

Toxicological estimation of mortality of oceanic sea turtles oiled during the *Deepwater Horizon* oil spill

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Table S1: Summary of daily instantaneous dose and 14-day retained dose calculations for the minimum oil volume estimated in the oral cavity using the minimum, mean and maximum turtle body weights.

Daily Instantaneous Dose			
mg oil/kg BW			
Category of Oiling	Body Weights		
	Extent	Minimum	MEAN
1	123	29	10
2	613	146	52
3	2,451	585	208
4	9,804	2,341	833

14-Day Retained Dose			
mg oil/kg BW			
Category of Oiling	Body Weights		
	Extent	Minimum	MEAN
1	1,222	292	104
2	6,108	1,459	519
3	24,433	5,835	2,077
4	97,733	23,342	8,307

Table redrawn from Mitchelmore 2012a. Turtle body weights used were; 0.34, 1.42 and 4.00 kg for minimum, mean and maximum weights respectively (Data is from Stacy, 2012 as oiled turtles were weighed following rescue and hence body weights were calculated from these data sheets for the purpose of the calculations above).

Table S2: Summary of daily instantaneous dose and 14-day retained dose calculations for the mean oil volume estimated in the oral cavity using the minimum, mean and maximum turtle body weights.

Daily Instantaneous Dose			
mg oil/kg BW			
Category of Oiling	Body Weights		
	Extent	Minimum	MEAN
1	245	59	21
2	931	222	79
3	4,902	1,171	417
4	14,706	3,512	1,250

14-Day Retained Dose			
mg oil/kg BW			
Category of Oiling	Body Weights		
	Extent	Minimum	MEAN
1	2,443	584	208
2	9,285	2,217	789
3	48,866	11,671	4,154
4	146,599	35,012	12,461

Table redrawn from Mitchelmore 2012a. Turtle body weights used were; 0.34, 1.42 and 4.00 kg for minimum, mean and maximum weights respectively (Data is from Stacy, 2012 as oiled turtles were weighed following rescue and hence body weights were calculated from these data sheets for the purpose of the calculations above).

Table S3: Summary of daily Instantaneous dose and 14-day retained dose calculations for the maximum oil volume estimated in the oral cavity using the minimum, mean and maximum turtle body weights.

Daily Instantaneous Dose			
mg oil/kg BW			
Category of Oiling	Body Weights		
	Extent	Minimum	MEAN
1	368	88	31
2	1,225	293	104
3	7,353	1,756	625
4	19,608	4,683	1,667

14-Day Retained Dose			
mg oil/kg BW			
Category of Oiling	Body Weights		
	Extent	Minimum	MEAN
1	3,665	875	312
2	12,217	2,918	1,038
3	73,300	17,506	6,230
4	195,466	46,683	16,615

Table redrawn from Mitchelmore 2012a. Turtle body weights used were; 0.34, 1.42 and 4.00 kg for minimum, mean and maximum weights respectively (Data is from Stacy, 2012 as oiled turtles were weighed following rescue and hence body weights were calculated from these data sheets for the purpose of the calculations above).

Table S4: Estimates of potential retained doses in turtles exposed up to Day 14 (includes uptake and excretion based on a 50% reduction of dose after Day 9).

Dosing day							
Amount of daily dose oil from day:	8	9	10	11	12	13	14
1	1	1	0.5	0.25	0.125	0.0625	0.03125
2	1	1	1	0.5	0.25	0.125	0.0625
3	1	1	1	1	0.5	0.25	0.125
4	1	1	1	1	1	0.5	0.25
5	1	1	1	1	1	1	0.5
6	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1
9		1	1	1	1	1	1
10			1	1	1	1	1
11				1	1	1	1
12					1	1	1
13						1	1
14							1
Total accumulated oil volume:	8	9	9.5	9.75	9.875	9.938	9.969

(NOTE: showing from Day 8 onwards as Days 1-9 are simply additive of the daily dose e.g. Day 5 would be 1+1+1+1+1 = 5 i.e. they receive the whole daily dose, no excretion). From Day 9 excretion occurs and modifies the accumulated dose i.e. at Day 10 the turtles will have received 10 days of daily dose but the first Day 1 of dose will be reduced 50% due to excretion; therefore, instead of a x 10 daily dose they would receive a x 9.5 daily dosing. So at each day after Day 9 50% loss of the prior daily doses occurs.

Table S5: Estimation of the 14-day retained dose possible in oceanic sea turtles in the four oiling categories using the minimum, mean and maximum estimates for oral oil volume as detailed in Table 1. Numbers are presented based on the average turtle weight with values in parenthesis showing the ranges based on the maximum, mean and minimum weight of turtles.

Extent of visual external oiling (Category) ¹	14-day retained dose for all three oral volume estimates (mg oil/ kg body weight)		
	Minimum Oral Oil Estimate	Mean Oral Oil Estimate	Maximum Oral Oil Estimate
1	292 (104-1,222)	584 (208-2,443)	875 (312-3,665)
2	1,459 (519-6,108)	2,217 (789-9,285)	2,918 (1,038-12,217)
3	5,835 (2,077-24,433)	11,671 (4,154-48,866)	17,506 (6,230-73,300)
4	23,342 (8,307-97,733)	35,012 (12,461-146,599)	46,683 (16,615-195,466)

1 = Categories defined in Stacy 2012; DWH Trustees 2015, Chapter 4.8)

Table redrawn from Mitchelmore, 2012a. Category 4 data provided for completeness but not included in our mortality assessments. Further details can be found in Supplementary tables S1-3.

NOTE: calculations used an average weight of 1.42 kg (Data is from Stacy, 2012 as oiled turtles were weighed following rescue and hence body weights were calculated from these data sheets for the purpose of the calculations above). A conversion factor for oil mass of 1.2 ml oil / g (based on an oil specific gravity of 0.833) was used, which was further converted to provide oil estimates in mg. This oil mass was divided by the mean turtle body weight to obtain data in mg oil / kg body weight. 14-day retained dose represents 9 days of total daily dose with subsequent days assuming an estimated 50% loss of dose due to excretion.