, Forest Research Institute, Laboratory of Forest Environment Chemistry (Poland)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	-999	11	10.819	0.768		B
H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.69	0.7	0.7	0.051	-0.187	S
H2		< 0.500	0.1	0.095	0.021		B
H3		0.9	0.9	0.885	0.075	0.206	S
H4		< 0.500	0.09	0.088	0.012		B
H1	Cr	-999	8.5	8.26	0.647		B
H2		-999	0.9	0.885	0.101		B
H3		-999	4.5	4.464	0.55		B
H4		-999	0.6	0.6	0.072		B
H1	Cu	14.56	15	14.817	1.167	-0.22	S
H2		< 9.000	0.85	0.848	0.203		B
H3		12.08	12.5	12.362	1.011	-0.279	S
H4		< 9.000	1	0.979	0.148		B
H1	Ni	-999	9	8.971	0.453		B
H2		-999	0.8	0.801	0.112		B
H3		-999	12	11.965	1.008		B
H4		-999	1.1	1.061	0.156		B
H1	Pb	24.8	25	24.381	1.704	0.246	S
H2		< 10.000	2	1.886	0.278		B
H3		19.41	19.5	19.396	1.202	0.011	S
H4		< 10.000	0.9	0.902	0.118		B
H1	Zn	128.61	130	128.515	5.494	0.017	S
H2		10.31	10	10.135	1.777	0.098	S
H3		132.66	135	135.287	7.75	-0.339	S
H4		9	9	9.387	1.107	-0.349	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

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U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 169, Lancaster Environment Centre, Centre for Ecology and Hydrology (United Kingdom)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.1	11	10.819	0.768	0.366	S
H2		0.789	0.8	0.768	0.152	0.138	S
H3		9.08	9	8.923	0.562	0.279	S
H4		1.5	1.5	1.439	0.218	0.279	S
H1	Cd	0.744	0.7	0.7	0.051	0.875	S
H2		0.106	0.1	0.095	0.021	0.526	S
H3		0.951	0.9	0.885	0.075	0.889	S
H4		0.097	0.09	0.088	0.012	0.774	S
H1	Cr	8.82	8.5	8.26	0.647	0.866	S
H2		0.942	0.9	0.885	0.101	0.563	S
H3		4.73	4.5	4.464	0.55	0.483	S
H4		0.611	0.6	0.6	0.072	0.15	S
H1	Cu	15.3	15	14.817	1.167	0.414	S
H2		0.917	0.85	0.848	0.203	0.34	S
H3		12.9	12.5	12.362	1.011	0.532	S
H4		1.06	1	0.979	0.148	0.549	S
H1	Ni	9.26	9	8.971	0.453	0.638	S
H2		0.875	0.8	0.801	0.112	0.664	S
H3		12.9	12	11.965	1.008	0.928	S
H4		1.27	1.1	1.061	0.156	1.333	Q
H1	Pb	25.5	25	24.381	1.704	0.657	S
H2		2.06	2	1.886	0.278	0.625	S
H3		19.7	19.5	19.396	1.202	0.253	S
H4		0.922	0.9	0.902	0.118	0.171	S
H1	Zn	133	130	128.515	5.494	0.816	S
H2		11.3	10	10.135	1.777	0.656	S
H3		138	135	135.287	7.75	0.35	S
H4		10.4	9	9.387	1.107	0.915	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 171, Ecole de Mines de Douai, Department Chimie et Environnement (France)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	12.012	11	10.819	0.768	1.553	S
H2		0.863	0.8	0.768	0.152	0.624	S
H3		9.817	9	8.923	0.562	1.589	S
H4		1.629	1.5	1.439	0.218	0.872	S
H1	Cd	0.76	0.7	0.7	0.051	1.19	S
H2		0.111	0.1	0.095	0.021	0.763	S
H3		0.992	0.9	0.885	0.075	1.437	S
H4		0.096	0.09	0.088	0.012	0.669	S
H1	Cr	8.083	8.5	8.26	0.647	-0.273	S
H2		0.809	0.9	0.885	0.101	-0.755	S
H3		4.218	4.5	4.464	0.55	-0.448	S
H4		0.551	0.6	0.6	0.072	-0.68	S
H1	Cu	15.288	15	14.817	1.167	0.404	S
H2		0.856	0.85	0.848	0.203	0.04	S
H3		12.712	12.5	12.362	1.011	0.346	S
H4		1.018	1	0.979	0.148	0.266	S
H1	Ni	9.243	9	8.971	0.453	0.6	S
H2		0.824	0.8	0.801	0.112	0.208	S
H3		12.172	12	11.965	1.008	0.206	S
H4		1.136	1.1	1.061	0.156	0.477	S
H1	Pb	25.551	25	24.381	1.704	0.686	S
H2		2.042	2	1.886	0.278	0.56	S
H3		20.102	19.5	19.396	1.202	0.587	S
H4		0.934	0.9	0.902	0.118	0.273	S
H1	Zn	143.715	130	128.515	5.494	2.766	S
H2		11.108	10	10.135	1.777	0.548	S
H3		150.532	135	135.287	7.75	1.967	S
H4		10.063	9	9.387	1.107	0.611	S

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 174, Background Monitoring Department, Institute of Global Climate and Ecology (IGCE), Moscow (Russian Federation)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	-999	11	10.819	0.768		B
H2		-999	0.8	0.768	0.152		B
H3		-999	9	8.923	0.562		B
H4		-999	1.5	1.439	0.218		B
H1	Cd	0.51	0.7	0.7	0.051	-3.727	Q
H2		0.085	0.1	0.095	0.021	-0.47	S
H3		0.76	0.9	0.885	0.075	-1.667	Q
H4		0.076	0.09	0.088	0.012	-0.944	S
H1	Cr	-999	8.5	8.26	0.647		B
H2		-999	0.9	0.885	0.101		B
H3		-999	4.5	4.464	0.55		B
H4		-999	0.6	0.6	0.072		B
H1	Cu	10.8	15	14.817	1.167	-3.442	Q
H2		0.6	0.85	0.848	0.203	-1.222	Q
H3		7.4	12.5	12.362	1.011	-4.909	U
H4		0.85	1	0.979	0.148	-0.866	S
H1	Ni	-999	9	8.971	0.453		B
H2		-999	0.8	0.801	0.112		B
H3		-999	12	11.965	1.008		B
H4		-999	1.1	1.061	0.156		B
H1	Pb	20	25	24.381	1.704	-2.572	Q
H2		2	2	1.886	0.278	0.409	S
H3		17.4	19.5	19.396	1.202	-1.661	S
H4		0.76	0.9	0.902	0.118	-1.206	S
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 178, Environmental Chemistry and EANET Monitoring Laboratory, Limnological Institute RAS/SB, Irkutsk (Russian Federation)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm [⌘]
H1	As	11.89	11	10.819	0.768	1.394	S
H2		0.91	0.8	0.768	0.152	0.933	S
H3		9.43	9	8.923	0.562	0.901	S
H4		1.63	1.5	1.439	0.218	0.876	S
H1	Cd	0.67	0.7	0.7	0.051	-0.58	S
H2		0.1	0.1	0.095	0.021	0.241	S
H3		0.91	0.9	0.885	0.075	0.34	S
H4		0.09	0.09	0.088	0.012	0.185	S
H1	Cr	6.65	8.5	8.26	0.647	-2.488	Q
H2		0.68	0.9	0.885	0.101	-2.034	S
H3		3.54	4.5	4.464	0.55	-1.681	Q
H4		0.45	0.6	0.6	0.072	-2.076	S
H1	Cu	11.74	15	14.817	1.167	-2.637	Q
H2		0.67	0.85	0.848	0.203	-0.877	S
H3		10.26	12.5	12.362	1.011	-2.079	Q
H4		0.78	1	0.979	0.148	-1.337	S
H1	Ni	7.2	9	8.971	0.453	-3.909	Q
H2		0.67	0.8	0.801	0.112	-1.167	S
H3		10.06	12	11.965	1.008	-1.889	Q
H4		0.92	1.1	1.061	0.156	-0.905	Q
H1	Pb	18.7	25	24.381	1.704	-3.335	Q
H2		1.53	2	1.886	0.278	-1.281	S
H3		14.82	19.5	19.396	1.202	-3.809	Q
H4		0.68	0.9	0.902	0.118	-1.886	S
H1	Zn	135.24	130	128.515	5.494	1.224	S
H2		10.75	10	10.135	1.777	0.346	S
H3		143.83	135	135.287	7.75	1.102	S
H4		9.72	9	9.387	1.107	0.301	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

⌘ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 179, Murmansk Environmental Monitoring Center, Murmansk (Russian Federation)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.098	11	10.819	0.768	0.363	S
H2		0.577	0.8	0.768	0.152	-1.257	Q
H3		6.872	9	8.923	0.562	-3.647	Q
H4		1.48	1.5	1.439	0.218	0.187	S
H1	Cd	0.812	0.7	0.7	0.051	2.212	Q
H2		0.112	0.1	0.095	0.021	0.811	S
H3		1.006	0.9	0.885	0.075	1.624	S
H4		0.089	0.09	0.088	0.012	0.104	S
H1	Cr	24.24	8.5	8.26	0.647	24.701	U
H2		1.072	0.9	0.885	0.101	1.852	S
H3		10.76	4.5	4.464	0.55	11.448	U
H4		0.854	0.6	0.6	0.072	3.51	Q
H1	Cu	15.78	15	14.817	1.167	0.825	S
H2		0.907	0.85	0.848	0.203	0.291	S
H3		13.02	12.5	12.362	1.011	0.651	S
H4		1.153	1	0.979	0.148	1.175	S
H1	Ni	8.17	9	8.971	0.453	-1.768	S
H2		0.57	0.8	0.801	0.112	-2.06	Q
H3		10.74	12	11.965	1.008	-1.214	S
H4		0.84	1.1	1.061	0.156	-1.416	Q
H1	Pb	32.49	25	24.381	1.704	4.759	Q
H2		2.042	2	1.886	0.278	0.56	S
H3		21.34	19.5	19.396	1.202	1.617	S
H4		1.071	0.9	0.902	0.118	1.437	S
H1	Zn	122.8	130	128.515	5.494	-1.04	S
H2		9.23	10	10.135	1.777	-0.509	S
H3		130.35	135	135.287	7.75	-0.637	S
H4		8.16	9	9.387	1.107	-1.108	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

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U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 181, TNO innovation for life (The Netherlands)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11	11	10.819	0.768	0.235	S
H2		0.84	0.8	0.768	0.152	0.473	S
H3		9	9	8.923	0.562	0.136	S
H4		1.5	1.5	1.439	0.218	0.279	S
H1	Cd	0.72	0.7	0.7	0.051	0.403	S
H2		0.12	0.1	0.095	0.021	1.19	S
H3		0.9	0.9	0.885	0.075	0.206	S
H4		0.11	0.09	0.088	0.012	1.798	S
H1	Cr	8.2	8.5	8.26	0.647	-0.092	S
H2		0.9	0.9	0.885	0.101	0.147	S
H3		4.4	4.5	4.464	0.55	-0.117	S
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	15	15	14.817	1.167	0.157	S
H2		0.9	0.85	0.848	0.203	0.257	S
H3		13	12.5	12.362	1.011	0.631	S
H4		1.1	1	0.979	0.148	0.818	S
H1	Ni	8.9	9	8.971	0.453	-0.157	S
H2		0.8	0.8	0.801	0.112	-0.006	S
H3		12	12	11.965	1.008	0.035	S
H4		1.1	1.1	1.061	0.156	0.246	S
H1	Pb	24	25	24.381	1.704	-0.224	S
H2		2	2	1.886	0.278	0.409	S
H3		19	19.5	19.396	1.202	-0.33	S
H4		0.9	0.9	0.902	0.118	-0.016	S
H1	Zn	131	130	128.515	5.494	0.452	S
H2		12	10	10.135	1.777	1.05	S
H3		136	135	135.287	7.75	0.092	S
H4		9	9	9.387	1.107	-0.349	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

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U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 184, Institute for Public Health Pozarevac (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.64	11	10.819	0.768	-0.233	S
H2		< 2.000	0.8	0.768	0.152		B
H3		8.44	9	8.923	0.562	-0.859	S
H4		< 2.000	1.5	1.439	0.218		B
H1	Cd	0.715	0.7	0.7	0.051	0.305	S
H2		< 0.100	0.1	0.095	0.021	-2.131	Q
H3		0.924	0.9	0.885	0.075	0.527	S
H4		< 0.100	0.09	0.088	0.012		B
H1	Cr	8.54	8.5	8.26	0.647	0.433	S
H2		1.35	0.9	0.885	0.101	4.607	U
H3		5.11	4.5	4.464	0.55	1.174	S
H4		< 1.000	0.6	0.6	0.072		B
H1	Cu	-999	15	14.817	1.167		B
H2		-999	0.85	0.848	0.203		B
H3		-999	12.5	12.362	1.011		B
H4		-999	1	0.979	0.148		B
H1	Ni	9.24	9	8.971	0.453	0.594	S
H2		< 2.000	0.8	0.801	0.112		B
H3		12.79	12	11.965	1.008	0.819	S
H4		< 2.000	1.1	1.061	0.156		B
H1	Pb	-999	25	24.381	1.704		B
H2		-999	2	1.886	0.278		B
H3		-999	19.5	19.396	1.202		B
H4		-999	0.9	0.902	0.118		B
H1	Zn	125	130	128.515	5.494	-0.64	S
H2		< 10.000	10	10.135	1.777	-2.89	Q
H3		138	135	135.287	7.75	0.35	S
H4		< 10.000	9	9.387	1.107		B

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

- S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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- U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3
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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 187, Public Health Institute - Nis, Department for Sanitary Chemistry (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.4	11	10.819	0.768	-0.546	S
H2		1.1	0.8	0.768	0.152	2.183	Q
H3		8.6	9	8.923	0.562	-0.575	S
H4		1.4	1.5	1.439	0.218	-0.18	S
H1	Cd	0.5	0.7	0.7	0.051	-3.924	Q
H2		< 0.500	0.1	0.095	0.021		B
H3		0.7	0.9	0.885	0.075	-2.469	Q
H4		< 0.500	0.09	0.088	0.012		B
H1	Cr	8.6	8.5	8.26	0.647	0.526	S
H2		1.1	0.9	0.885	0.101	2.129	S
H3		8.2	4.5	4.464	0.55	6.793	U
H4		1.2	0.6	0.6	0.072	8.294	U
H1	Cu	16	15	14.817	1.167	1.014	S
H2		< 4.000	0.85	0.848	0.203		B
H3		12	12.5	12.362	1.011	-0.358	S
H4		< 4.000	1	0.979	0.148		B
H1	Ni	8.9	9	8.971	0.453	-0.157	S
H2		< 2.000	0.8	0.801	0.112		B
H3		11.9	12	11.965	1.008	-0.064	S
H4		11.5	1.1	1.061	0.156	66.755	U
H1	Pb	22.7	25	24.381	1.704	-0.987	S
H2		2	2	1.886	0.278	0.409	S
H3		18.5	19.5	19.396	1.202	-0.746	S
H4		1	0.9	0.902	0.118	0.834	S
H1	Zn	135	130	128.515	5.494	1.18	S
H2		24	10	10.135	1.777	7.804	U
H3		154	135	135.287	7.75	2.415	S
H4		23	9	9.387	1.107	12.299	U

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 189, Institute of Public Health - Kikinda (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.54	11	10.819	0.768	-0.364	S
H2		< 2.000	0.8	0.768	0.152		B
H3		8.263	9	8.923	0.562	-1.174	S
H4		< 2.000	1.5	1.439	0.218		B
H1	Cd	0.689	0.7	0.7	0.051	-0.207	S
H2		< 0.100	0.1	0.095	0.021	-2.131	Q
H3		0.903	0.9	0.885	0.075	0.246	S
H4		< 0.100	0.09	0.088	0.012		B
H1	Cr	8.613	8.5	8.26	0.647	0.546	S
H2		1.32	0.9	0.885	0.101	4.31	Q
H3		4.984	4.5	4.464	0.55	0.945	S
H4		< 1.000	0.6	0.6	0.072		B
H1	Cu	-999	15	14.817	1.167		B
H2		-999	0.85	0.848	0.203		B
H3		-999	12.5	12.362	1.011		B
H4		-999	1	0.979	0.148		B
H1	Ni	8.968	9	8.971	0.453	-0.007	S
H2		< 2.000	0.8	0.801	0.112		B
H3		12.28	12	11.965	1.008	0.313	S
H4		< 2.000	1.1	1.061	0.156		B
H1	Pb	-999	25	24.381	1.704		B
H2		-999	2	1.886	0.278		B
H3		-999	19.5	19.396	1.202		B
H4		-999	0.9	0.902	0.118		B
H1	Zn	123	130	128.515	5.494	-1.004	S
H2		< 10.000	10	10.135	1.777	-2.89	Q
H3		135	135	135.287	7.75	-0.037	S
H4		< 10.000	9	9.387	1.107		B

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 191, Institute for Public Health - Pancevo (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	< 1.000	11	10.819	0.768	-13.436	U
H2		7.8	0.8	0.768	0.152	46.245	U
H3		-999	9	8.923	0.562		B
H4		1.1	1.5	1.439	0.218	-1.558	Q
H1	Cd	0.78	0.7	0.7	0.051	1.583	S
H2		-999	0.1	0.095	0.021		B
H3		-999	0.9	0.885	0.075		B
H4		-999	0.09	0.088	0.012		B
H1	Cr	-999	8.5	8.26	0.647		B
H2		-999	0.9	0.885	0.101		B
H3		-999	4.5	4.464	0.55		B
H4		-999	0.6	0.6	0.072		B
H1	Cu	17.2	15	14.817	1.167	2.042	S
H2		-999	0.85	0.848	0.203		B
H3		-999	12.5	12.362	1.011		B
H4		-999	1	0.979	0.148		B
H1	Ni	7.8	9	8.971	0.453	-2.585	S
H2		-999	0.8	0.801	0.112		B
H3		-999	12	11.965	1.008		B
H4		-999	1.1	1.061	0.156		B
H1	Pb	25	25	24.381	1.704	0.363	S
H2		-999	2	1.886	0.278		B
H3		-999	19.5	19.396	1.202		B
H4		-999	0.9	0.902	0.118		B
H1	Zn	-999	130	128.515	5.494		B
H2		-999	10	10.135	1.777		B
H3		-999	135	135.287	7.75		B
H4		-999	9	9.387	1.107		B

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

^x EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than ±25% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

Q – Questionable: Your result deviates between ±25-50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

U – Unsatisfactory: Your result deviates more than ±50% of the expected value for samples H2 and H4, and less than ±15% for samples H1 and H3

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 194, Institute of Public Health - Zrenjanin (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	11.2	11	10.819	0.768	0.496	S
H2		< 5.000	0.8	0.768	0.152		B
H3		9.7	9	8.923	0.562	1.381	S
H4		< 5.000	1.5	1.439	0.218		B
H1	Cd	0.7	0.7	0.7	0.051	0.01	S
H2		< 0.400	0.1	0.095	0.021		B
H3		0.9	0.9	0.885	0.075	0.206	S
H4		< 0.400	0.09	0.088	0.012		B
H1	Cr	8.5	8.5	8.26	0.647	0.371	S
H2		0.97	0.9	0.885	0.101	0.841	S
H3		4.4	4.5	4.464	0.55	-0.117	S
H4		< 0.800	0.6	0.6	0.072		B
H1	Cu	14.4	15	14.817	1.167	-0.357	S
H2		< 3.000	0.85	0.848	0.203		B
H3		11.7	12.5	12.362	1.011	-0.655	S
H4		< 3.000	1	0.979	0.148		B
H1	Ni	8.9	9	8.971	0.453	-0.157	S
H2		< 1.000	0.8	0.801	0.112		B
H3		11.9	12	11.965	1.008	-0.064	S
H4		1.15	1.1	1.061	0.156	0.566	S
H1	Pb	25.3	25	24.381	1.704	0.539	S
H2		< 4.000	2	1.886	0.278		B
H3		20	19.5	19.396	1.202	0.502	S
H4		< 4.000	0.9	0.902	0.118		B
H1	Zn	126.7	130	128.515	5.494	-0.33	S
H2		8.4	10	10.135	1.777	-0.977	S
H3		132.8	135	135.287	7.75	-0.321	S
H4		7.2	9	9.387	1.107	-1.976	S

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EMEP – Analytical intercomparison of heavy metals in precipitation 2014

Laboratory 195, Institute of Public Health - Suobtica (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	10.35	11	10.819	0.768	-0.611	S
H2		0.75	0.8	0.768	0.152	-0.119	S
H3		9.5	9	8.923	0.562	1.025	S
H4		1.88	1.5	1.439	0.218	2.025	Q
H1	Cd	0.7	0.7	0.7	0.051	0.01	S
H2		0.48	0.1	0.095	0.021	18.272	U
H3		0.88	0.9	0.885	0.075	-0.061	S
H4		0.48	0.09	0.088	0.012	31.638	U
H1	Cr	7.97	8.5	8.26	0.647	-0.448	S
H2		0.6	0.9	0.885	0.101	-2.827	Q
H3		3.79	4.5	4.464	0.55	-1.226	Q
H4		0.6	0.6	0.6	0.072	-0.002	S
H1	Cu	15.21	15	14.817	1.167	0.337	S
H2		1.32	0.85	0.848	0.203	2.326	U
H3		12.72	12.5	12.362	1.011	0.354	S
H4		1.32	1	0.979	0.148	2.3	Q
H1	Ni	8.59	9	8.971	0.453	-0.841	S
H2		1.03	0.8	0.801	0.112	2.048	Q
H3		11.55	12	11.965	1.008	-0.411	S
H4		1.23	1.1	1.061	0.156	1.078	S
H1	Pb	23.18	25	24.381	1.704	-0.705	S
H2		1.31	2	1.886	0.278	-2.071	Q
H3		17.55	19.5	19.396	1.202	-1.537	S
H4		1.31	0.9	0.902	0.118	3.469	Q
H1	Zn	125.93	130	128.515	5.494	-0.471	S
H2		11	10	10.135	1.777	0.487	S
H3		131.54	135	135.287	7.75	-0.483	S
H4		9.96	9	9.387	1.107	0.518	S

If your laboratory reported values as less than the detection limit, and your detection limit equal or is lower than the expected value, ½ DL is taken as the reported value in further calculations.

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Laboratory 198, Institute for public health - Sremska Mitrovica (Republic of Serbia)

Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
H1	As	9.635	11	10.819	0.768	-1.542	S
H2		0.295	0.8	0.768	0.152	-3.111	U
H3		7.938	9	8.923	0.562	-1.752	S
H4		0.908	1.5	1.439	0.218	-2.44	U
H1	Cd	0.68	0.7	0.7	0.051	-0.384	S
H2		0.15	0.1	0.095	0.021	2.614	Q
H3		0.86	0.9	0.885	0.075	-0.329	S
H4		0.06	0.09	0.088	0.012	-2.235	Q
H1	Cr	-999	8.5	8.26	0.647		B
H2		-999	0.9	0.885	0.101		B
H3		-999	4.5	4.464	0.55		B
H4		-999	0.6	0.6	0.072		B
H1	Cu	11.4	15	14.817	1.167	-2.928	Q
H2		< 1.000	0.85	0.848	0.203		B
H3		9.14	12.5	12.362	1.011	-3.187	Q
H4		< 1.000	1	0.979	0.148	-3.223	Q
H1	Ni	-999	9	8.971	0.453		B
H2		-999	0.8	0.801	0.112		B
H3		-999	12	11.965	1.008		B
H4		-999	1.1	1.061	0.156		B
H1	Pb	19.39	25	24.381	1.704	-2.93	Q
H2		2.2	2	1.886	0.278	1.128	S
H3		17.11	19.5	19.396	1.202	-1.903	S
H4		1.03	0.9	0.902	0.118	1.089	S
H1	Zn	96	130	128.515	5.494	-5.918	Q
H2		< 22.000	10	10.135	1.777		B
H3		103	135	135.287	7.75	-4.166	Q
H4		< 22.000	9	9.387	1.107		B

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