Correction to: New and updated life cycle inventories for surfactants used in European detergents: summary of the ERASM surfactant life cycle and ecofootprinting project

Diederik Schowanek¹ · Tilly Borsboom-Patel² · Alain Bouvy³ · John Colling⁴ · Juan Antonio de Ferrer⁵ · Diana Eggers⁶ · Karsten Groenke⁷ · Thomas Gruenenwald⁸ · Johanna Martinsson⁹ · Philip Mckeown¹⁰ · Bjoern Miller¹¹ · Simon Moons¹² · Kate Niedermann¹³ · Miguel Pérez¹⁴ · Christine Schneider¹⁵ · Jean-Francois Viot¹⁶

Published online: 5 February 2018

© Springer-Verlag GmbH Germany, part of Springer Nature 2018

Correction to: Int J Life Cycle Assess

<https://doi.org/10.1007/s11367-017-1384-x>

In Table 4, reference to the footnotes should be a, b and c (instead of 1, 2 and 3).

Table 6 was not correctly displayed. The reference approach used in this study should be marked in **bold** (not in grey).

The online version of the original article can be found at <https://doi.org/10.1007/s11367-017-1384-x>

✉ Diederik Schowanek
schowanek.d@pg.com

¹ Procter & Gamble, Brussels Innovation Centre, Temselaan 100, 1853, Strombeek-Bever, Belgium

² Shell Chemicals Europe BV, Weena 70, 3012 CM Rotterdam, The Netherlands

³ CEFIC, The European Chemical Industry Council, Avenue E. Van Nieuwenhuysse 4, 1160 Brussels, Belgium

⁴ Stepan Europe SAS, Chemin Jongkind, CS 20127, 38341 Voreppe Cedex, France

⁵ CEPISA QUIMICA S.A., Fabrica de Puente Mayorga, Apdo. Correos 40, 11360 San Roque, Cádiz, Spain

⁶ PE International AG (now thinkstep AG), Hauptstraße 111-113, 70771 Leinfelden-Echterdingen, Germany

⁷ Evonik Industries AG, Bäckerpfad 25, 47805 Krefeld, Germany

⁸ BASF, SE, Carl-Bosch-Str. 38, 67056 Ludwigshafen, Germany

⁹ Akzo Nobel Surface Chemistry, AB Stenunge Allé 3, SE-444 85 Stenungsund, Sweden

¹⁰ Unilever Safety & Environmental Assurance Centre, Colworth Science Park Sharnbrook, Bedford MK44 1LQ, UK

¹¹ Sasol Germany GmbH, Anckelmannsplatz 1, 20537 Hamburg, Germany

¹² Huntsman Performance Products, Everslaan 45, 3078 Everberg, Belgium

¹³ Dow Chemical Company, Zurich, Switzerland

¹⁴ Kao Chemicals Europe, Puig dels Tudons no. 10, 08210 Barberà del Vallès, Barcelona, Spain

¹⁵ Henkel AG & Co. KGaA, Henkelstrasse 67, 40589 Duesseldorf, Germany

¹⁶ Solvay Research & Innovation, Centre Paris, 52 rue de la Haie Coq, 93308 Aubervilliers Cedex, France

Table 4 Primary energy demand (PED), GHG emissions and global warming potential (GWP 100 years) for 1 metric tonne (active ingredient) of market-average surfactant

	SLE no.	Surfactant	PED renewable MJ	PED fossil MJ	PED fossil and renewable MJ	CO ₂ , Biotic ^a kg	CO ₂ , Fossil kg	CO ₂ , LUC ^b kg	Methane emissions ^c kg	Nitrous oxide emissions kg	NM VOC emissions kg	Total GWP kg CO ₂ e
Anionic	2	Linear alkylbenzene sulphonic acid	891	61,61	62,052	5.4	1563	0	6.8	0.02	0.00	1746
	5	C12–14 sodium alkyl sulphate	24,601	42,154	66,755	– 1885.1	2159	917	11.5	0.51	0.02	1629
	6	C12–14 sodium alkyl ether sulphate, 2 EO	21,718	33,449	55,167	– 1593.6	1394	975	11.0	0.45	0.02	1185
Non-ionic	7	C12–13 sodium alkyl ether sulphate, 2 EO	1602	63,441	65,043	11.2	2211	0	7.7	0.04	0.00	2428
	30	Sodium cumene sulphonate	988	51,437	52,424	4.7	1593	0	5.1	0.05	0.00	1738
	9	C12–14 alcohol ethoxylate, 3 EO	28,017	31,705	59,722	– 1660.0	1062	2337	22.7	0.59	0.03	2524
	10	C12–14 alcohol ethoxylate, 7 EO	20,107	47,746	67,853	– 1290.0	1539	1190	14.8	0.43	0.02	1935
	11	C12–15 alcohol ethoxylate, 3 EO	1254	75,372	76,626	16.6	2408	0	9.5	0.04	0.00	2674
	12	C12–15 alcohol ethoxylate, 7 EO	1100	71,079	72,179	9.3	2097	0	7.9	0.04	0.00	2314
	14	C16–18 alcohol ethoxylate, ≥20 EO	6324	63,912	70,236	– 714.9	1930	292	15.4	0.22	0.00	1959
Cationic	16	Cocamide diethanolamine	23,239	18,165	41,405	– 2151.5	838	187	3.0	0.55	0.01	– 887
	20	C12–14 amine oxide	37,435	39,038	76,473	– 2436.9	1638	2654	24.9	0.90	0.03	2745
	24	C16–18 triethanolamine Esterquats	6719	38,086	44,805	– 2235	1662	5	34.5	0.67	2.55	495
Amphoteric	28	C8–18 alkyl amidopropyl betaine	25,001	51,126	76,126	– 1750.7	2617	1030	14.7	0.65	0.02	2455
	32	Sodium cocoamphoacetate	20,078	54,620	74,699	– 1460.2	3007	438	9.3	0.60	0.01	2395

^a Sum of carbon dioxide uptake and emission from biogenic sources^b From land use (peat oxidation) and land use change^c From fossil and biogenic sources

Table 6 Sensitivity related to allocation by mass vs. price

	Substance	Primary energy demand			Global warming potential		
		MJ / tonne			Tonne-CO ₂ -equiv. / tonne		
		Price	Mass	Difference (%)	Price	Mass	Difference (%)
15	Diethanolamine	52,769	65,562	+ 24	2220	2760	+ 24
17	Dimethylamine	69,874	79,220	− 12	2695	3066	− 12
21	Beef tallow	24,782	274,613	+ 1008	− 1529	28,253	+ 1748
22	Triethanolamine	72,086	71,437	− 1	3033	2669	− 12
25	Coconut oil methyl ester	62,800	38,055	+ 65	1193	− 1989	+ 60
25a	Palm oil methyl ester	60,633	53,187	+ 14	3030	2658	+ 14
25b	Palm kernel oil methyl ester	80,240	54,585	+ 47	4017	2696	+ 49
27	Chloroacetic acid	33,905	29,794	+ 14	1649	1450	+ 14
31	Aminoethylethanolamine	91,767	66,778	+ 37	4095	2974	+ 38
32	Sodium cocoamphoacetate	81,160	74,699	+ 9	2673	2395	+ 12

The reference approach used in this study is marked in **bold**.