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CORRECTION

Correction to: Addressing the use and end-of-life phase of pharmaceutical products in life cycle assessment

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The original version of this article unfortunately contained a mistake which was missed during typesetting. In Tab. 3, the first parameter of Flow #4 was incorrect. The correct version of the table is given below.

The original article has been corrected.

The online version of the original article can be found at https://doi.org/10.1007/s11367-019-01722-7

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Table 3 Application of the model to the example of ibuprofen

Flow #	Calculation (ibuprofen, 400 mg)	Data source/reference
1	$API_{Admin} = 1200\ mg \times 7\ day = 8400\ mg\ (oral) \triangleq 21$ tablets	TP is individually determined, DDD obtained from DIMDI (2019)
2	$API_{Unused} = 8400\ mg \times 0.05 = 420\ mg$	Loss rate at consumer: 5% for healthcare products (European Commission 2018)
	$API_{Regular\ disposal} = 420\ mg \times 0.85 = 357\ mg$ $API_{Irregular\ disposal} = 420\ mg \times 0.15 = 63\ mg$	Average disposal rates for solid products according to Bartsch (2010) applied to API_{Unused}
3	Not applicable (n/a) because the model is tested for oral application of ibuprofen (see Table 1)	
4	$API_{abs\_par,\ excreted} = 0.09 \times 8400\ mg \times 0.85 = 643\ mg$	Excretion rate: Medsafe (2017), absorption rate A: Ortiz de García et al. (2013)
	$API_{abs\_met\ 1,\ excreted} = 8400\ mg \times 0.85 \times 0.35 = 2499\ mg$ $API_{abs\_met\ 2,\ excreted} = 8400\ mg \times 0.85 \times 0.51 = 3641\ mg$	Metabolization rate for metabolite 1 and 2[1]: Medsafe (2017)
	$API_{nabs\_par,\ excreted} = 8400\ mg \times (1 - 0.85) = 1260\ mg$	Excretion rate: Medsafe (2017), absorption rate A: Ortiz de García et al. (2013)
	$API_{Influent}(parental) = 63\ mg + 643\ mg + 1260\ mg = 1966\ mg$ $API_{Influent}(metabolite\ 1) = API_{abs\_met\ 1,\ influent} = 2499\ mg$ $API_{Influent}(metabolite\ 2) = API_{abs\_met\ 2,\ influent} = 3641\ mg$	See calculations for $API_{Irregular\ disposal}$, API_{abs_par}, excreted and $API_{nabs\_par,\ excreted}$
5, 6, 8	$API_{Effluent} = 1965.6\ mg \times 0.3687 = 724.72\ mg$ $API_{Solid\ matter} = 1965.6\ mg \times 0.0159 = 31.25\ mg$ $API_{Evaporated} = 1965.6\ mg \times 0 = 0\ mg$ $API_{Degraded} = 1965.6\ mg \times 0.6154 = 1209.63\ mg$ Removal rate = 63.13%	DF and removal rate calculated with SimpleTreat4.0. A detailed overview on the calculation parameters used in SimpleTreat can be found in the supplementary material (Tables S1–3).
7	Not applicable (n/a) because the application of sewage sludge as fertilizer is outside the scope of this publication	
9–11	$API_{Waste\ disposal\_water} = API_{Waste\ disposal\_soil} = API_{Waste\ disposal\_air} = 0\ mg$	See chapter 3.2.2

[1] In this example, ibuprofen is mainly metabolized to two substances: 2-4-(2-hydroxy-2-methylpropylphenyl) propionic acid (metabolite 1) and 2-4-(2-carboxypropylphenyl) propionic acid (metabolite 2) (Davies 1998; Medsafe 2017). Therefore, only these two metabolites are considered