

## EMEP – 37<sup>th</sup> intercomparison of analytical methods

**Laboratory 10, Institute for Atmospheric Physics (Hungary)**

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.274	0.288	0.294	0.008	-2.53	S
C2		0.255	0.272	0.271	0.007	-2.182	S
C3		0.091	0.1	0.1	0.003	-2.805	S
C4		0.079	0.092	0.092	0.004	-3.32	Q

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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 – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.28	0.288	0.294	0.008	-1.763	S
C2		0.258	0.272	0.271	0.007	-1.78	S
C3		0.097	0.1	0.1	0.003	-1.001	S
C4		0.09	0.092	0.092	0.004	-0.524	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.281	0.288	0.294	0.008	-1.635	S
C2		0.261	0.272	0.271	0.007	-1.378	S
C3		0.099	0.1	0.1	0.003	-0.4	S
C4		0.09	0.092	0.092	0.004	-0.524	S

\* Z score is unitless

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U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 19, Centro Nacional de Sanidad Ambiental (Spain)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.292	0.288	0.294	0.008	-0.228	S
C2		0.272	0.272	0.271	0.007	0.081	S
C3		0.101	0.1	0.1	0.003	0.081	S
C4		0.092	0.092	0.092	0.004	-0.016	S

\* Z score is unitless

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Laboratory 19, Centro Nacional de Sanidad Ambiental (Spain)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.292	0.288	0.294	0.008	-0.241	S
C2		0.271	0.272	0.271	0.007	-0.093	S
C3		0.1	0.1	0.1	0.003	0.021	S
C4		0.093	0.092	0.092	0.004	0.162	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.292	0.288	0.294	0.008	-0.228	S
C2		0.272	0.272	0.271	0.007	0.095	S
C3		0.096	0.1	0.1	0.003	-1.302	S
C4		0.088	0.092	0.092	0.004	-1.032	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

**Laboratory 23, Ricardo-AEA Limited (United Kingdom)**

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.29	0.288	0.294	0.008	-0.535	S
C2		0.271	0.272	0.271	0.007	-0.079	S
C3		0.1	0.1	0.1	0.003	-0.129	S
C4		0.092	0.092	0.092	0.004	-0.117	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

**Laboratory 31, Slovak Hydrometeorological Institute (Slovakia)**

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.317	0.288	0.294	0.008	2.969	Q
C2		0.294	0.272	0.271	0.007	3.041	S
C3		0.105	0.1	0.1	0.003	1.404	S
C4		0.099	0.092	0.092	0.004	1.763	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

**Laboratory 32, Atmospheric Pollution Research Laboratory, Institute of Physics, Vilnius (Lithuania)**

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> <i>µg N/ml</i>	0.309	0.288	0.294	0.008	1.946	S
C2		0.278	0.272	0.271	0.007	0.898	S
C3		0.103	0.1	0.1	0.003	0.803	S
C4		0.099	0.092	0.092	0.004	1.763	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 33, Environmental Pollution Observ. Centre (Latvia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.317	0.288	0.294	0.008	2.969	Q
C2		0.282	0.272	0.271	0.007	1.434	S
C3		< 0.204	0.1	0.1	0.003		B
C4		< 0.204	0.092	0.092	0.004		B

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

**Laboratory 42, State Hydrometeorological Service, Chisnau (Moldova)**

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.281	0.288	0.294	0.008	-1.635	S
C2		0.245	0.272	0.271	0.007	-3.521	S
C3		0.101	0.1	0.1	0.003	0.202	S
C4		0.065	0.092	0.092	0.004	-6.878	U

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.299	0.288	0.294	0.008	0.667	S
C2		0.303	0.272	0.271	0.007	4.246	Q
C3		0.075	0.1	0.1	0.003	-7.616	U
C4		0.047	0.092	0.092	0.004	-11.452	U

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 183, Public health institute Uzice (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.304	0.288	0.294	0.008	1.306	S
C2		0.27	0.272	0.271	0.007	-0.173	S
C3		0.103	0.1	0.1	0.003	0.803	S
C4		0.096	0.092	0.092	0.004	1.001	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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 – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.297	0.288	0.294	0.008	0.411	S
C2		0.269	0.272	0.271	0.007	-0.307	S
C3		0.099	0.1	0.1	0.003	-0.4	S
C4		0.092	0.092	0.092	0.004	-0.016	S

\* Z score is unitless

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

S – Satisfactory: Your result deviates less than ±10% of the expected value

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U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 185, Public Health Centre - Cacak, Department for Sanitary Chemistry and Ecotoxicology  
(Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.296	0.288	0.294	0.008	0.283	S
C2		0.27	0.272	0.271	0.007	-0.173	S
C3		0.099	0.1	0.1	0.003	-0.4	S
C4		0.091	0.092	0.092	0.004	-0.27	S

\* Z score is unitless

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U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

**Laboratory 186, Public Health Institute - Kraleva (Republic of Serbia)**

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.297	0.288	0.294	0.008	0.411	S
C2		0.271	0.272	0.271	0.007	-0.039	S
C3		0.099	0.1	0.1	0.003	-0.4	S
C4		0.092	0.092	0.092	0.004	-0.016	S

\* Z score is unitless

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U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.288	0.288	0.294	0.008	-0.74	S
C2		0.267	0.272	0.271	0.007	-0.575	S
C3		0.1	0.1	0.1	0.003	-0.099	S
C4		0.091	0.092	0.092	0.004	-0.27	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 188, Institute of Public Health - Krusevac (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.29	0.288	0.294	0.008	-0.484	S
C2		0.266	0.272	0.271	0.007	-0.709	S
C3		0.097	0.1	0.1	0.003	-1.001	S
C4		0.09	0.092	0.092	0.004	-0.524	S

\* Z score is unitless

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.294	0.288	0.294	0.008	0.028	S
C2		0.272	0.272	0.271	0.007	0.095	S
C3		0.098	0.1	0.1	0.003	-0.7	S
C4		0.092	0.092	0.092	0.004	-0.016	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 192, The Public Health Institute Sabac (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.297	0.288	0.294	0.008	0.411	S
C2		0.278	0.272	0.271	0.007	0.898	S
C3		0.104	0.1	0.1	0.003	1.104	S
C4		0.095	0.092	0.092	0.004	0.747	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

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U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 193, Institute of Public Health of Vojvodina (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.29	0.288	0.294	0.008	-0.484	S
C2		0.271	0.272	0.271	0.007	-0.039	S
C3		0.1	0.1	0.1	0.003	-0.099	S
C4		0.091	0.092	0.092	0.004	-0.27	S

\* Z score is unitless

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Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.288	0.288	0.294	0.008	-0.753	S
C2		0.269	0.272	0.271	0.007	-0.253	S
C3		0.1	0.1	0.1	0.003	-0.099	S
C4		0.091	0.092	0.092	0.004	-0.194	S

\* Z score is unitless

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

S – Satisfactory: Your result deviates less than ±10% of the expected value

Q – Questionable: Your result deviates between ±10-20% of the expected value

U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 196, Institute of Public Health Leskovac (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.292	0.288	0.294	0.008	-0.228	S
C2		0.271	0.272	0.271	0.007	-0.039	S
C3		0.1	0.1	0.1	0.003	-0.099	S
C4		0.09	0.092	0.092	0.004	-0.524	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 197, Institute of Occupational Health - Novi Sad (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.291	0.288	0.294	0.008	-0.356	S
C2		0.277	0.272	0.271	0.007	0.764	S
C3		0.105	0.1	0.1	0.003	1.404	S
C4		0.094	0.092	0.092	0.004	0.493	S

\* Z score is unitless

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

S – Satisfactory: Your result deviates less than ±10% of the expected value

Q – Questionable: Your result deviates between ±10-20% of the expected value

U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

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

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm <sup>¤</sup>
C1	NO <sub>2</sub> µg N/ml	0.298	0.288	0.294	0.008	0.539	S
C2		0.275	0.272	0.271	0.007	0.496	S
C3		0.099	0.1	0.1	0.003	-0.4	S
C4		0.093	0.092	0.092	0.004	0.239	S

\* Z score is unitless

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

S – Satisfactory: Your result deviates less than ±10% of the expected value

Q – Questionable: Your result deviates between ±10-20% of the expected value

U – Unsatisfactory: Your result deviates more than ±20% of the expected value

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 – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 200, FUB AG (Switzerland)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.294	0.288	0.294	0.008	0.028	S
C2		0.272	0.272	0.271	0.007	0.095	S
C3		0.1	0.1	0.1	0.003	-0.099	S
C4		0.092	0.092	0.092	0.004	-0.016	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 201, Public Health Institute "Timok" (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.296	0.288	0.294	0.008	0.283	S
C2		0.268	0.272	0.271	0.007	-0.441	S
C3		0.101	0.1	0.1	0.003	0.202	S
C4		0.089	0.092	0.092	0.004	-0.778	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{-}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 203, The Public Health Institute Vranje (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.296	0.288	0.294	0.008	0.283	S
C2		0.274	0.272	0.271	0.007	0.363	S
C3		0.104	0.1	0.1	0.003	1.104	S
C4		0.095	0.092	0.092	0.004	0.747	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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## EMEP – 37<sup>th</sup> intercomparison of analytical methods

Laboratory 206, Public Health Institute Valjevo (Republic of Serbia)

### Nitrogen dioxide in absorbing solution (C-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score *	EMEP quality norm $\ddagger$
C1	NO <sub>2</sub> $\mu\text{g N/ml}$	0.315	0.288	0.294	0.008	2.713	S
C2		0.308	0.272	0.271	0.007	4.915	Q
C3		0.108	0.1	0.1	0.003	2.306	S
C4		0.098	0.092	0.092	0.004	1.509	S

\* Z score is unitless

$\ddagger$  EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than  $\pm 10\%$  of the expected value

Q – Questionable: Your result deviates between  $\pm 10\text{--}20\%$  of the expected value

U – Unsatisfactory: Your result deviates more than  $\pm 20\%$  of the expected value

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