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Reply to Letter to the Editor

Reply to comments of Ruiz-Bevia on "Process sampling module coupled with purge and trap-GC-FID for in situ auto-monitoring of volatile organic compounds in wastewater" by Chiu et al. [Talanta 80(2) (2009) 903–908]

To the Editor,

We appreciate the comments of Professor F. Ruiz-Bevia. We have the following comments:

Response to the first question:

Yes, the significant figures that Prof. F. Ruiz-Bevia questioned is basic and important expression for scientific report, certainly, we have noticed this. As a consequence, we corrected all the contents in the revised version, as instructed by the editor and since we were reminded by one of the reviewers. However, it seems we did not successfully insert the new tables in the revised version. We hereby submit those tables (Tables 1 and 2).

Response to the second question:

When the system was developed and brought to the monitoring site for in situ detection of the VOCs, we found that almost all VOCs amount was donated by single acetone. Moreover, the concentration of detected acetone in the sampling site exceeded the upper limit of calibration curve built in the laboratory. Obviously, this told that the calibration curve which was prepared in the lab could not fit this situation. Therefore, another calibration curve of acetone was immediately built in the field and applied to in situ monitoring with concentration range increasing up to 1500 ppb (50, 100, 250, 500, 800, 1200, and 1500, higher than the 240 ppb in-lab). The figures of precision (%), accuracy (%) and MDL (ppb) were 8.9, 10 and 14 individually. Why did we need to build a calibration curve in the field instead of bringing the sample back to the laboratory? This is because the system was originally developed for the timely information of the contamination in the field and thus may report to EPA or related office for rapid reflection. We are so sorry for not putting the above-mentioned description in the manuscript.

Table 1
QA and QC of the automated system.

VOC	Precision (%)	Accuracy (%)	MDL (ppb)	*R*-square
1,1-Dichloroethlene	13.4	19.4	2.39	0.996
Acetone	8.9	10.0	14.00	0.994
Methylenechlorin	13.1	9.5	2.15	0.999
Chloroform	9.5	23.5	1.76	0.994
Benzene	8.3	7.3	1.34	0.998
Trichloroethylene	8.6	9.1	1.41	0.999
Bromodichloromethane	9.4	0.3	1.41	0.996
Toluene	9.0	10.0	1.48	0.999
Tetrachloroethylene	9.4	12.0	1.58	0.999
Dibromochloromethane	5.9	0.3	0.89	0.998
m,p-Xylene	9.6	12.2	1.66	0.998
Bromoform	3.7	0.4	0.56	0.998
1,2,4-Trimethylbenzene	3.1	13.7	0.39	0.997
1,3-Dichlorobenzene	3.8	12.5	0.50	0.998
1,4-Dichlorobenzene	2.8	11.5	0.37	0.999
1,2,4-Trichlorobenzene	4.7	7.7	0.67	0.996
Naphthalene	2.0	7.9	0.32	0.998

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Table 2
VOC concentration analysis between laboratory-made automated system and Archon auto sampler.

Compounds	Sampling time			
	01:50 AM		09:14 AM	
	Laboratory-made system (ppb)	Archon system (ppb)	Laboratory-made system (ppb)	Archon system (ppb)
Acetone	523.26	543.71	609.06	620.98
Chloroform	3.27	3.69	4.95	5.23
Trichloroethylene	2.93	3.17	4.16	4.52
Toluene	ND	ND	ND	1.58
1,4-Dichlorobenzene	ND	ND	ND	ND
Naphthalene	1.68	1.58	1.59	1.54
Total VOCs	521.14	552.15	611.34	632.27

Compounds	Sampling time			
	03:37 PM		10:54 AM	
	Laboratory-made system (ppb)	Archon system (ppb)	Laboratory-made System (ppb)	Archon system (ppb)
Acetone	472.70	483.23	248.94	254.14
Chloroform	7.25	8.48	3.45	4.30
Trichloroethylene	2.86	3.38	5.37	5.71
Toluene	ND	1.68	ND	1.51
1,4-Dichloro Benzene	ND	ND	ND	0.39
Naphthalene	1.56	1.54	1.68	1.69
Total VOCs	484.37	498.32	239.43	268.74

ND, not detected.

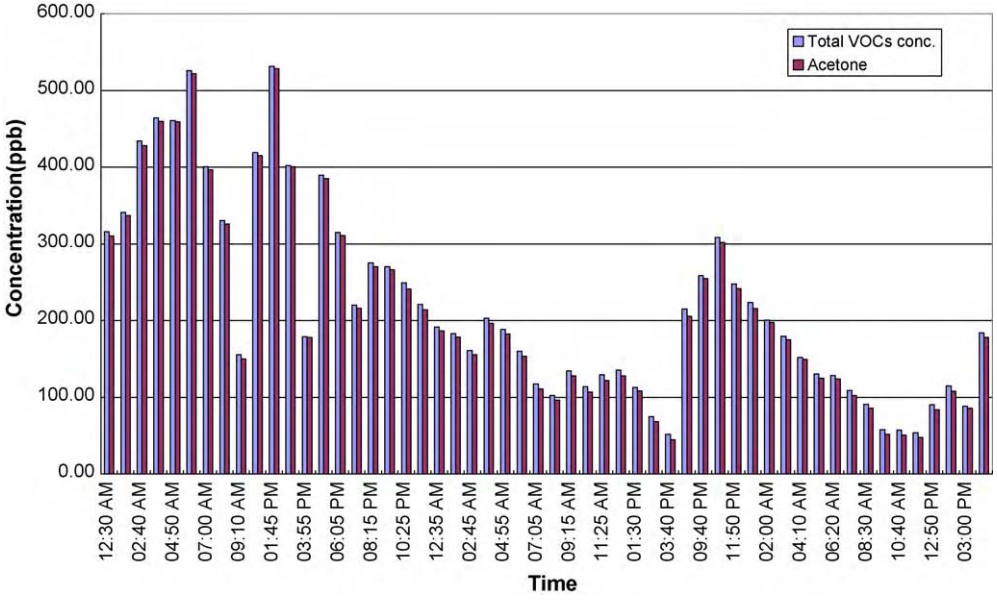

Fig. 8. Hourly concentration variations of acetone and total VOC determined by the laboratory-made automated system. The period of in situ monitoring was 54 h.

Response to the third question:

Finally, the Fig. 7 and Fig. 8 should be different but I saw that Fig. 7 was repeated as Fig. 8 in the print. The attached file, which is the copy we sent, may verify that we have already watched out for this arrangement.

We apologize for any confusion.
Sincerely Yours,

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