

## EMEP – Analytical intercomparison of heavy metals in precipitation 2016

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 <sup>x</sup>
H1	As	0.716	0.60	0.658	0.135	0.426	S
H2		0.952	0.85	0.962	0.205	-0.048	S
H3		7.84	7.00	6.995	0.356	2.374	S
H4		10.6	9.50	9.513	0.534	2.035	S
H1	Cd	0.102	0.09	0.091	0.008	1.394	S
H2		0.124	0.10	0.102	0.011	2.01	S
H3		1.16	1.00	1.004	0.051	3.081	Q
H4		1.29	1.10	1.11	0.089	2.027	Q
H1	Cr	0.581	0.60	0.578	0.104	0.031	S
H2		0.872	0.90	0.913	0.081	-0.505	S
H3		6.39	6.50	6.53	0.518	-0.269	S
H4		8.85	9.00	9.179	0.58	-0.568	S
H1	Cu	0.856	0.80	0.858	0.173	-0.009	S
H2		1.14	1.10	1.156	0.486	-0.032	S
H3		10.8	10.50	10.376	0.5	0.847	S
H4		11.2	11.00	10.924	0.564	0.49	S
H1	Ni	1.05	1.00	0.971	0.202	0.389	S
H2		1.19	1.10	1.086	0.237	0.438	S
H3		9.1	8.60	8.501	1.557	0.385	S
H4		12.7	12.00	11.89	2.24	0.361	S
H1	Pb	1.33	1.30	1.306	0.109	0.223	S
H2		0.932	0.90	0.926	0.136	0.047	S
H3		18.7	18.00	18.465	1.335	0.176	S
H4		22.9	22.00	22.375	2.003	0.262	S
H1	Zn	13.6	10.50	11.184	3.881	0.623	Q
H2		19.3	15.00	15.182	4.154	0.991	Q
H3		124	95.00	95.929	17.167	1.635	U
H4		163	125.00	125.656	22.913	1.63	U

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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	< 1.500	0.60	0.658	0.135		B
H2		< 1.500	0.85	0.962	0.205		B
H3		6.4	7.00	6.995	0.356	-1.67	S
H4		8.6	9.50	9.513	0.534	-1.708	S
H1	Cd	< 0.350	0.09	0.091	0.008		B
H2		< 3.500	0.10	0.102	0.011		B
H3		0.87	1.00	1.004	0.051	-2.63	S
H4		0.96	1.10	1.11	0.089	-1.687	S
H1	Cr	< 2.000	0.60	0.578	0.104		B
H2		< 2.000	0.90	0.913	0.081		B
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		8.93	9.00	9.179	0.58	-0.43	S
H1	Cu	< 2.500	0.80	0.858	0.173		B
H2		< 2.500	1.10	1.156	0.486		B
H3		9.8	10.50	10.376	0.5	-1.152	S
H4		10.5	11.00	10.924	0.564	-0.751	S
H1	Ni	< 3.000	1.00	0.971	0.202		B
H2		< 3.000	1.10	1.086	0.237		B
H3		7.6	8.60	8.501	1.557	-0.579	S
H4		11.2	12.00	11.89	2.24	-0.308	S
H1	Pb	< 3.000	1.30	1.306	0.109		B
H2		< 3.000	0.90	0.926	0.136		B
H3		19	18.00	18.465	1.335	0.401	S
H4		21.9	22.00	22.375	2.003	-0.237	S
H1	Zn	-999	10.50	11.184	3.881		B
H2		-999	15.00	15.182	4.154		B
H3		-999	95.00	95.929	17.167		B
H4		-999	125.00	125.656	22.913		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 2016

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 <sup>x</sup>
H1	As	0.604	0.60	0.658	0.135	-0.403	S
H2		0.832	0.85	0.962	0.205	-0.633	S
H3		6.89	7.00	6.995	0.356	-0.294	S
H4		9.22	9.50	9.513	0.534	-0.548	S
H1	Cd	0.089	0.09	0.091	0.008	-0.236	S
H2		0.101	0.10	0.102	0.011	-0.114	S
H3		1.01	1.00	1.004	0.051	0.127	S
H4		1.09	1.10	1.11	0.089	-0.224	S
H1	Cr	0.605	0.60	0.578	0.104	0.262	S
H2		0.894	0.90	0.913	0.081	-0.232	S
H3		6.43	6.50	6.53	0.518	-0.192	S
H4		8.78	9.00	9.179	0.58	-0.689	S
H1	Cu	0.814	0.80	0.858	0.173	-0.253	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10.4	10.50	10.376	0.5	0.048	S
H4		10.7	11.00	10.924	0.564	-0.397	S
H1	Ni	1.04	1.00	0.971	0.202	0.34	S
H2		1.12	1.10	1.086	0.237	0.143	S
H3		8.52	8.60	8.501	1.557	0.012	S
H4		11.6	12.00	11.89	2.24	-0.13	S
H1	Pb	1.3	1.30	1.306	0.109	-0.053	S
H2		0.9	0.90	0.926	0.136	-0.188	S
H3		18	18.00	18.465	1.335	-0.348	S
H4		21.8	22.00	22.375	2.003	-0.287	S
H1	Zn	10.7	10.50	11.184	3.881	-0.125	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		94.2	95.00	95.929	17.167	-0.101	S
H4		123	125.00	125.656	22.913	-0.116	S

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## EMEP – Analytical intercomparison of heavy metals in precipitation 2016

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 <sup>x</sup>
H1	As	0.606	0.60	0.658	0.135	-0.388	S
H2		0.84	0.85	0.962	0.205	-0.594	S
H3		6.89	7.00	6.995	0.356	-0.294	S
H4		9.31	9.50	9.513	0.534	-0.38	S
H1	Cd	0.092	0.09	0.091	0.008	0.19	S
H2		0.102	0.10	0.102	0.011	-0.021	S
H3		0.992	1.00	1.004	0.051	-0.228	S
H4		1.1	1.10	1.11	0.089	-0.111	S
H1	Cr	0.601	0.60	0.578	0.104	0.223	S
H2		0.88	0.90	0.913	0.081	-0.406	S
H3		6.36	6.50	6.53	0.518	-0.327	S
H4		8.81	9.00	9.179	0.58	-0.637	S
H1	Cu	0.876	0.80	0.858	0.173	0.106	S
H2		1.12	1.10	1.156	0.486	-0.073	S
H3		10.6	10.50	10.376	0.5	0.448	S
H4		11	11.00	10.924	0.564	0.136	S
H1	Ni	1.02	1.00	0.971	0.202	0.241	S
H2		1.16	1.10	1.086	0.237	0.311	S
H3		8.51	8.60	8.501	1.557	0.006	S
H4		11.8	12.00	11.89	2.24	-0.04	S
H1	Pb	1.31	1.30	1.306	0.109	0.039	S
H2		0.9	0.90	0.926	0.136	-0.188	S
H3		17.8	18.00	18.465	1.335	-0.498	S
H4		21.8	22.00	22.375	2.003	-0.287	S
H1	Zn	10.9	10.50	11.184	3.881	-0.073	S
H2		15.4	15.00	15.182	4.154	0.053	S
H3		97.8	95.00	95.929	17.167	0.109	S
H4		129	125.00	125.656	22.913	0.146	S

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## EMEP – Analytical intercomparison of heavy metals in precipitation 2016

Laboratory 10, Institute for Atmospheric Physics (Hungary)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	0.129	0.09	0.091	0.008	4.779	Q
H2		< 0.110	0.10	0.102	0.011		B
H3		0.85	1.00	1.004	0.051	-3.024	Q
H4		0.96	1.10	1.11	0.089	-1.687	S
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		-999	6.50	6.53	0.518		B
H4		-999	9.00	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		-999	10.50	10.376	0.5		B
H4		-999	11.00	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	1.683	1.30	1.306	0.109	3.471	Q
H2		1.129	0.90	0.926	0.136	1.491	Q
H3		19.119	18.00	18.465	1.335	0.49	S
H4		22.41	22.00	22.375	2.003	0.017	S
H1	Zn	-999	10.50	11.184	3.881		B
H2		-999	15.00	15.182	4.154		B
H3		-999	95.00	95.929	17.167		B
H4		-999	125.00	125.656	22.913		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 2016

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 <sup>x</sup>
H1	As	0.6	0.60	0.658	0.135	-0.433	S
H2		0.84	0.85	0.962	0.205	-0.594	S
H3		6.7	7.00	6.995	0.356	-0.827	S
H4		8.9	9.50	9.513	0.534	-1.147	S
H1	Cd	0.08	0.09	0.091	0.008	-1.364	S
H2		0.09	0.10	0.102	0.011	-1.13	S
H3		0.96	1.00	1.004	0.051	-0.858	S
H4		1	1.10	1.11	0.089	-1.237	S
H1	Cr	0.61	0.60	0.578	0.104	0.31	S
H2		0.9	0.90	0.913	0.081	-0.158	S
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		8.8	9.00	9.179	0.58	-0.654	S
H1	Cu	0.82	0.80	0.858	0.173	-0.218	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10.4	10.50	10.376	0.5	0.048	S
H4		10.7	11.00	10.924	0.564	-0.397	S
H1	Ni	1	1.00	0.971	0.202	0.141	S
H2		1.1	1.10	1.086	0.237	0.058	S
H3		8.6	8.60	8.501	1.557	0.063	S
H4		11.8	12.00	11.89	2.24	-0.04	S
H1	Pb	1.3	1.30	1.306	0.109	-0.053	S
H2		0.91	0.90	0.926	0.136	-0.115	S
H3		18.1	18.00	18.465	1.335	-0.273	S
H4		21.7	22.00	22.375	2.003	-0.337	S
H1	Zn	11	10.50	11.184	3.881	-0.047	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		92	95.00	95.929	17.167	-0.229	S
H4		134	125.00	125.656	22.913	0.364	S

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

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## EMEP – Analytical intercomparison of heavy metals in precipitation 2016

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 <sup>x</sup>
H1	As	0.6	0.60	0.658	0.135	-0.433	S
H2		0.9	0.85	0.962	0.205	-0.301	S
H3		7	7.00	6.995	0.356	0.015	S
H4		9.5	9.50	9.513	0.534	-0.024	S
H1	Cd	0.09	0.09	0.091	0.008	-0.111	S
H2		0.1	0.10	0.102	0.011	-0.206	S
H3		1	1.00	1.004	0.051	-0.07	S
H4		1.2	1.10	1.11	0.089	1.014	S
H1	Cr	0.65	0.60	0.578	0.104	0.696	S
H2		1	0.90	0.913	0.081	1.084	S
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		9.3	9.00	9.179	0.58	0.208	S
H1	Cu	0.85	0.80	0.858	0.173	-0.044	S
H2		1.2	1.10	1.156	0.486	0.091	S
H3		10	10.50	10.376	0.5	-0.752	S
H4		10.5	11.00	10.924	0.564	-0.751	S
H1	Ni	1.1	1.00	0.971	0.202	0.637	S
H2		1.2	1.10	1.086	0.237	0.48	S
H3		8.7	8.60	8.501	1.557	0.128	S
H4		12	12.00	11.89	2.24	0.049	S
H1	Pb	1.3	1.30	1.306	0.109	-0.053	S
H2		0.9	0.90	0.926	0.136	-0.188	S
H3		18.5	18.00	18.465	1.335	0.026	S
H4		22.5	22.00	22.375	2.003	0.062	S
H1	Zn	10	10.50	11.184	3.881	-0.305	S
H2		14	15.00	15.182	4.154	-0.285	S
H3		97	95.00	95.929	17.167	0.062	S
H4		130	125.00	125.656	22.913	0.19	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.

<sup>x</sup> 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 2016

Laboratory 16, Institute of Meteorology and Water Management, Warsaw (Poland)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	0.1	0.09	0.091	0.008	1.143	S
H2		0.11	0.10	0.102	0.011	0.717	S
H3		1.05	1.00	1.004	0.051	0.914	S
H4		1.15	1.10	1.11	0.089	0.451	S
H1	Cr	0.6	0.60	0.578	0.104	0.214	S
H2		0.9	0.90	0.913	0.081	-0.158	S
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		9	9.00	9.179	0.58	-0.309	S
H1	Cu	0.85	0.80	0.858	0.173	-0.044	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10	10.50	10.376	0.5	-0.752	S
H4		11	11.00	10.924	0.564	0.136	S
H1	Ni	1	1.00	0.971	0.202	0.141	S
H2		1.2	1.10	1.086	0.237	0.48	S
H3		8.6	8.60	8.501	1.557	0.063	S
H4		12	12.00	11.89	2.24	0.049	S
H1	Pb	1.3	1.30	1.306	0.109	-0.053	S
H2		0.9	0.90	0.926	0.136	-0.188	S
H3		18	18.00	18.465	1.335	-0.348	S
H4		22	22.00	22.375	2.003	-0.187	S
H1	Zn	10.5	10.50	11.184	3.881	-0.176	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		95	95.00	95.929	17.167	-0.054	S
H4		125	125.00	125.656	22.913	-0.029	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.636	0.60	0.658	0.135	-0.166	S
H2		0.912	0.85	0.962	0.205	-0.243	S
H3		7.06	7.00	6.995	0.356	0.184	S
H4		9.67	9.50	9.513	0.534	0.294	S
H1	Cd	0.098	0.09	0.091	0.008	0.892	S
H2		0.111	0.10	0.102	0.011	0.81	S
H3		1.03	1.00	1.004	0.051	0.52	S
H4		1.14	1.10	1.11	0.089	0.339	S
H1	Cr	0.583	0.60	0.578	0.104	0.05	S
H2		0.89	0.90	0.913	0.081	-0.282	S
H3		6.72	6.50	6.53	0.518	0.368	S
H4		9.14	9.00	9.179	0.58	-0.068	S
H1	Cu	0.787	0.80	0.858	0.173	-0.409	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10.3	10.50	10.376	0.5	-0.152	S
H4		10.6	11.00	10.924	0.564	-0.574	S
H1	Ni	1.05	1.00	0.971	0.202	0.389	S
H2		1.11	1.10	1.086	0.237	0.1	S
H3		8.76	8.60	8.501	1.557	0.166	S
H4		12.1	12.00	11.89	2.24	0.094	S
H1	Pb	1.25	1.30	1.306	0.109	-0.513	S
H2		0.89	0.90	0.926	0.136	-0.261	S
H3		17.5	18.00	18.465	1.335	-0.723	S
H4		21.3	22.00	22.375	2.003	-0.537	S
H1	Zn	11.5	10.50	11.184	3.881	0.081	S
H2		16.6	15.00	15.182	4.154	0.341	S
H3		91.9	95.00	95.929	17.167	-0.235	S
H4		117	125.00	125.656	22.913	-0.378	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.

<sup>x</sup> 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 2016

Laboratory 22, Institute of Global Climate and Ecology (Russian Federation)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	0.055	0.09	0.091	0.008	-4.498	Q
H2		0.069	0.10	0.102	0.011	-3.069	Q
H3		0.84	1.00	1.004	0.051	-3.221	Q
H4		0.93	1.10	1.11	0.089	-2.025	Q
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		-999	6.50	6.53	0.518		B
H4		-999	9.00	9.179	0.58		B
H1	Cu	0.45	0.80	0.858	0.173	-2.36	Q
H2		0.63	1.10	1.156	0.486	-1.081	Q
H3		8.7	10.50	10.376	0.5	-3.35	Q
H4		9.1	11.00	10.924	0.564	-3.235	Q
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	1.16	1.30	1.306	0.109	-1.341	S
H2		0.76	0.90	0.926	0.136	-1.214	S
H3		21.5	18.00	18.465	1.335	2.273	Q
H4		27.1	22.00	22.375	2.003	2.358	Q
H1	Zn	-999	10.50	11.184	3.881		B
H2		-999	15.00	15.182	4.154		B
H3		-999	95.00	95.929	17.167		B
H4		-999	125.00	125.656	22.913		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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	< 1.000	0.60	0.658	0.135		B
H2		1.2	0.85	0.962	0.205	1.161	Q
H3		7	7.00	6.995	0.356	0.015	S
H4		10	9.50	9.513	0.534	0.912	S
H1	Cd	0.13	0.09	0.091	0.008	4.904	Q
H2		0.12	0.10	0.102	0.011	1.641	S
H3		1.06	1.00	1.004	0.051	1.111	S
H4		1.22	1.10	1.11	0.089	1.239	S
H1	Cr	< 0.600	0.60	0.578	0.104	-2.678	Q
H2		< 0.600	0.90	0.913	0.081	-7.606	U
H3		5.9	6.50	6.53	0.518	-1.216	S
H4		8.4	9.00	9.179	0.58	-1.344	S
H1	Cu	< 1.000	0.80	0.858	0.173		B
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10.8	10.50	10.376	0.5	0.847	S
H4		11.7	11.00	10.924	0.564	1.377	S
H1	Ni	< 2.000	1.00	0.971	0.202		B
H2		< 2.000	1.10	1.086	0.237		B
H3		8.3	8.60	8.501	1.557	-0.129	S
H4		11.4	12.00	11.89	2.24	-0.219	S
H1	Pb	1.6	1.30	1.306	0.109	2.707	S
H2		1.1	0.90	0.926	0.136	1.278	S
H3		19.1	18.00	18.465	1.335	0.476	S
H4		23	22.00	22.375	2.003	0.312	S
H1	Zn	0	10.50	11.184	3.881	-2.882	U
H2		0	15.00	15.182	4.154	-3.655	U
H3		98	95.00	95.929	17.167	0.121	S
H4		125	125.00	125.656	22.913	-0.029	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.596	0.60	0.658	0.135	-0.462	S
H2		0.839	0.85	0.962	0.205	-0.599	S
H3		7.002	7.00	6.995	0.356	0.021	S
H4		9.416	9.50	9.513	0.534	-0.181	S
H1	Cd	0.085	0.09	0.091	0.008	-0.737	S
H2		0.093	0.10	0.102	0.011	-0.853	S
H3		0.93	1.00	1.004	0.051	-1.449	S
H4		1.024	1.10	1.11	0.089	-0.967	S
H1	Cr	0.589	0.60	0.578	0.104	0.108	S
H2		0.877	0.90	0.913	0.081	-0.443	S
H3		6.411	6.50	6.53	0.518	-0.229	S
H4		8.852	9.00	9.179	0.58	-0.565	S
H1	Cu	0.744	0.80	0.858	0.173	-0.658	S
H2		1.129	1.10	1.156	0.486	-0.055	S
H3		9.848	10.50	10.376	0.5	-1.056	S
H4		10.36	11.00	10.924	0.564	-1	S
H1	Ni	1.154	1.00	0.971	0.202	0.905	S
H2		1.213	1.10	1.086	0.237	0.535	S
H3		8.555	8.60	8.501	1.557	0.034	S
H4		11.82	12.00	11.89	2.24	-0.031	S
H1	Pb	1.24	1.30	1.306	0.109	-0.605	S
H2		0.804	0.90	0.926	0.136	-0.892	S
H3		17.99	18.00	18.465	1.335	-0.356	S
H4		21.93	22.00	22.375	2.003	-0.222	S
H1	Zn	10.1	10.50	11.184	3.881	-0.279	S
H2		15.2	15.00	15.182	4.154	0.004	S
H3		91.8	95.00	95.929	17.167	-0.24	S
H4		120.9	125.00	125.656	22.913	-0.208	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.5	0.60	0.658	0.135	-1.173	S
H2		0.8	0.85	0.962	0.205	-0.789	S
H3		7	7.00	6.995	0.356	0.015	S
H4		9	9.50	9.513	0.534	-0.96	S
H1	Cd	0.07	0.09	0.091	0.008	-2.618	S
H2		0.09	0.10	0.102	0.011	-1.13	S
H3		1	1.00	1.004	0.051	-0.07	S
H4		1.1	1.10	1.11	0.089	-0.111	S
H1	Cr	0.6	0.60	0.578	0.104	0.214	S
H2		0.9	0.90	0.913	0.081	-0.158	S
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		9.3	9.00	9.179	0.58	0.208	S
H1	Cu	1	0.80	0.858	0.173	0.824	S
H2		1	1.10	1.156	0.486	-0.32	S
H3		11	10.50	10.376	0.5	1.247	S
H4		12	11.00	10.924	0.564	1.91	S
H1	Ni	< 0.900	1.00	0.971	0.202	-2.584	U
H2		< 0.900	1.10	1.086	0.237	-2.683	U
H3		8.5	8.60	8.501	1.557	-0.001	S
H4		11.5	12.00	11.89	2.24	-0.174	S
H1	Pb	1.3	1.30	1.306	0.109	-0.053	S
H2		0.95	0.90	0.926	0.136	0.179	S
H3		20	18.00	18.465	1.335	1.149	S
H4		23	22.00	22.375	2.003	0.312	S
H1	Zn	11	10.50	11.184	3.881	-0.047	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		95	95.00	95.929	17.167	-0.054	S
H4		124	125.00	125.656	22.913	-0.072	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.609	0.60	0.658	0.135	-0.366	S
H2		0.862	0.85	0.962	0.205	-0.487	S
H3		7.05	7.00	6.995	0.356	0.156	S
H4		9.58	9.50	9.513	0.534	0.126	S
H1	Cd	0.09	0.09	0.091	0.008	-0.111	S
H2		0.101	0.10	0.102	0.011	-0.114	S
H3		1.01	1.00	1.004	0.051	0.127	S
H4		1.11	1.10	1.11	0.089	0.001	S
H1	Cr	0.563	0.60	0.578	0.104	-0.143	S
H2		0.857	0.90	0.913	0.081	-0.691	S
H3		6.23	6.50	6.53	0.518	-0.578	S
H4		8.59	9.00	9.179	0.58	-1.016	S
H1	Cu	0.801	0.80	0.858	0.173	-0.328	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10.6	10.50	10.376	0.5	0.448	S
H4		11.2	11.00	10.924	0.564	0.49	S
H1	Ni	1.08	1.00	0.971	0.202	0.538	S
H2		1.61	1.10	1.086	0.237	2.209	U
H3		8.72	8.60	8.501	1.557	0.14	S
H4		12.2	12.00	11.89	2.24	0.138	S
H1	Pb	1.32	1.30	1.306	0.109	0.131	S
H2		0.918	0.90	0.926	0.136	-0.056	S
H3		18.4	18.00	18.465	1.335	-0.049	S
H4		22.4	22.00	22.375	2.003	0.012	S
H1	Zn	10.3	10.50	11.184	3.881	-0.228	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		94.2	95.00	95.929	17.167	-0.101	S
H4		125	125.00	125.656	22.913	-0.029	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.

<sup>x</sup> 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

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 2016

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 <sup>x</sup>
H1	As	0.59	0.60	0.658	0.135	-0.507	S
H2		0.91	0.85	0.962	0.205	-0.253	S
H3		6.89	7.00	6.995	0.356	-0.294	S
H4		9.79	9.50	9.513	0.534	0.519	S
H1	Cd	0.08	0.09	0.091	0.008	-1.364	S
H2		0.09	0.10	0.102	0.011	-1.13	S
H3		0.99	1.00	1.004	0.051	-0.267	S
H4		1.11	1.10	1.11	0.089	0.001	S
H1	Cr	0.52	0.60	0.578	0.104	-0.557	S
H2		0.87	0.90	0.913	0.081	-0.53	S
H3		6.24	6.50	6.53	0.518	-0.559	S
H4		9.03	9.00	9.179	0.58	-0.258	S
H1	Cu	< 1.000	0.80	0.858	0.173		B
H2		< 1.000	1.10	1.156	0.486	-1.348	U
H3		9.19	10.50	10.376	0.5	-2.371	S
H4		10.3	11.00	10.924	0.564	-1.106	S
H1	Ni	0.92	1.00	0.971	0.202	-0.255	S
H2		1.09	1.10	1.086	0.237	0.016	S
H3		8.28	8.60	8.501	1.557	-0.142	S
H4		12.1	12.00	11.89	2.24	0.094	S
H1	Pb	1.15	1.30	1.306	0.109	-1.433	S
H2		0.71	0.90	0.926	0.136	-1.581	S
H3		18.3	18.00	18.465	1.335	-0.124	S
H4		22.9	22.00	22.375	2.003	0.262	S
H1	Zn	10.5	10.50	11.184	3.881	-0.176	S
H2		15.6	15.00	15.182	4.154	0.101	S
H3		96	95.00	95.929	17.167	0.004	S
H4		126	125.00	125.656	22.913	0.015	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.5	0.60	0.658	0.135	-1.173	S
H2		0.9	0.85	0.962	0.205	-0.301	S
H3		7	7.00	6.995	0.356	0.015	S
H4		9	9.50	9.513	0.534	-0.96	S
H1	Cd	0.09	0.09	0.091	0.008	-0.111	S
H2		0.11	0.10	0.102	0.011	0.717	S
H3		1.1	1.00	1.004	0.051	1.899	S
H4		1.3	1.10	1.11	0.089	2.14	Q
H1	Cr	0.6	0.60	0.578	0.104	0.214	S
H2		0.9	0.90	0.913	0.081	-0.158	S
H3		7	6.50	6.53	0.518	0.909	S
H4		9.5	9.00	9.179	0.58	0.553	S
H1	Cu	0.9	0.80	0.858	0.173	0.245	S
H2		1.2	1.10	1.156	0.486	0.091	S
H3		10.7	10.50	10.376	0.5	0.647	S
H4		11	11.00	10.924	0.564	0.136	S
H1	Ni	1	1.00	0.971	0.202	0.141	S
H2		1.2	1.10	1.086	0.237	0.48	S
H3		8.6	8.60	8.501	1.557	0.063	S
H4		12	12.00	11.89	2.24	0.049	S
H1	Pb	1.2	1.30	1.306	0.109	-0.973	S
H2		1	0.90	0.926	0.136	0.545	S
H3		18	18.00	18.465	1.335	-0.348	S
H4		23	22.00	22.375	2.003	0.312	S
H1	Zn	11	10.50	11.184	3.881	-0.047	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		96	95.00	95.929	17.167	0.004	S
H4		125	125.00	125.656	22.913	-0.029	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.

<sup>x</sup> 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 2016

Laboratory 41, Micro Pollutants Technology (France)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	0.719	0.60	0.658	0.135	0.448	S
H2		0.87	0.85	0.962	0.205	-0.448	S
H3		6.89	7.00	6.995	0.356	-0.294	S
H4		9.1	9.50	9.513	0.534	-0.773	S
H1	Cd	0.093	0.09	0.091	0.008	0.265	S
H2		0.131	0.10	0.102	0.011	2.657	Q
H3		0.879	1.00	1.004	0.051	-2.453	S
H4		0.961	1.10	1.11	0.089	-1.676	S
H1	Cr	0.684	0.60	0.578	0.104	1.023	S
H2		0.967	0.90	0.913	0.081	0.674	S
H3		6.88	6.50	6.53	0.518	0.677	S
H4		9.48	9.00	9.179	0.58	0.518	S
H1	Cu	1.09	0.80	0.858	0.173	1.346	Q
H2		1.25	1.10	1.156	0.486	0.194	S
H3		11.04	10.50	10.376	0.5	1.327	S
H4		11.45	11.00	10.924	0.564	0.934	S
H1	Ni	1.21	1.00	0.971	0.202	1.182	S
H2		1.28	1.10	1.086	0.237	0.817	Q
H3		9.05	8.60	8.501	1.557	0.352	S
H4		12.84	12.00	11.89	2.24	0.424	S
H1	Pb	1.26	1.30	1.306	0.109	-0.421	S
H2		0.866	0.90	0.926	0.136	-0.437	S
H3		16.91	18.00	18.465	1.335	-1.164	S
H4		20.79	22.00	22.375	2.003	-0.791	S
H1	Zn	22.41	10.50	11.184	3.881	2.893	U
H2		17.66	15.00	15.182	4.154	0.597	Q
H3		95.41	95.00	95.929	17.167	-0.03	S
H4		121	125.00	125.656	22.913	-0.203	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.675	0.60	0.658	0.135	0.123	S
H2		0.931	0.85	0.962	0.205	-0.15	S
H3		7.272	7.00	6.995	0.356	0.779	S
H4		10.921	9.50	9.513	0.534	2.635	S
H1	Cd	0.093	0.09	0.091	0.008	0.265	S
H2		0.105	0.10	0.102	0.011	0.256	S
H3		1.069	1.00	1.004	0.051	1.289	S
H4		1.338	1.10	1.11	0.089	2.568	Q
H1	Cr	0.6	0.60	0.578	0.104	0.214	S
H2		0.9	0.90	0.913	0.081	-0.158	S
H3		6.34	6.50	6.53	0.518	-0.366	S
H4		9.91	9.00	9.179	0.58	1.26	S
H1	Cu	0.91	0.80	0.858	0.173	0.303	S
H2		1.14	1.10	1.156	0.486	-0.032	S
H3		10.35	10.50	10.376	0.5	-0.052	S
H4		12.04	11.00	10.924	0.564	1.98	S
H1	Ni	1.01	1.00	0.971	0.202	0.191	S
H2		1.09	1.10	1.086	0.237	0.016	S
H3		8.56	8.60	8.501	1.557	0.038	S
H4		13.14	12.00	11.89	2.24	0.558	S
H1	Pb	1.45	1.30	1.306	0.109	1.327	S
H2		0.96	0.90	0.926	0.136	0.252	S
H3		17.94	18.00	18.465	1.335	-0.393	S
H4		21.95	22.00	22.375	2.003	-0.212	S
H1	Zn	11.62	10.50	11.184	3.881	0.112	S
H2		16.52	15.00	15.182	4.154	0.322	S
H3		99.93	95.00	95.929	17.167	0.233	S
H4		146.37	125.00	125.656	22.913	0.904	Q

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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.59	0.60	0.658	0.135	-0.507	S
H2		0.81	0.85	0.962	0.205	-0.74	S
H3		6.97	7.00	6.995	0.356	-0.069	S
H4		9.97	9.50	9.513	0.534	0.855	S
H1	Cd	0.09	0.09	0.091	0.008	-0.111	S
H2		0.1	0.10	0.102	0.011	-0.206	S
H3		0.97	1.00	1.004	0.051	-0.661	S
H4		1.06	1.10	1.11	0.089	-0.562	S
H1	Cr	0.62	0.60	0.578	0.104	0.407	S
H2		0.92	0.90	0.913	0.081	0.091	S
H3		6.61	6.50	6.53	0.518	0.155	S
H4		9.3	9.00	9.179	0.58	0.208	S
H1	Cu	0.89	0.80	0.858	0.173	0.188	S
H2		1.19	1.10	1.156	0.486	0.071	S
H3		10.9	10.50	10.376	0.5	1.047	S
H4		11.3	11.00	10.924	0.564	0.668	S
H1	Ni	1.03	1.00	0.971	0.202	0.29	S
H2		1.22	1.10	1.086	0.237	0.564	S
H3		8.85	8.60	8.501	1.557	0.224	S
H4		12.5	12.00	11.89	2.24	0.272	S
H1	Pb	1.31	1.30	1.306	0.109	0.039	S
H2		0.95	0.90	0.926	0.136	0.179	S
H3		18.2	18.00	18.465	1.335	-0.198	S
H4		21.3	22.00	22.375	2.003	-0.537	S
H1	Zn	10	10.50	11.184	3.881	-0.305	S
H2		13.3	15.00	15.182	4.154	-0.453	S
H3		86.7	95.00	95.929	17.167	-0.538	S
H4		113	125.00	125.656	22.913	-0.552	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.

<sup>x</sup> 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
- 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 2016

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 <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	0.097	0.09	0.091	0.008	0.767	S
H2		0.104	0.10	0.102	0.011	0.163	S
H3		0.995	1.00	1.004	0.051	-0.169	S
H4		1.093	1.10	1.11	0.089	-0.19	S
H1	Cr	0.626	0.60	0.578	0.104	0.464	S
H2		0.948	0.90	0.913	0.081	0.438	S
H3		6.73	6.50	6.53	0.518	0.387	S
H4		9.218	9.00	9.179	0.58	0.067	S
H1	Cu	0.584	0.80	0.858	0.173	-1.584	Q
H2		0.871	1.10	1.156	0.486	-0.585	S
H3		10.428	10.50	10.376	0.5	0.104	S
H4		10.805	11.00	10.924	0.564	-0.21	S
H1	Ni	1.103	1.00	0.971	0.202	0.652	S
H2		1.068	1.10	1.086	0.237	-0.077	S
H3		8.98	8.60	8.501	1.557	0.307	S
H4		12.412	12.00	11.89	2.24	0.233	S
H1	Pb	1.36	1.30	1.306	0.109	0.499	S
H2		< 0.000	0.90	0.926	0.136	-6.787	U
H3		17.88	18.00	18.465	1.335	-0.438	S
H4		21.72	22.00	22.375	2.003	-0.327	S
H1	Zn	10.473	10.50	11.184	3.881	-0.183	S
H2		15.076	15.00	15.182	4.154	-0.025	S
H3		95.378	95.00	95.929	17.167	-0.032	S
H4		125.134	125.00	125.656	22.913	-0.023	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.

<sup>x</sup> 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

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 2016

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 <sup>x</sup>
H1	As	2.3	0.60	0.658	0.135	12.154	U
H2		2.4	0.85	0.962	0.205	7.011	U
H3		8.6	7.00	6.995	0.356	4.508	Q
H4		11.3	9.50	9.513	0.534	3.345	Q
H1	Cd	0.1	0.09	0.091	0.008	1.143	S
H2		0.1	0.10	0.102	0.011	-0.206	S
H3		1	1.00	1.004	0.051	-0.07	S
H4		1.1	1.10	1.11	0.089	-0.111	S
H1	Cr	0.6	0.60	0.578	0.104	0.214	S
H2		0.8	0.90	0.913	0.081	-1.399	S
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		9.1	9.00	9.179	0.58	-0.137	S
H1	Cu	0.9	0.80	0.858	0.173	0.245	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		10.3	10.50	10.376	0.5	-0.152	S
H4		10.7	11.00	10.924	0.564	-0.397	S
H1	Ni	1	1.00	0.971	0.202	0.141	S
H2		1.1	1.10	1.086	0.237	0.058	S
H3		8.9	8.60	8.501	1.557	0.256	S
H4		12.3	12.00	11.89	2.24	0.183	S
H1	Pb	1.2	1.30	1.306	0.109	-0.973	S
H2		0.8	0.90	0.926	0.136	-0.921	S
H3		18.4	18.00	18.465	1.335	-0.049	S
H4		22.5	22.00	22.375	2.003	0.062	S
H1	Zn	10	10.50	11.184	3.881	-0.305	S
H2		14.5	15.00	15.182	4.154	-0.164	S
H3		94	95.00	95.929	17.167	-0.112	S
H4		123	125.00	125.656	22.913	-0.116	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.

<sup>x</sup> 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 2016

Laboratory 115, Bayerische Landesanstalt f. Wald- und Forstwirtschaft (Germany)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	0.653	0.60	0.658	0.135	-0.04	S
H2		0.932	0.85	0.962	0.205	-0.145	S
H3		7.53	7.00	6.995	0.356	1.503	S
H4		10.24	9.50	9.513	0.534	1.361	S
H1	Cd	0.096	0.09	0.091	0.008	0.642	S
H2		0.107	0.10	0.102	0.011	0.44	S
H3		1.06	1.00	1.004	0.051	1.111	S
H4		1.157	1.10	1.11	0.089	0.53	S
H1	Cr	0.571	0.60	0.578	0.104	-0.066	S
H2		0.855	0.90	0.913	0.081	-0.716	S
H3		6.27	6.50	6.53	0.518	-0.501	S
H4		8.72	9.00	9.179	0.58	-0.792	S
H1	Cu	0.778	0.80	0.858	0.173	-0.461	S
H2		1.092	1.10	1.156	0.486	-0.131	S
H3		10.33	10.50	10.376	0.5	-0.092	S
H4		10.71	11.00	10.924	0.564	-0.379	S
H1	Ni	1.018	1.00	0.971	0.202	0.231	S
H2		1.064	1.10	1.086	0.237	-0.094	S
H3		8.33	8.60	8.501	1.557	-0.11	S
H4		11.65	12.00	11.89	2.24	-0.107	S
H1	Pb	1.227	1.30	1.306	0.109	-0.725	S
H2		0.854	0.90	0.926	0.136	-0.525	S
H3		16.84	18.00	18.465	1.335	-1.217	S
H4		20.47	22.00	22.375	2.003	-0.951	S
H1	Zn	12.3	10.50	11.184	3.881	0.288	Q
H2		17.76	15.00	15.182	4.154	0.621	Q
H3		114	95.00	95.929	17.167	1.053	Q
H4		148.6	125.00	125.656	22.913	1.001	Q

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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	0.084	0.09	0.091	0.008	-0.863	S
H2		0.095	0.10	0.102	0.011	-0.668	S
H3		1.065	1.00	1.004	0.051	1.21	S
H4		1.155	1.10	1.11	0.089	0.508	S
H1	Cr	0.095	0.60	0.578	0.104	-4.654	U
H2		0.165	0.90	0.913	0.081	-9.282	U
H3		0.075	6.50	6.53	0.518	-12.465	U
H4		0.117	9.00	9.179	0.58	-15.624	U
H1	Cu	0.69	0.80	0.858	0.173	-0.971	S
H2		0.97	1.10	1.156	0.486	-0.382	S
H3		9.42	10.50	10.376	0.5	-1.911	S
H4		10.02	11.00	10.924	0.564	-1.603	S
H1	Ni	0.57	1.00	0.971	0.202	-1.99	Q
H2		0.83	1.10	1.086	0.237	-1.081	Q
H3		0.76	8.60	8.501	1.557	-4.973	U
H4		0.87	12.00	11.89	2.24	-4.919	U
H1	Pb	1.15	1.30	1.306	0.109	-1.433	S
H2		0.77	0.90	0.926	0.136	-1.141	S
H3		18.03	18.00	18.465	1.335	-0.326	S
H4		21.86	22.00	22.375	2.003	-0.257	S
H1	Zn	1	10.50	11.184	3.881	-2.624	U
H2		1	15.00	15.182	4.154	-3.414	U
H3		1.25	95.00	95.929	17.167	-5.515	U
H4		1.25	125.00	125.656	22.913	-5.43	U

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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	< 2.500	0.60	0.658	0.135		B
H2		< 2.500	0.85	0.962	0.205		B
H3		6.8	7.00	6.995	0.356	-0.546	S
H4		9.4	9.50	9.513	0.534	-0.211	S
H1	Cd	0.08	0.09	0.091	0.008	-1.364	S
H2		0.08	0.10	0.102	0.011	-2.053	S
H3		1.03	1.00	1.004	0.051	0.52	S
H4		1.12	1.10	1.11	0.089	0.114	S
H1	Cr	1.6	0.60	0.578	0.104	9.852	U
H2		1.8	0.90	0.913	0.081	11.015	U
H3		7.3	6.50	6.53	0.518	1.488	S
H4		10	9.00	9.179	0.58	1.415	S
H1	Cu	< 2.300	0.80	0.858	0.173		B
H2		< 2.300	1.10	1.156	0.486		B
H3		9.8	10.50	10.376	0.5	-1.152	S
H4		10.4	11.00	10.924	0.564	-0.929	S
H1	Ni	1	1.00	0.971	0.202	0.141	S
H2		1.1	1.10	1.086	0.237	0.058	S
H3		8.6	8.60	8.501	1.557	0.063	S
H4		11.8	12.00	11.89	2.24	-0.04	S
H1	Pb	2.8	1.30	1.306	0.109	13.748	U
H2		2.1	0.90	0.926	0.136	8.611	U
H3		18.4	18.00	18.465	1.335	-0.049	S
H4		22.9	22.00	22.375	2.003	0.262	S
H1	Zn	10.5	10.50	11.184	3.881	-0.176	S
H2		14.2	15.00	15.182	4.154	-0.236	S
H3		92.2	95.00	95.929	17.167	-0.217	S
H4		123.5	125.00	125.656	22.913	-0.094	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.624	0.60	0.658	0.135	-0.255	S
H2		0.867	0.85	0.962	0.205	-0.462	S
H3		6.831	7.00	6.995	0.356	-0.459	S
H4		9.37	9.50	9.513	0.534	-0.267	S
H1	Cd	0.092	0.09	0.091	0.008	0.14	S
H2		0.098	0.10	0.102	0.011	-0.391	S
H3		0.983	1.00	1.004	0.051	-0.405	S
H4		1.125	1.10	1.11	0.089	0.17	S
H1	Cr	0.579	0.60	0.578	0.104	0.011	S
H2		0.879	0.90	0.913	0.081	-0.418	S
H3		6.396	6.50	6.53	0.518	-0.258	S
H4		8.912	9.00	9.179	0.58	-0.461	S
H1	Cu	0.884	0.80	0.858	0.173	0.153	S
H2		1.162	1.10	1.156	0.486	0.013	S
H3		10.817	10.50	10.376	0.5	0.881	S
H4		11.164	11.00	10.924	0.564	0.427	S
H1	Ni	0.97	1.00	0.971	0.202	-0.007	S
H2		1.093	1.10	1.086	0.237	0.029	S
H3		8.663	8.60	8.501	1.557	0.104	S
H4		11.909	12.00	11.89	2.24	0.008	S
H1	Pb	1.3	1.30	1.306	0.109	-0.053	S
H2		0.936	0.90	0.926	0.136	0.076	S
H3		18.115	18.00	18.465	1.335	-0.262	S
H4		21.94	22.00	22.375	2.003	-0.217	S
H1	Zn	10.499	10.50	11.184	3.881	-0.176	S
H2		14.832	15.00	15.182	4.154	-0.084	S
H3		94.123	95.00	95.929	17.167	-0.105	S
H4		124.315	125.00	125.656	22.913	-0.059	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.566	0.60	0.658	0.135	-0.684	S
H2		0.816	0.85	0.962	0.205	-0.711	S
H3		6.71	7.00	6.995	0.356	-0.799	S
H4		9.11	9.50	9.513	0.534	-0.754	S
H1	Cd	0.089	0.09	0.091	0.008	-0.236	S
H2		0.107	0.10	0.102	0.011	0.44	S
H3		1.07	1.00	1.004	0.051	1.308	S
H4		1.12	1.10	1.11	0.089	0.114	S
H1	Cr	0.632	0.60	0.578	0.104	0.522	S
H2		0.937	0.90	0.913	0.081	0.302	S
H3		6.68	6.50	6.53	0.518	0.291	S
H4		9.38	9.00	9.179	0.58	0.346	S
H1	Cu	0.726	0.80	0.858	0.173	-0.762	S
H2		1.04	1.10	1.156	0.486	-0.238	S
H3		10.5	10.50	10.376	0.5	0.248	S
H4		11	11.00	10.924	0.564	0.136	S
H1	Ni	1.06	1.00	0.971	0.202	0.439	S
H2		1.11	1.10	1.086	0.237	0.1	S
H3		8.72	8.60	8.501	1.557	0.14	S
H4		11.8	12.00	11.89	2.24	-0.04	S
H1	Pb	1.29	1.30	1.306	0.109	-0.145	S
H2		0.877	0.90	0.926	0.136	-0.357	S
H3		17.6	18.00	18.465	1.335	-0.648	S
H4		21.1	22.00	22.375	2.003	-0.637	S
H1	Zn	10.8	10.50	11.184	3.881	-0.099	S
H2		15.1	15.00	15.182	4.154	-0.02	S
H3		96.2	95.00	95.929	17.167	0.016	S
H4		125	125.00	125.656	22.913	-0.029	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>	
H1	As	< 15.000	0.60	0.658	0.135		B	
H2		< 15.000	0.85	0.962	0.205		B	
H3		< 15.000	7.00	6.995	6.995	0.356		B
H4		< 15.000	9.50	9.513	9.513	0.534		B
H1	Cd	< 2.000	0.09	0.091	0.008		B	
H2		< 2.000	0.10	0.102	0.011		B	
H3		< 2.000	1.00	1.004	1.004	0.051		B
H4		< 2.000	1.10	1.11	1.11	0.089		B
H1	Cr	< 2.000	0.60	0.578	0.104		B	
H2		< 2.000	0.90	0.913	0.913	0.081		B
H3		4.9	6.50	6.53	6.53	0.518	-3.147	Q
H4		9.8	9.00	9.179	9.179	0.58	1.07	S
H1	Cu	< 2.000	0.80	0.858	0.173		B	
H2		< 2.000	1.10	1.156	1.156	0.486		B
H3		10.2	10.50	10.376	10.376	0.5	-0.352	S
H4		10.1	11.00	10.924	10.924	0.564	-1.461	S
H1	Ni	< 2.000	1.00	0.971	0.202		B	
H2		< 2.000	1.10	1.086	1.086	0.237		B
H3		8.2	8.60	8.501	8.501	1.557	-0.194	S
H4		11.6	12.00	11.89	11.89	2.24	-0.13	S
H1	Pb	< 5.000	1.30	1.306	0.109		B	
H2		< 5.000	0.90	0.926	0.926	0.136		B
H3		17.5	18.00	18.465	18.465	1.335	-0.723	S
H4		21.5	22.00	22.375	22.375	2.003	-0.437	S
H1	Zn	7.1	10.50	11.184	3.881	-1.052	U	
H2		11.9	15.00	15.182	4.154	-0.79	Q	
H3		95.2	95.00	95.929	95.929	17.167	-0.042	S
H4		127	125.00	125.656	125.656	22.913	0.059	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.674	0.60	0.658	0.135	0.115	S
H2		0.943	0.85	0.962	0.205	-0.092	S
H3		7.67	7.00	6.995	0.356	1.896	S
H4		10.29	9.50	9.513	0.534	1.454	S
H1	Cd	0.094	0.09	0.091	0.008	0.391	S
H2		0.106	0.10	0.102	0.011	0.348	S
H3		1.04	1.00	1.004	0.051	0.717	S
H4		1.14	1.10	1.11	0.089	0.339	S
H1	Cr	0.604	0.60	0.578	0.104	0.252	S
H2		0.903	0.90	0.913	0.081	-0.12	S
H3		6.6	6.50	6.53	0.518	0.136	S
H4		9.08	9.00	9.179	0.58	-0.171	S
H1	Cu	0.96	0.80	0.858	0.173	0.593	S
H2		1.29	1.10	1.156	0.486	0.277	S
H3		11.16	10.50	10.376	0.5	1.567	S
H4		11.58	11.00	10.924	0.564	1.164	S
H1	Ni	1.03	1.00	0.971	0.202	0.29	S
H2		1.13	1.10	1.086	0.237	0.185	S
H3		9.01	8.60	8.501	1.557	0.327	S
H4		12.52	12.00	11.89	2.24	0.281	S
H1	Pb	1.33	1.30	1.306	0.109	0.223	S
H2		0.932	0.90	0.926	0.136	0.047	S
H3		18.79	18.00	18.465	1.335	0.243	S
H4		22.83	22.00	22.375	2.003	0.227	S
H1	Zn	13.4	10.50	11.184	3.881	0.571	Q
H2		19.2	15.00	15.182	4.154	0.967	Q
H3		117	95.00	95.929	17.167	1.227	Q
H4		155	125.00	125.656	22.913	1.281	Q

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.

<sup>x</sup> 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 2016

Laboratory 129, Ecole Nationale d'ingénieurs de Sfax (Tunisia)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	1.812	0.60	0.658	0.135	8.541	U
H2		1.575	0.85	0.962	0.205	2.989	U
H3		8.039	7.00	6.995	0.356	2.933	S
H4		10.463	9.50	9.513	0.534	1.778	S
H1	Cd	0.093	0.09	0.091	0.008	0.265	S
H2		0.082	0.10	0.102	0.011	-1.869	S
H3		0.933	1.00	1.004	0.051	-1.39	S
H4		0.99	1.10	1.11	0.089	-1.35	S
H1	Cr	0.605	0.60	0.578	0.104	0.262	S
H2		1.294	0.90	0.913	0.081	4.734	Q
H3		7.4	6.50	6.53	0.518	1.681	S
H4		9.972	9.00	9.179	0.58	1.367	S
H1	Cu	1.124	0.80	0.858	0.173	1.542	Q
H2		7.849	1.10	1.156	0.486	13.767	U
H3		9.949	10.50	10.376	0.5	-0.854	S
H4		10.619	11.00	10.924	0.564	-0.54	S
H1	Ni	0.703	1.00	0.971	0.202	-1.33	Q
H2		0.741	1.10	1.086	0.237	-1.456	U
H3		7.441	8.60	8.501	1.557	-0.681	S
H4		10.486	12.00	11.89	2.24	-0.627	S
H1	Pb	1.318	1.30	1.306	0.109	0.113	S
H2		1.109	0.90	0.926	0.136	1.344	S
H3		17.611	18.00	18.465	1.335	-0.639	S
H4		21.214	22.00	22.375	2.003	-0.58	S
H1	Zn	13.086	10.50	11.184	3.881	0.49	Q
H2		25.455	15.00	15.182	4.154	2.473	U
H3		107.508	95.00	95.929	17.167	0.675	S
H4		139.98	125.00	125.656	22.913	0.625	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	< 5.000	0.60	0.658	0.135		B
H2		< 5.000	0.85	0.962	0.205		B
H3		5.6	7.00	6.995	0.356	-3.916	Q
H4		9	9.50	9.513	0.534	-0.96	S
H1	Cd	< 5.000	0.09	0.091	0.008		B
H2		< 5.000	0.10	0.102	0.011		B
H3		< 5.000	1.00	1.004	0.051		B
H4		< 5.000	1.10	1.11	0.089		B
H1	Cr	0.59	0.60	0.578	0.104	0.117	S
H2		0.86	0.90	0.913	0.081	-0.654	S
H3		6.6	6.50	6.53	0.518	0.136	S
H4		9.1	9.00	9.179	0.58	-0.137	S
H1	Cu	< 5.000	0.80	0.858	0.173		B
H2		< 5.000	1.10	1.156	0.486		B
H3		10.5	10.50	10.376	0.5	0.248	S
H4		12.4	11.00	10.924	0.564	2.619	S
H1	Ni	< 0.500	1.00	0.971	0.202	-3.575	U
H2		< 0.500	1.10	1.086	0.237	-3.527	U
H3		8.1	8.60	8.501	1.557	-0.258	S
H4		12	12.00	11.89	2.24	0.049	S
H1	Pb	< 5.000	1.30	1.306	0.109		B
H2		< 5.000	0.90	0.926	0.136		B
H3		18.6	18.00	18.465	1.335	0.101	S
H4		22.5	22.00	22.375	2.003	0.062	S
H1	Zn	10.2	10.50	11.184	3.881	-0.254	S
H2		14.5	15.00	15.182	4.154	-0.164	S
H3		95	95.00	95.929	17.167	-0.054	S
H4		126	125.00	125.656	22.913	0.015	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.

<sup>x</sup> 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 2016

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 <sup>⌘</sup>	
H1	As	-999	0.60	0.658	0.135		B	
H2		-999	0.85	0.962	0.205		B	
H3		-999	7.00	6.995	6.995	0.356		B
H4		-999	9.50	9.513	9.513	0.534		B
H1	Cd	0.086	0.09	0.091	0.008	-0.612	S	
H2		0.098	0.10	0.102	0.011	-0.391	S	
H3		1.02	1.00	1.004	0.051	0.324	S	
H4		1.115	1.10	1.11	0.089	0.057	S	
H1	Cr	-999	0.60	0.578	0.104		B	
H2		-999	0.90	0.913	0.081		B	
H3		-999	6.50	6.53	6.53	0.518		B
H4		-999	9.00	9.179	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B	
H2		-999	1.10	1.156	0.486		B	
H3		-999	10.50	10.376	10.376	0.5		B
H4		-999	11.00	10.924	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B	
H2		-999	1.10	1.086	0.237		B	
H3		-999	8.60	8.501	8.501	1.557		B
H4		-999	12.00	11.89	11.89	2.24		B
H1	Pb	-999	1.30	1.306	0.109		B	
H2		-999	0.90	0.926	0.136		B	
H3		-999	18.00	18.465	18.465	1.335		B
H4		-999	22.00	22.375	22.375	2.003		B
H1	Zn	-999	10.50	11.184	3.881		B	
H2		-999	15.00	15.182	15.182	4.154		B
H3		-999	95.00	95.929	95.929	17.167		B
H4		-999	125.00	125.656	125.656	22.913		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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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 2016

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 <sup>x</sup>
H1	As	0.58	0.60	0.658	0.135	-0.581	S
H2		0.821	0.85	0.962	0.205	-0.687	S
H3		6.76	7.00	6.995	0.356	-0.659	S
H4		9.11	9.50	9.513	0.534	-0.754	S
H1	Cd	0.091	0.09	0.091	0.008	0.002	S
H2		0.1	0.10	0.102	0.011	-0.243	S
H3		0.984	1.00	1.004	0.051	-0.385	S
H4		1.08	1.10	1.11	0.089	-0.337	S
H1	Cr	0.566	0.60	0.578	0.104	-0.114	S
H2		0.849	0.90	0.913	0.081	-0.791	S
H3		6.25	6.50	6.53	0.518	-0.54	S
H4		8.65	9.00	9.179	0.58	-0.913	S
H1	Cu	1.49	0.80	0.858	0.173	3.662	U
H2		3.68	1.10	1.156	0.486	5.192	U
H3		11.1	10.50	10.376	0.5	1.447	S
H4		11.5	11.00	10.924	0.564	1.023	S
H1	Ni	1.09	1.00	0.971	0.202	0.587	S
H2		1.16	1.10	1.086	0.237	0.311	S
H3		8.8	8.60	8.501	1.557	0.192	S
H4		12.1	12.00	11.89	2.24	0.094	S
H1	Pb	1.25	1.30	1.306	0.109	-0.513	S
H2		0.882	0.90	0.926	0.136	-0.32	S
H3		17.4	18.00	18.465	1.335	-0.797	S
H4		21.4	22.00	22.375	2.003	-0.487	S
H1	Zn	10.1	10.50	11.184	3.881	-0.279	S
H2		14.3	15.00	15.182	4.154	-0.212	S
H3		94.3	95.00	95.929	17.167	-0.095	S
H4		118	125.00	125.656	22.913	-0.334	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.

<sup>x</sup> 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 2016

Laboratory 146, Luxembourg Institute of Science and Technology (LIST) (Luxembourg)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>x</sup>
H1	As	0.62	0.60	0.658	0.135	-0.285	S
H2		0.781	0.85	0.962	0.205	-0.882	S
H3		6.614	7.00	6.995	0.356	-1.069	S
H4		9.257	9.50	9.513	0.534	-0.479	S
H1	Cd	0.086	0.09	0.091	0.008	-0.612	S
H2		0.098	0.10	0.102	0.011	-0.391	S
H3		0.963	1.00	1.004	0.051	-0.799	S
H4		1.097	1.10	1.11	0.089	-0.145	S
H1	Cr	0.599	0.60	0.578	0.104	0.204	S
H2		0.941	0.90	0.913	0.081	0.351	S
H3		6.503	6.50	6.53	0.518	-0.051	S
H4		9.042	9.00	9.179	0.58	-0.237	S
H1	Cu	0.802	0.80	0.858	0.173	-0.322	S
H2		1.017	1.10	1.156	0.486	-0.285	S
H3		10.14	10.50	10.376	0.5	-0.472	S
H4		10.8	11.00	10.924	0.564	-0.219	S
H1	Ni	0.996	1.00	0.971	0.202	0.122	S
H2		1.056	1.10	1.086	0.237	-0.127	S
H3		8.358	8.60	8.501	1.557	-0.092	S
H4		11.98	12.00	11.89	2.24	0.04	S
H1	Pb	1.259	1.30	1.306	0.109	-0.43	S
H2		0.878	0.90	0.926	0.136	-0.349	S
H3		17.08	18.00	18.465	1.335	-1.037	S
H4		22.72	22.00	22.375	2.003	0.172	S
H1	Zn	10.69	10.50	11.184	3.881	-0.127	S
H2		15.33	15.00	15.182	4.154	0.036	S
H3		95.77	95.00	95.929	17.167	-0.009	S
H4		125.6	125.00	125.656	22.913	-0.002	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	< 0.500	0.09	0.091	0.008		B
H2		< 0.500	0.10	0.102	0.011		B
H3		1.02	1.00	1.004	0.051	0.324	S
H4		1.146	1.10	1.11	0.089	0.406	S
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		-999	6.50	6.53	0.518		B
H4		-999	9.00	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		-999	10.50	10.376	0.5		B
H4		-999	11.00	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	< 10.000	1.30	1.306	0.109		B
H2		< 10.000	0.90	0.926	0.136		B
H3		18.249	18.00	18.465	1.335	-0.162	S
H4		22.365	22.00	22.375	2.003	-0.005	S
H1	Zn	10.036	10.50	11.184	3.881	-0.296	S
H2		14.658	15.00	15.182	4.154	-0.126	S
H3		97.387	95.00	95.929	17.167	0.085	S
H4		128.48	125.00	125.656	22.913	0.123	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.594	0.60	0.658	0.135	-0.477	S
H2		0.843	0.85	0.962	0.205	-0.579	S
H3		6.703	7.00	6.995	0.356	-0.819	S
H4		9.077	9.50	9.513	0.534	-0.816	S
H1	Cd	0.089	0.09	0.091	0.008	-0.274	S
H2		0.1	0.10	0.102	0.011	-0.178	S
H3		0.975	1.00	1.004	0.051	-0.569	S
H4		1.1	1.10	1.11	0.089	-0.111	S
H1	Cr	0.614	0.60	0.578	0.104	0.349	S
H2		0.95	0.90	0.913	0.081	0.463	S
H3		6.43	6.50	6.53	0.518	-0.192	S
H4		8.893	9.00	9.179	0.58	-0.494	S
H1	Cu	0.794	0.80	0.858	0.173	-0.368	S
H2		1.067	1.10	1.156	0.486	-0.182	S
H3		9.92	10.50	10.376	0.5	-0.912	S
H4		10.5	11.00	10.924	0.564	-0.751	S
H1	Ni	1.097	1.00	0.971	0.202	0.622	S
H2		1.12	1.10	1.086	0.237	0.143	S
H3		8.29	8.60	8.501	1.557	-0.136	S
H4		11.6	12.00	11.89	2.24	-0.13	S
H1	Pb	1.247	1.30	1.306	0.109	-0.541	S
H2		0.877	0.90	0.926	0.136	-0.357	S
H3		17.333	18.00	18.465	1.335	-0.848	S
H4		21.433	22.00	22.375	2.003	-0.47	S
H1	Zn	11.133	10.50	11.184	3.881	-0.013	S
H2		16.033	15.00	15.182	4.154	0.205	S
H3		99.367	95.00	95.929	17.167	0.2	S
H4		133.667	125.00	125.656	22.913	0.35	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.

<sup>x</sup> 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 2016

Laboratory 171, Mines Douai, D,partement Sciences de l'Atmosphère et G,nie de l'Environnement (France)

### Heavy metals in precipitation (H-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm <sup>⌘</sup>
H1	As	0.754	0.60	0.658	0.135	0.708	Q
H2		1.049	0.85	0.962	0.205	0.425	S
H3		8.387	7.00	6.995	0.356	3.91	Q
H4		11.828	9.50	9.513	0.534	4.333	Q
H1	Cd	0.1	0.09	0.091	0.008	1.143	S
H2		0.115	0.10	0.102	0.011	1.179	S
H3		1.177	1.00	1.004	0.051	3.415	Q
H4		1.304	1.10	1.11	0.089	2.185	Q
H1	Cr	0.579	0.60	0.578	0.104	0.011	S
H2		0.843	0.90	0.913	0.081	-0.865	S
H3		6.451	6.50	6.53	0.518	-0.152	S
H4		8.868	9.00	9.179	0.58	-0.537	S
H1	Cu	0.846	0.80	0.858	0.173	-0.067	S
H2		1.119	1.10	1.156	0.486	-0.075	S
H3		11.094	10.50	10.376	0.5	1.435	S
H4		11.507	11.00	10.924	0.564	1.035	S
H1	Ni	1.096	1.00	0.971	0.202	0.617	S
H2		1.233	1.10	1.086	0.237	0.619	S
H3		8.947	8.60	8.501	1.557	0.286	S
H4		12.479	12.00	11.89	2.24	0.263	S
H1	Pb	1.328	1.30	1.306	0.109	0.205	S
H2		0.922	0.90	0.926	0.136	-0.027	S
H3		18.776	18.00	18.465	1.335	0.233	S
H4		23.334	22.00	22.375	2.003	0.478	S
H1	Zn	14.427	10.50	11.184	3.881	0.836	U
H2		21.919	15.00	15.182	4.154	1.622	U
H3		135.902	95.00	95.929	17.167	2.328	U
H4		176.604	125.00	125.656	22.913	2.224	U

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:

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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

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 2016

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 <sup>⌘</sup>
H1	As	0.81	0.60	0.658	0.135	1.122	Q
H2		1.13	0.85	0.962	0.205	0.82	Q
H3		6.79	7.00	6.995	0.356	-0.574	S
H4		9.61	9.50	9.513	0.534	0.182	S
H1	Cd	0.09	0.09	0.091	0.008	-0.111	S
H2		0.1	0.10	0.102	0.011	-0.206	S
H3		1.01	1.00	1.004	0.051	0.127	S
H4		1.07	1.10	1.11	0.089	-0.449	S
H1	Cr	0.62	0.60	0.578	0.104	0.407	S
H2		0.93	0.90	0.913	0.081	0.215	S
H3		6.78	6.50	6.53	0.518	0.484	S
H4		9.05	9.00	9.179	0.58	-0.223	S
H1	Cu	0.83	0.80	0.858	0.173	-0.16	S
H2		1.15	1.10	1.156	0.486	-0.011	S
H3		10.9	10.50	10.376	0.5	1.047	S
H4		11	11.00	10.924	0.564	0.136	S
H1	Ni	1.06	1.00	0.971	0.202	0.439	S
H2		1.15	1.10	1.086	0.237	0.269	S
H3		9.04	8.60	8.501	1.557	0.346	S
H4		12.01	12.00	11.89	2.24	0.053	S
H1	Pb	1.33	1.30	1.306	0.109	0.223	S
H2		0.93	0.90	0.926	0.136	0.032	S
H3		18.54	18.00	18.465	1.335	0.056	S
H4		22.43	22.00	22.375	2.003	0.027	S
H1	Zn	10.58	10.50	11.184	3.881	-0.156	S
H2		15.1	15.00	15.182	4.154	-0.02	S
H3		95.9	95.00	95.929	17.167	-0.002	S
H4		123.9	125.00	125.656	22.913	-0.077	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:

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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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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 2016

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 <sup>x</sup>
H1	As	0.6	0.60	0.658	0.135	-0.433	S
H2		0.98	0.85	0.962	0.205	0.089	S
H3		6.22	7.00	6.995	0.356	-2.175	S
H4		9.12	9.50	9.513	0.534	-0.735	S
H1	Cd	0.101	0.09	0.091	0.008	1.268	S
H2		0.108	0.10	0.102	0.011	0.533	S
H3		0.95	1.00	1.004	0.051	-1.055	S
H4		1.16	1.10	1.11	0.089	0.564	S
H1	Cr	0.65	0.60	0.578	0.104	0.696	S
H2		0.94	0.90	0.913	0.081	0.339	S
H3		5.62	6.50	6.53	0.518	-1.756	S
H4		8.03	9.00	9.179	0.58	-1.982	S
H1	Cu	0.84	0.80	0.858	0.173	-0.102	S
H2		1.12	1.10	1.156	0.486	-0.073	S
H3		9.92	10.50	10.376	0.5	-0.912	S
H4		10.25	11.00	10.924	0.564	-1.195	S
H1	Ni	0.93	1.00	0.971	0.202	-0.206	S
H2		1.12	1.10	1.086	0.237	0.143	S
H3		8.03	8.60	8.501	1.557	-0.303	S
H4		11.77	12.00	11.89	2.24	-0.054	S
H1	Pb	1.31	1.30	1.306	0.109	0.039	S
H2		0.9	0.90	0.926	0.136	-0.188	S
H3		20	18.00	18.465	1.335	1.149	S
H4		24.16	22.00	22.375	2.003	0.891	S
H1	Zn	10.8	10.50	11.184	3.881	-0.099	S
H2		14.58	15.00	15.182	4.154	-0.145	S
H3		91.75	95.00	95.929	17.167	-0.243	S
H4		121.39	125.00	125.656	22.913	-0.186	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	0.62	0.60	0.658	0.135	-0.285	S
H2		0.9	0.85	0.962	0.205	-0.301	S
H3		7.2	7.00	6.995	0.356	0.577	S
H4		9.6	9.50	9.513	0.534	0.163	S
H1	Cd	0.09	0.09	0.091	0.008	-0.111	S
H2		0.09	0.10	0.102	0.011	-1.13	S
H3		1	1.00	1.004	0.051	-0.07	S
H4		1.1	1.10	1.11	0.089	-0.111	S
H1	Cr	0.6	0.60	0.578	0.104	0.214	S
H2		0.9	0.90	0.913	0.081	-0.158	S
H3		6.7	6.50	6.53	0.518	0.329	S
H4		9.3	9.00	9.179	0.58	0.208	S
H1	Cu	0.9	0.80	0.858	0.173	0.245	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		11	10.50	10.376	0.5	1.247	S
H4		11	11.00	10.924	0.564	0.136	S
H1	Ni	1	1.00	0.971	0.202	0.141	S
H2		1.2	1.10	1.086	0.237	0.48	S
H3		8.8	8.60	8.501	1.557	0.192	S
H4		12	12.00	11.89	2.24	0.049	S
H1	Pb	1.4	1.30	1.306	0.109	0.867	S
H2		0.9	0.90	0.926	0.136	-0.188	S
H3		18	18.00	18.465	1.335	-0.348	S
H4		23	22.00	22.375	2.003	0.312	S
H1	Zn	11	10.50	11.184	3.881	-0.047	S
H2		15	15.00	15.182	4.154	-0.044	S
H3		97	95.00	95.929	17.167	0.062	S
H4		130	125.00	125.656	22.913	0.19	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		7.1	7.00	6.995	0.356	0.296	S
H4		9.19	9.50	9.513	0.534	-0.604	S
H1	Cd	-999	0.09	0.091	0.008		B
H2		-999	0.10	0.102	0.011		B
H3		0.988	1.00	1.004	0.051	-0.307	S
H4		1.16	1.10	1.11	0.089	0.564	S
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		6.44	6.50	6.53	0.518	-0.173	S
H4		8.91	9.00	9.179	0.58	-0.465	S
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		-999	10.50	10.376	0.5		B
H4		-999	11.00	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		8.86	8.60	8.501	1.557	0.23	S
H4		12.05	12.00	11.89	2.24	0.071	S
H1	Pb	-999	1.30	1.306	0.109		B
H2		-999	0.90	0.926	0.136		B
H3		19.03	18.00	18.465	1.335	0.423	S
H4		22.51	22.00	22.375	2.003	0.067	S
H1	Zn	-999	10.50	11.184	3.881		B
H2		-999	15.00	15.182	4.154		B
H3		93.8	95.00	95.929	17.167	-0.124	S
H4		123.4	125.00	125.656	22.913	-0.098	S

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## EMEP – Analytical intercomparison of heavy metals in precipitation 2016

Laboratory 185, Public Health Centre - Cacak, Department for Sanitary Chemistry and Ecotoxicology (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 <sup>⌘</sup>
H1	As	0.74	0.60	0.658	0.135	0.604	S
H2		1.05	0.85	0.962	0.205	0.43	S
H3		7.16	7.00	6.995	0.356	0.464	S
H4		10.4	9.50	9.513	0.534	1.66	S
H1	Cd	-999	0.09	0.091	0.008		B
H2		-999	0.10	0.102	0.011		B
H3		-999	1.00	1.004	0.051		B
H4		-999	1.10	1.11	0.089		B
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		-999	6.50	6.53	0.518		B
H4		-999	9.00	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		13	10.50	10.376	0.5	5.245	Q
H4		14	11.00	10.924	0.564	5.457	Q
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	-999	1.30	1.306	0.109		B
H2		-999	0.90	0.926	0.136		B
H3		21	18.00	18.465	1.335	1.898	Q
H4		27	22.00	22.375	2.003	2.309	Q
H1	Zn	20	10.50	11.184	3.881	2.272	U
H2		18	15.00	15.182	4.154	0.678	Q
H3		90	95.00	95.929	17.167	-0.345	S
H4		113	125.00	125.656	22.913	-0.552	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 2016

Laboratory 186, Public Health Institute - Kralevo (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 <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		-999	7.00	6.995	0.356		B
H4		-999	9.50	9.513	0.534		B
H1	Cd	-999	0.09	0.091	0.008		B
H2		-999	0.10	0.102	0.011		B
H3		-999	1.00	1.004	0.051		B
H4		-999	1.10	1.11	0.089		B
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		-999	6.50	6.53	0.518		B
H4		-999	9.00	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		-999	10.50	10.376	0.5		B
H4		-999	11.00	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	-999	1.30	1.306	0.109		B
H2		-999	0.90	0.926	0.136		B
H3		-999	18.00	18.465	1.335		B
H4		-999	22.00	22.375	2.003		B
H1	Zn	-999	10.50	11.184	3.881		B
H2		-999	15.00	15.182	4.154		B
H3		95	95.00	95.929	17.167	-0.054	S
H4		111	125.00	125.656	22.913	-0.64	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	1.21	0.60	0.658	0.135	4.084	U
H2		1.65	0.85	0.962	0.205	3.355	U
H3		5.1	7.00	6.995	0.356	-5.32	Q
H4		7.2	9.50	9.513	0.534	-4.329	Q
H1	Cd	0.111	0.09	0.091	0.008	2.522	S
H2		0.15	0.10	0.102	0.011	4.412	Q
H3		0.84	1.00	1.004	0.051	-3.221	Q
H4		0.982	1.10	1.11	0.089	-1.44	S
H1	Cr	2.4	0.60	0.578	0.104	17.562	U
H2		1.6	0.90	0.913	0.081	8.532	U
H3		9	6.50	6.53	0.518	4.771	U
H4		11.3	9.00	9.179	0.58	3.656	Q
H1	Cu	2.3	0.80	0.858	0.173	8.352	U
H2		7.7	1.10	1.156	0.486	13.461	U
H3		13.6	10.50	10.376	0.5	6.444	Q
H4		10.95	11.00	10.924	0.564	0.047	S
H1	Ni	3.25	1.00	0.971	0.202	11.292	U
H2		3.6	1.10	1.086	0.237	10.603	U
H3		13.7	8.60	8.501	1.557	3.339	U
H4		19.7	12.00	11.89	2.24	3.486	U
H1	Pb	2	1.30	1.306	0.109	6.387	U
H2		1.5	0.90	0.926	0.136	4.211	U
H3		23.5	18.00	18.465	1.335	3.77	U
H4		31.1	22.00	22.375	2.003	4.355	U
H1	Zn	12	10.50	11.184	3.881	0.21	S
H2		17	15.00	15.182	4.154	0.438	S
H3		100	95.00	95.929	17.167	0.237	S
H4		132	125.00	125.656	22.913	0.277	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	-999	0.60	0.658	0.135		B
H2		-999	0.85	0.962	0.205		B
H3		6.95	7.00	6.995	0.356	-0.125	S
H4		9.31	9.50	9.513	0.534	-0.38	S
H1	Cd	-999	0.09	0.091	0.008		B
H2		-999	0.10	0.102	0.011		B
H3		0.991	1.00	1.004	0.051	-0.248	S
H4		1.165	1.10	1.11	0.089	0.62	S
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		6.39	6.50	6.53	0.518	-0.269	S
H4		8.89	9.00	9.179	0.58	-0.499	S
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		-999	10.50	10.376	0.5		B
H4		-999	11.00	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	-999	1.30	1.306	0.109		B
H2		-999	0.90	0.926	0.136		B
H3		18.8	18.00	18.465	1.335	0.251	S
H4		21.2	22.00	22.375	2.003	-0.587	S
H1	Zn	-999	10.50	11.184	3.881		B
H2		-999	15.00	15.182	4.154		B
H3		93.2	95.00	95.929	17.167	-0.159	S
H4		125.6	125.00	125.656	22.913	-0.002	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.

<sup>x</sup> 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 2016

Laboratory 193, Institute of Public Health of Vojvodina (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 <sup>x</sup>
H1	As	< 1.000	0.60	0.658	0.135		B
H2		< 1.000	0.85	0.962	0.205		B
H3		7.06	7.00	6.995	0.356	0.184	S
H4		9.59	9.50	9.513	0.534	0.144	S
H1	Cd	0.079	0.09	0.091	0.008	-1.49	S
H2		0.11	0.10	0.102	0.011	0.717	S
H3		1.049	1.00	1.004	0.051	0.895	S
H4		1.152	1.10	1.11	0.089	0.474	S
H1	Cr	0.62	0.60	0.578	0.104	0.407	S
H2		0.92	0.90	0.913	0.081	0.091	S
H3		6.5	6.50	6.53	0.518	-0.057	S
H4		8.99	9.00	9.179	0.58	-0.327	S
H1	Cu	0.8	0.80	0.858	0.173	-0.334	S
H2		1.1	1.10	1.156	0.486	-0.114	S
H3		9.91	10.50	10.376	0.5	-0.932	S
H4		10.44	11.00	10.924	0.564	-0.858	S
H1	Ni	< 2.000	1.00	0.971	0.202		B
H2		< 2.000	1.10	1.086	0.237		B
H3		8.72	8.60	8.501	1.557	0.14	S
H4		12.18	12.00	11.89	2.24	0.129	S
H1	Pb	1.22	1.30	1.306	0.109	-0.789	S
H2		< 1.000	0.90	0.926	0.136		B
H3		16.69	18.00	18.465	1.335	-1.329	S
H4		20.33	22.00	22.375	2.003	-1.021	S
H1	Zn	11.1	10.50	11.184	3.881	-0.022	S
H2		15.85	15.00	15.182	4.154	0.161	S
H3		97.91	95.00	95.929	17.167	0.115	S
H4		131.73	125.00	125.656	22.913	0.265	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	< 5.000	0.60	0.658	0.135		B
H2		< 5.000	0.85	0.962	0.205		B
H3		6.9	7.00	6.995	0.356	-0.266	S
H4		9.3	9.50	9.513	0.534	-0.398	S
H1	Cd	< 0.500	0.09	0.091	0.008		B
H2		< 0.500	0.10	0.102	0.011		B
H3		1.01	1.00	1.004	0.051	0.127	S
H4		1.04	1.10	1.11	0.089	-0.787	S
H1	Cr	0.59	0.60	0.578	0.104	0.117	S
H2		0.93	0.90	0.913	0.081	0.215	S
H3		6.7	6.50	6.53	0.518	0.329	S
H4		9.4	9.00	9.179	0.58	0.38	S
H1	Cu	< 5.000	0.80	0.858	0.173		B
H2		< 5.000	1.10	1.156	0.486		B
H3		9.8	10.50	10.376	0.5	-1.152	S
H4		10.1	11.00	10.924	0.564	-1.461	S
H1	Ni	< 5.000	1.00	0.971	0.202		B
H2		< 5.000	1.10	1.086	0.237		B
H3		8.5	8.60	8.501	1.557	-0.001	S
H4		11.8	12.00	11.89	2.24	-0.04	S
H1	Pb	< 2.000	1.30	1.306	0.109		B
H2		< 2.000	0.90	0.926	0.136		B
H3		16.4	18.00	18.465	1.335	-1.546	S
H4		20	22.00	22.375	2.003	-1.186	S
H1	Zn	10	10.50	11.184	3.881	-0.305	S
H2		14.4	15.00	15.182	4.154	-0.188	S
H3		94.5	95.00	95.929	17.167	-0.083	S
H4		124.8	125.00	125.656	22.913	-0.037	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.

<sup>x</sup> 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 2016

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 <sup>x</sup>
H1	As	< 1.000	0.60	0.658	0.135		B
H2		< 1.000	0.85	0.962	0.205		B
H3		7.07	7.00	6.995	0.356	0.212	S
H4		9.25	9.50	9.513	0.534	-0.492	S
H1	Cd	-999	0.09	0.091	0.008		B
H2		-999	0.10	0.102	0.011		B
H3		-999	1.00	1.004	0.051		B
H4		-999	1.10	1.11	0.089		B
H1	Cr	-999	0.60	0.578	0.104		B
H2		-999	0.90	0.913	0.081		B
H3		-999	6.50	6.53	0.518		B
H4		-999	9.00	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B
H2		-999	1.10	1.156	0.486		B
H3		-999	10.50	10.376	0.5		B
H4		-999	11.00	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B
H2		-999	1.10	1.086	0.237		B
H3		-999	8.60	8.501	1.557		B
H4		-999	12.00	11.89	2.24		B
H1	Pb	-999	1.30	1.306	0.109		B
H2		-999	0.90	0.926	0.136		B
H3		-999	18.00	18.465	1.335		B
H4		-999	22.00	22.375	2.003		B
H1	Zn	< 22.000	10.50	11.184	3.881		B
H2		< 22.000	15.00	15.182	4.154		B
H3		95.27	95.00	95.929	17.167	-0.038	S
H4		118.63	125.00	125.656	22.913	-0.307	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.

<sup>x</sup> 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 2016

Laboratory 203, The Public Health Institute Vranje (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 <sup>x</sup>
H1	As	0.85	0.60	0.658	0.135	1.418	Q
H2		1.12	0.85	0.962	0.205	0.771	Q
H3		6.85	7.00	6.995	0.356	-0.406	S
H4		9.2	9.50	9.513	0.534	-0.586	S
H1	Cd	< 0.200	0.09	0.091	0.008		B
H2		< 0.200	0.10	0.102	0.011		B
H3		1.08	1.00	1.004	0.051	1.505	S
H4		1.24	1.10	1.11	0.089	1.464	S
H1	Cr	< 8.000	0.60	0.578	0.104		B
H2		< 8.000	0.90	0.913	0.081		B
H3		8.5	6.50	6.53	0.518	3.805	U
H4		10.6	9.00	9.179	0.58	2.449	Q
H1	Cu	< 20.000	0.80	0.858	0.173		B
H2		< 20.000	1.10	1.156	0.486		B
H3		< 20.000	10.50	10.376	0.5		B
H4		< 20.000	11.00	10.924	0.564		B
H1	Ni	< 20.000	1.00	0.971	0.202		B
H2		< 20.000	1.10	1.086	0.237		B
H3		65	8.60	8.501	1.557	36.292	U
H4		52	12.00	11.89	2.24	17.903	U
H1	Pb	1.42	1.30	1.306	0.109	1.051	S
H2		< 1.000	0.90	0.926	0.136		B
H3		21.3	18.00	18.465	1.335	2.123	Q
H4		17.7	22.00	22.375	2.003	-2.334	Q
H1	Zn	21	10.50	11.184	3.881	2.529	U
H2		18	15.00	15.182	4.154	0.678	Q
H3		107	95.00	95.929	17.167	0.645	S
H4		125	125.00	125.656	22.913	-0.029	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.

<sup>x</sup> EMEP quality norm; the letters in the column indicates:

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## EMEP – Analytical intercomparison of heavy metals in precipitation 2016

Laboratory 204, Institute for Public Health "Pomoravlje" Cuprija (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 <sup>x</sup>	
H1	As	-999	0.60	0.658	0.135		B	
H2		-999	0.85	0.962	0.205		B	
H3		-999	7.00	6.995	6.995	0.356		B
H4		-999	9.50	9.513	9.513	0.534		B
H1	Cd	< 10.000	0.09	0.091	0.008		B	
H2		< 10.000	0.10	0.102	0.011		B	
H3		< 10.000	1.00	1.004	1.004	0.051		B
H4		< 10.000	1.10	1.11	1.11	0.089		B
H1	Cr	-999	0.60	0.578	0.104		B	
H2		-999	0.90	0.913	0.913	0.081		B
H3		-999	6.50	6.53	6.53	0.518		B
H4		-999	9.00	9.179	9.179	0.58		B
H1	Cu	-999	0.80	0.858	0.173		B	
H2		-999	1.10	1.156	1.156	0.486		B
H3		-999	10.50	10.376	10.376	0.5		B
H4		-999	11.00	10.924	10.924	0.564		B
H1	Ni	-999	1.00	0.971	0.202		B	
H2		-999	1.10	1.086	1.086	0.237		B
H3		-999	8.60	8.501	8.501	1.557		B
H4		-999	12.00	11.89	11.89	2.24		B
H1	Pb	< 50.000	1.30	1.306	0.109		B	
H2		< 50.000	0.90	0.926	0.926	0.136		B
H3		200	18.00	18.465	18.465	1.335	135.937	U
H4		207	22.00	22.375	22.375	2.003	92.164	U
H1	Zn	102	10.50	11.184	3.881	23.4	U	
H2		117	15.00	15.182	4.154	24.513	U	
H3		1000	95.00	95.929	95.929	17.167	52.662	U
H4		1010	125.00	125.656	125.656	22.913	38.596	U

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