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Corrigendum

Construction and exploration of pollutant consumption oxygen equivalent treatment costs in municipal wastewater treatment plants*

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In the original online version of the article "Construction and exploration of pollutant consumption oxygen equivalent treatment costs in municipal wastewater treatment plants" (DOI: 10.1080/19443994.2013.803314), the authors wish to make the following corrections in the figures (marked in bold/underlined).

4.1. Calculation

Table 1
The influent and effluent qualities and treatment cost per cubic meter of wastewater in MWTPs

MWTP	Treatment cost (yuan/m^3)	Influent COD (mg/l)	Effluent COD (mg/l)	Influent TN (mg/l)	Effluent TN (mg/l)	Influent TP (mg/l)	Effluent TP (mg/l)
…							
14	**<u>0.57</u>**	175	36.3	25.18	12.40	2.56	0.77
15	**<u>0.73</u>**	253.00	16.78	35.30	13.28	2.63	0.35
…							

In Table 1

<u>0.57</u> should replace 0.44 which was incorrect.
<u>0.73</u> should replace 0.57 which was incorrect.

Table 2
Pollutant consumption oxygen equivalents in MWTPs

MWTPs	Treatment cost (yuan/m^3)	Influent PCOE (mg/l)	Effluent PCOE (mg/l)	PCOE of per liter of water (mg/l)	PCOE of per cubic meter of wastewater (g/m^3)	PCOETC (yuan/kg)
…						
14	**<u>0.57</u>**	265.08	72.90	192.18	192.18	**<u>2.97</u>**
15	**<u>0.73</u>**	364.04	48.47	315.57	315.57	**<u>2.31</u>**
…						

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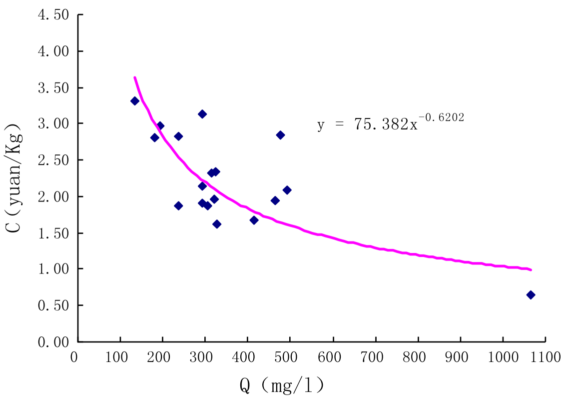
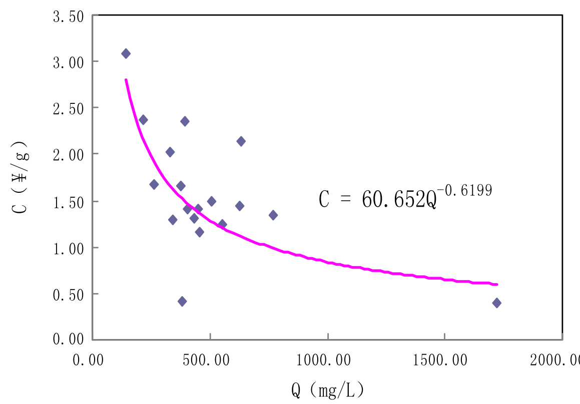
In Table 2

0.57 should replace 0.44 which was incorrect.
2.97 should replace 1.68 which was incorrect.
0.73 should replace 0.57 which was incorrect.
2.31 should replace 1.41 which was incorrect.

4.2. Feasibility analysis of PCOETC





The left figure is correct and should replace right figure which was incorrect.

Firstly, the PCOE per cubic meter of wastewater (or unit PCOE) in the MWTPs in southwest China lies mainly from 180 to 500 g/m^3 (Fig. 1). PCOETC is mainly from 1.50 to 3.0 yuan/kg, and its mean value is about **2.24** yuan/kg.

2.24 should replace 2.17 which is incorrect.

Secondly, according to the case study of 18 MWTPs in southwest China, a significant inverse relation is found between unit PCOE and PCOETC in the MWTPs (Fig. 1). The higher the unit PCOE value, the lower the PCOETC value, and *vice versa*. On fitting the data, the PCOETC model we obtained is $\mathbf{C = 75.382Q^{-0.6202}}$.

$\mathbf{C = 75.382Q^{-0.6202}}$ should replace $C = 59.349Q^{-0.5836}$ which was incorrect.

5. Application of PCOETC

In view of the statistical data, the average values of $P(P_m)$ and Q (Q_m) of the 18 MWTPs China in 2010 are **0.68** yuan/m^3 and 353.68 g/m^3, respectively. In light of Tables 3 and 4, the running costs of the MWTPs are evaluated by PCOETC.±20% of the treatment costs per cubic meter of wastewater(Pm) and PCOE(Qm) are considered as the value for the evaluation standard of small, medium, and large values. The results show that the treatment costs per cubic meter of wastewater of **13** of the MWTPs is normal, that of 2 of them is low, and **3** of them is high (Table 5).

0.68 should replace 0.69 which was incorrect.
13 should replace 14 which was incorrect.
3 should replace 2 which was incorrect.

Table 5
The evaluation results of applying PCOETC

MWTP	Judgment result of wastewater treatment cost, P (yuan/m^3)		Judgment result of PCOE, Q (g/m^3)		Evaluation result of PCOETC, C	Judgment result of running cost of MWTP
	$0.54 \le P_m = 0.68 \le 0.81$		$282.94 < Q_m = 353.68 < 424.41$			
14	0.57	medium	192.18	small	reasonable	high
15	0.73	medium	315.57	medium	reasonable	normal

In Table 5

***$0.54 \le P_m$* = 0.68 ≤ 0.81** should replace $0.55 < P_m = 0.69 < 0.82$ which was incorrect.
0.57 should replace 0.44 which was incorrect.
medium should replace small which was incorrect.
high should replace normal which was incorrect.
0.73 should replace 0.57 which was incorrect.

6. Conclusions

The PCOE formula is deduced using the fact that wastewater pollutant indicators such as COD, BOD, SS, NH_3-N, TN, and TP have some relation to oxygen consumption. Thus, the PCOE formula is derived: $T = U + 1.97X + 15.81Z$. On this basis, we further build the mathematical model for PCOETC (**$C = 75.382Q^{-0.6202}$**). The results show that PCOE (Q) and PCOETC (C) have a significant inverse relation based on the study of practical examples from 18 MWTPs in southwest China (Fig. 1). Overall, the higher the PCOE value, the lower the PCOETC value, and *vice versa*. This proves that PCOETC is a reasonable and correct parameter to use, and that it can be used as the evaluation parameter for the running costs of MWTPs.

$C = 75.382Q^{-0.6202}$ should replace $C = 59.349Q^{-0.5836}$ which was incorrect.

Finally, the running costs of 18 MWTPs are evaluated according to the PCOETC theory. The results obtained show that the treatment costs per cubic meter of wastewater of **13 MWTPs** are normal, that of 2 are low, and that of **3 are high**. PCOETC can effectively evaluate the running cost of a MWTP together with PCOE and the treatment costs per cubic meter of wastewater. This method is much more scientific than the commonly used statistical indicator (i.e. the treatment cost per cubic meter of wastewater). This has important significance in the operation and management of MWTPs.

13 should replace 14 which was incorrect.
3 should replace 2 which was incorrect.