

1 Linking catabolism to cyclodextrin extractability: determination of
2 the microbial availability of PAHs in soil

3 **Supporting Data**

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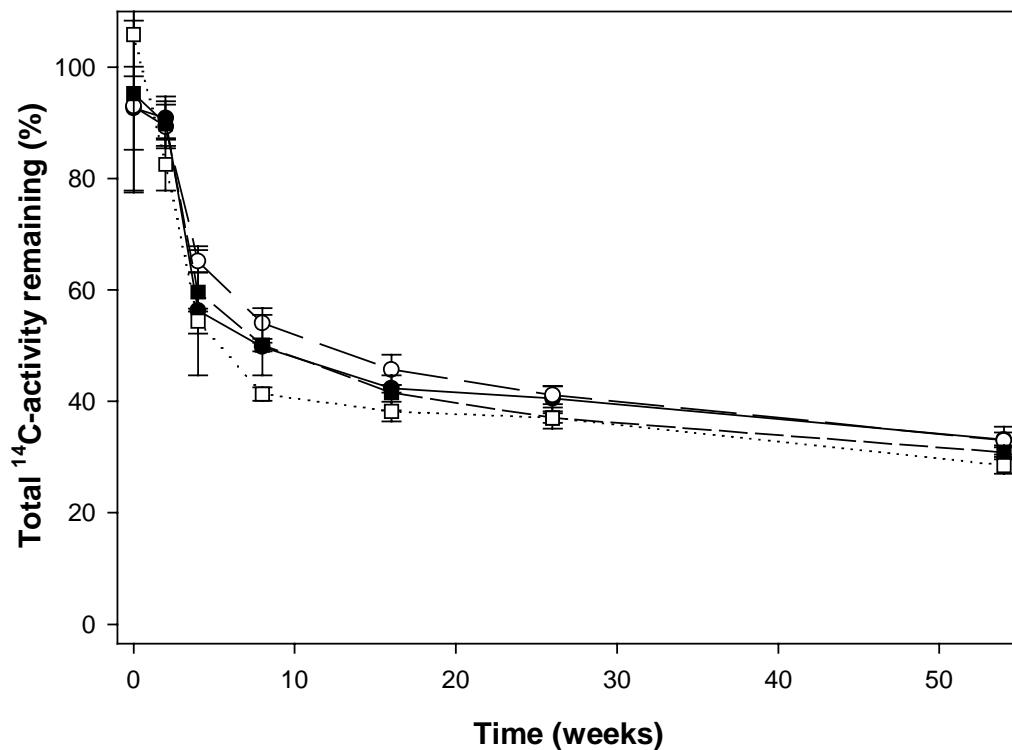
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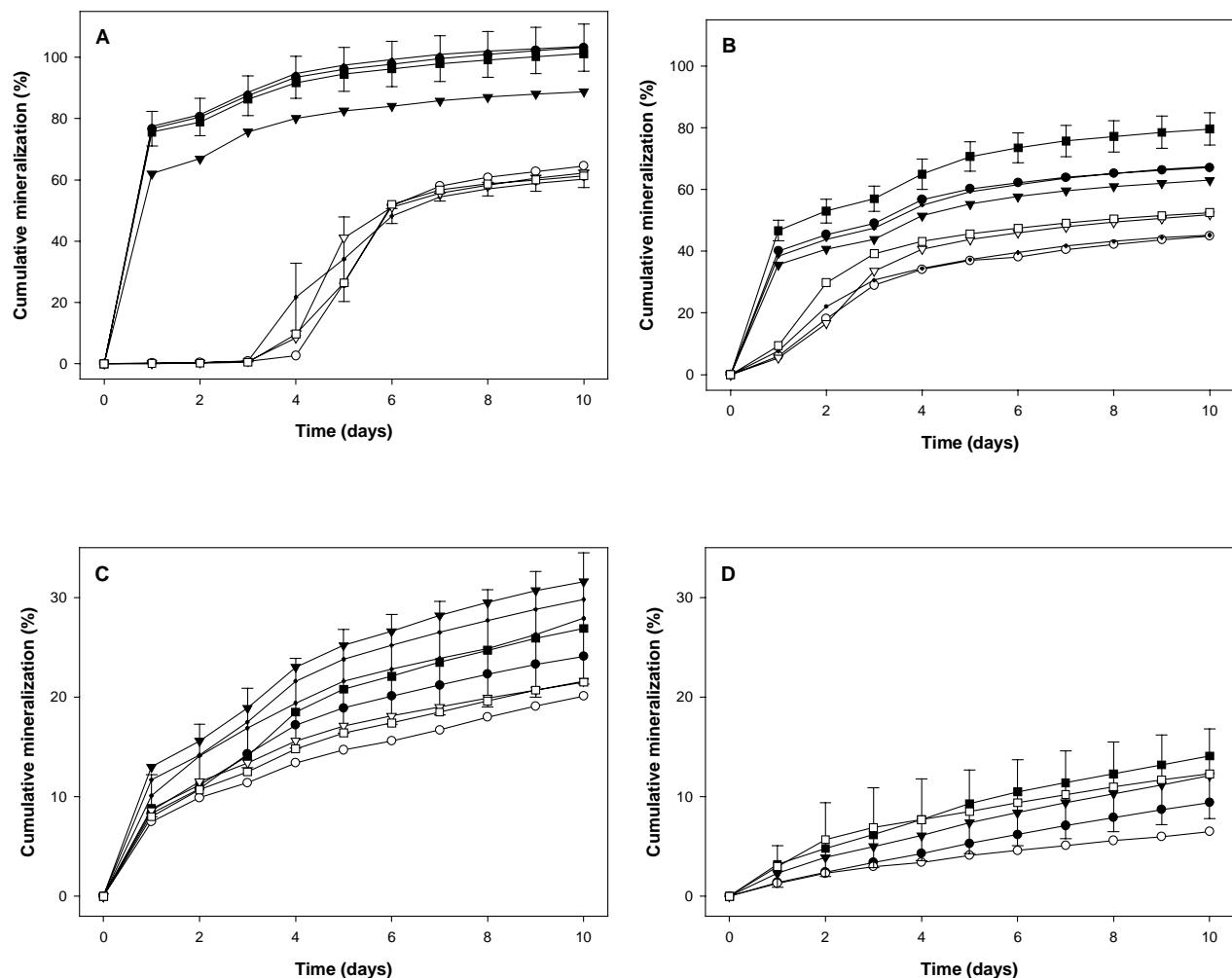
14 **Figure A.** Decline in total ^{14}C -activity with time in non-sterile soils amended with transformer oil
15 to 0 (●), 0.005 (○), 0.01 (■) and 0.05% (□). Values are percentage of the time-zero concentration.
16 Error bars, where visible, represent 2 SEM.



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18 **Figure B.** Cumulative mineralization curves for 0% (●), 0.005% (▼), 0.01% (■) and 0.05% oil-
19 amended soil (◆); after 0 (A), 2 (B), 4 (C), 8 (D), 16 (E), 26 (F) and 54 (plot G) weeks soil-oil-
20 contaminant contact time. Full symbols represent catabolic inocula degradation. Open symbols
21 indigenous microbial degradation. y-axes have been maximized to aid clarity. Error bars represent
22 1 standard error of the mean (SEM) and are given for the condition displaying the greatest
23 variability only, to aid clarity.

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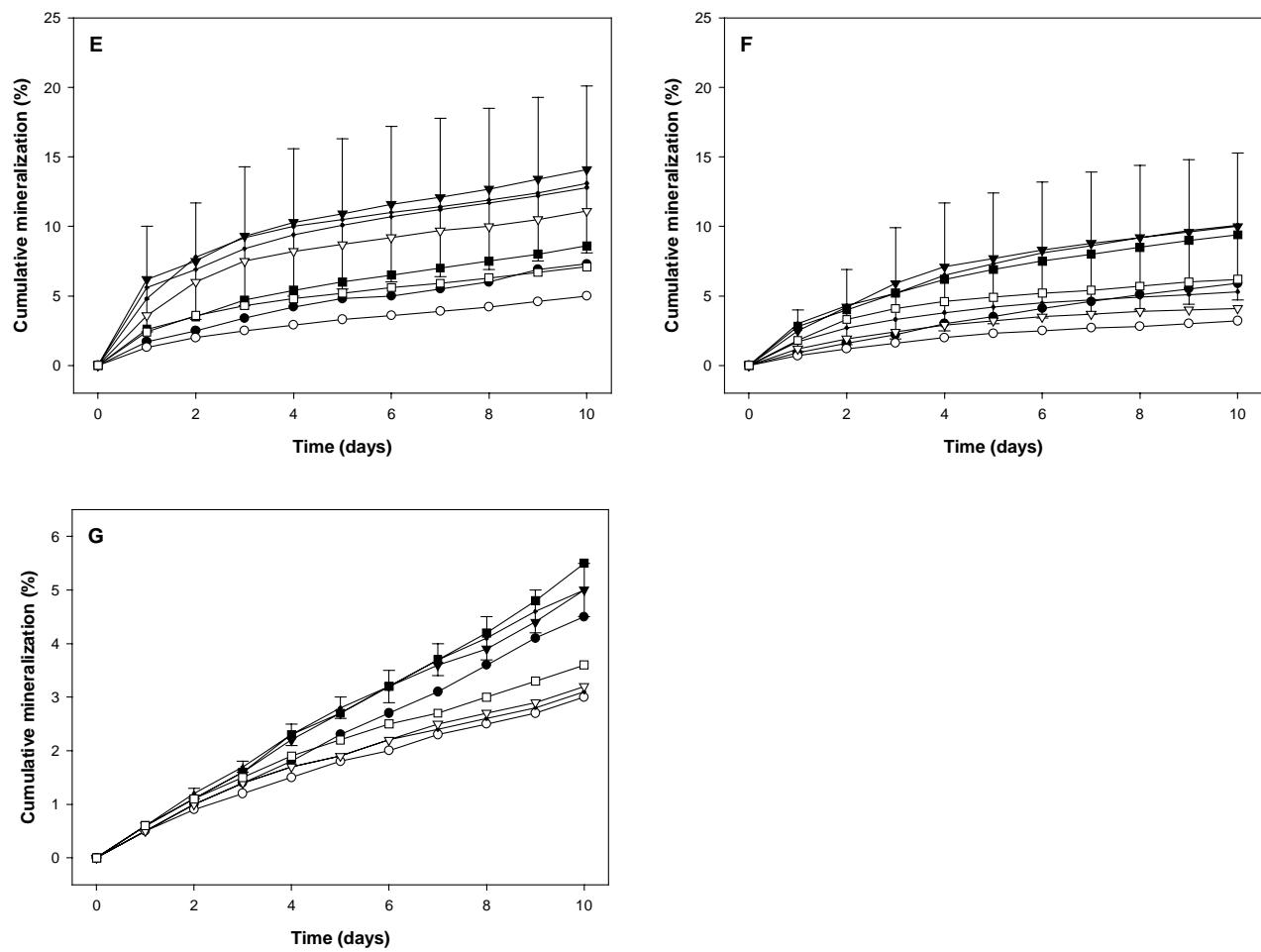


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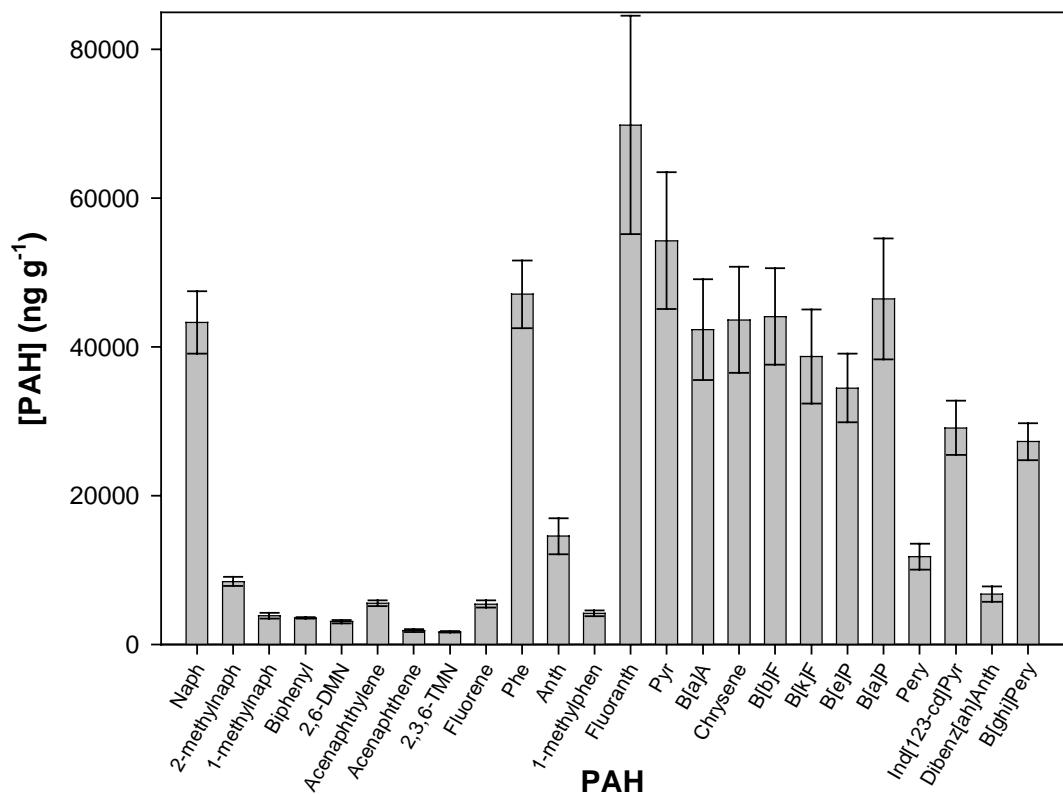
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32 **Figure C.** Total concentrations of the 24 PAHs extracted from untreated coke plant soil. Error bars
33 are 1 SEM.

34 **Key:** Naph = Naphthalene; 2-methylnaph = 2-methylnaphthalene; 1-methylnaph = 1-
35 methylnaphthalene; 2,6-DMN = 2,6-dimethylnaphthalene; 2,3,6-TMN = 2,3,6-
36 trimethylnaphthalene; Phe = Phenanthrene; Anth = Anthracene; 1-methylphen = 1-
37 methylphenanthrene; Fluoranth = Fluoranthene; Pyr = Pyrene; B[a]A = Benzo(a)anthracene; B[b]F
38 = Benzo(b)fluoranthene; B[k]F = Benzo(k)fluoranthene; B[e]P = Benzo(e)pyrene; B[a]P =
39 Benzo(a)pyrene; Pery = Perylene; Ind[123-cd]Pyr = Indeno(123-cd)pyrene; Dibenz[ah]Anth =
40 Dibenz(ah)anthracene; B[ghi]Pery = Benzo(ghi)perylene.

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44 **Table A.** Influence of ageing period and transformer oil concentration on percentage HPCD and
 45 DCM extractability of ^{14}C -phenanthrene-associated activity in a laboratory spiked agricultural soil.
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Extraction	Ageing Period (weeks)	^{14}C -Phenanthrene-associated activity extracted per transformer oil concentration			
		0%	0.005%	0.01%	0.05%
DCM [#]	0	101.7 aA*	98.4 aA	92.8 aA	104.4 aA
	2	76.4 aB	68.1 aB	72.2 aB	66.1 aB
	4	19.8 abC	37.1 aC	18.7 bC	20.1 abC
	8	7.3 aC	26.9 bCD	6.7 aC	6.4 aC
	16	8.4 aC	24.5 aCD	20.3 aC	10.5 aC
	26	7.2 aC	16.2 aD	9.5 aC	14.3 aC
	54	6.6 aC	7.9 aD	7.3 aC	6.2 aC
HPCD [#]	0	74.1 aA*	72.1 abA	60.5 bA	75.9 aA
	2	59.7 aA	61.4 aB	61.5 aA	64.0 aA
	4	14.8 aB	15.4 aC	15.3 aB	21.8 aB
	8	9.7 aB	16.9 aC	12.8 aB	11.3 aB
	16	8.6 aB	14.3 aC	16.5 aB	11.0 aB
	26	7.6 aB	7.7 aC	7.6 aB	10.3 aB
	54	8.3 aB	8.2 aC	7.3 aB	8.0 aB

47 [#] Total extracted (% of total ^{14}C -activity remaining as determined by combustion).

48 * For any one procedure, values in a row or column followed by the same lower or upper
 49 cased letter, respectively, are not statistically different ($p > 0.05$).
 50

50 **Table B.** Influence of ageing period and transformer oil concentration on percentage mineralization
 51 ^{14}C -phenanthrene-associated activity in a laboratory spiked agricultural soil, by a catabolically
 52 active inoculum or the indigenous microflora.
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Mineralization	Ageing Period (weeks)	Phenanthrene mineralization per transformer oil concentration			
		0%	0.005%	0.01%	0.05%
Catabolic Inoculum					
Maximum Rates	0	76.7 ¹ (5.4) ²	77.5 (0.6)	62.0 (2.5)	75.6 (0.6)
	2	40.1 (2.9)	38.4 (2.7)	35.6 (2.1)	46.7 (3.2)
	4	8.3 (0.3)	11.7 (1.2)	13.0 (3.8)	8.8 (2.0)
	8	1.4 (0.1)	14.0 (6.1)	2.3 (0.6)	3.3 (1.6)
	16	1.7 (0.03)	5.6 (0.9)	6.2 (3.8)	2.6 (1.0)
	26	0.9 (0.03)	3.0 (0.8)	2.5 (1.5)	2.8 (1.4)
	54	0.5 (0.01)	0.6 (0.04)	0.6 (0.02)	0.6 (0.02)
Extents ³	0	103.2 (7.7)	103.5 (2.9)	88.8 (4.3)	101.2 (1.2)
	2	67.1 (4.3)	67.5 (3.1)	63.0 (5.0)	79.6 (5.2)
	4	24.1 (0.8)	29.8 (1.7)	31.6 (5.2)	26.9 (3.1)
	8	9.4 (0.3)	44.8 (18.4)	12.1 (1.5)	14.1 (2.0)
	16	7.3 (0.5)	12.8 (1.4)	14.1 (6.0)	8.6 (1.6)
	26	5.9 (0.2)	10.1 (1.5)	10.0 (5.3)	9.4 (2.5)
	54	4.5 (0.1)	5.0 (0.5)	5.0 (0.2)	5.5 (0.1)
Indigenous Degraders					
Maximum Rates	0	25.4 ¹ (1.9) ²	32.9 (4.5)	32.6 (3.9)	33.5 (3.8)
	2	12.1 (0.9)	14.5 (1.3)	17.0 (3.5)	20.4 (2.9)
	4	7.5 (0.8)	11.1 (2.1)	8.6 (1.5)	8.0 (0.6)
	8	1.3 (0.1)	11.8 (4.3)	2.1 (0.3)	3.2 (2.0)
	16	1.3 (0.04)	4.8 (0.7)	3.6 (2.1)	2.4 (1.1)
	26	0.7 (0.05)	1.7 (0.2)	1.2 (0.4)	1.8 (0.7)
	54	0.5 (0.01)	0.5 (0.02)	0.5 (0.02)	0.6 (0.03)
Extents ³	0	64.5 (3.7)	60.3 (3.8)	62.3 (1.8)	61.3 (1.8)
	2	44.9 (2.0)	45.2 (1.4)	51.9 (4.2)	52.5 (1.5)
	4	20.1 (1.7)	27.9 (6.6)	21.6 (2.7)	21.5 (0.9)
	8	6.5 (0.2)	37.2 (12.1)	8.5 (1.0)	12.3 (4.5)
	16	5.0 (0.1)	13.1 (0.6)	11.1 (4.9)	7.2 (2.1)
	26	3.2 (0.2)	5.3 (0.3)	4.1 (1.1)	6.2 (1.9)
	54	3.0 (0.2)	3.1 (0.2)	3.2 (0.1)	3.6 (0.1)

54 ¹ Mineralization = percent of total ^{14}C -activity remaining as determined by combustion.
 55 ² Values in parentheses are 1 SEM
 56 ³ Extents = 10 d totals
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