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Review

Applicability of Scrape Loading-Dye Transfer Assay for Non-Genotoxic Carcinogen Testing

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Content

Supplementary Texts

Supplementary Text S1

A. Literature strategy in PubMed through October 30, 2020

((("Chemicals and Drugs Category"[MeSH Terms] OR "Xenobiotics"[MeSH Terms]) OR "Inorganic Chemicals"[MeSH Terms]) OR "Organic Chemicals"[MeSH Terms]) OR "Pharmaceutical Preparations"[MeSH Terms]) OR "Polycyclic Compounds"[MeSH Terms]) OR "Heterocyclic Compounds"[MeSH Terms]) OR "Pesticides"[MeSH Terms]) OR "toxins, biological"[MeSH Terms]) OR "radiation, ionizing"[MeSH Terms]) OR "agent*"[Text Word]) OR "anthracene*"[Text Word]) OR "aromatic polycyclic hydrocarbon*"[Text Word]) OR "bisphenol*"[Text Word]) OR "BPA"[Text Word]) OR "BPF"[Text Word]) OR "BPS"[Text Word]) OR "brominated flame retardant*"[Text Word]) OR "Cadmium"[Text Word]) OR "Carbon"[Text Word]) OR "Carbon Tetrachloride"[Text Word]) OR "carcinogen*"[Text Word]) OR "chemical*"[Text Word]) OR "Chlorpyriphos"[Text Word]) OR "compound*"[Text Word]) OR "contaminant*"[Text Word]) OR "DBP"[Text Word]) OR "DDE"[Text Word]) OR "DDT"[Text Word]) OR "DEHP"[Text Word]) OR "Dibutyl phthalate"[Text Word]) OR "Dieldrin"[Text Word]) OR "Diethylhexyl"[Text Word]) OR "Diethylhexyl phthalate"[Text Word]) OR "DINCH"[Text Word]) OR "dioxin*"[Text Word]) OR "drug*"[Text Word]) OR "fluorene*"[Text Word]) OR "Furan"[Text Word]) OR "metal*"[Text Word]) OR "naphthalene*"[Text Word]) OR "organophosphate*"[Text Word]) OR "Paraben"[Text Word]) OR "PCB"[Text Word]) OR "PCBs"[Text Word]) OR "Perchlorate"[Text Word]) OR "perfluorinated chemical*"[Text Word]) OR "pesticide*"[Text Word]) OR "PFOA"[Text Word]) OR "PFOS"[Text Word]) OR "Phenol"[Text Word]) OR "phthalate*"[Text Word]) OR "phytoestrogen*"[Text Word]) OR "pollutant*"[Text Word]) OR "polychlorinated biphenyl*"[Text Word]) OR "polychlorinated dibenzodioxin*"[Text Word]) OR "polycyclic aromatic hydrocarbon*"[Text Word]) OR "polynuclear aromatic hydrocarbon*"[Text Word]) OR "pyrene*"[Text Word]) OR "TCDD"[Text Word]) OR "Tetrachloride"[Text Word]) OR "Tetrachloromethane"[Text Word]) OR "Tetracycline"[Text Word]) OR "Thioacetamide"[Text Word]) OR "Toxicant"[Text Word]) OR "toxin*"[Text Word]) OR "Tributyltin"[Text Word]) OR "Triclosan"[Text Word]) OR "tumor promotor*"[Text Word]) OR "volatile organic compound*"[Text Word]) OR "xenobiotic*"[Text Word]) OR "Heterocyclic Compounds"[Text Word]) OR "Inorganic Chemicals"[Text Word]) OR "Organic Chemicals"[Text Word]) OR "Pesticides"[Text Word]) OR "Pharmaceutical Preparations"[Text Word]) OR "Polycyclic Compounds"[Text Word]) OR "Biological Toxins"[Text Word]) OR "Xenobiotics"[Text Word]) OR "Ionizing Radiation"[Text Word]) OR "Ionizing Radiations"[Text Word]) AND ((((((((((("Gap Junctions"[MeSH Terms] OR "Cell Junction"[Text Word]) OR "Cell Junctions"[Text Word]) OR "Gap Junction Channel Proteins"[Text Word]) OR "Gap Junction Protein"[Text Word]) OR "Gap Junction Proteins"[Text Word]) OR "Gap Junction"[Text Word]) OR "Gap junctional intercellular communication"[Text Word]) OR "Gap junctional intercellular communications"[Text Word]) OR "Gap Junctions"[Text Word]) OR "Gap Junctions"[Text Word]) OR "GJIC"[Text Word])) AND ((("Hepatocytes"[MeSH Terms] OR "primary liver cell*"[Text Word]) OR "liver"[Text Word]) OR "hepatic"[Text Word]) OR "oval cell*"[Text Word]) OR "hepatic cell*"[Text Word]) OR "sinusoidal endothelial cell*"[Text Word]) OR "kupffer cell*"[Text Word]) OR "stellate cell*"[Text Word]) OR "liver endothelial cell*"[Text Word]) OR "liver epithelial cell line"[Text Word]) OR "liver slice"[Text Word]) OR "parenchymal cell*"[Text Word]) OR "nonparenchymal cell*"[Text Word]) OR "non parenchymal cell*"[Text Word]) OR "liver cell*"[Text Word]) OR "hepatocyte*"[Text Word]) OR "ito cell*"[Text Word]) OR "ARL 18"[Text Word]) OR "ARL18"[Text Word]) OR "Ac2F"[Text Word]) OR "AH601"[Text Word]) OR "AH66tc"[Text Word]) OR "AH70Btc"[Text Word]) OR "alexander cell*"[Text Word]) OR "ARLJ301-3"[Text Word]) OR "AML12"[Text Word]) OR "fah cell*"[Text Word]) OR "Hep3B"[Text Word]) OR "F344"[Text Word]) OR "wb f344"[Text Word]) OR "wb f344"[Text Word]) OR "WBF344"[Text Word]) OR "wb cell*"[Text Word]) OR "WB-a/32-10"[Text Word]) OR "WB-aB1"[Text Word]) OR "WBHa-ras"[Text Word]) OR "Chang liver"[Text Word]) OR "MTR6"[Text Word]) OR "T51B"[Text Word]) OR "BRL"[Text Word]) OR "BRL-3A"[Text Word]) OR "mRLh"[Text Word]) OR "dRLa-74"[Text Word]) OR "dRLh"[Text Word]) OR "dRLN"[Text Word]) OR "FLS"[Text Word]) OR "Hep G2"[Text Word]) OR "HepG2"[Text Word]) OR "Huh7"[Text Word]) OR "Huh"[Text Word]) OR "Huh-7"[Text Word]) OR "HLE"[Text Word]) OR "HLF"[Text Word]) OR "HuCCT1"[Text Word]) OR "JHH"[Text Word]) OR "JTC-16"[Text Word])

OR "P3"[Text Word]) OR "LMH"[Text Word]) OR "M.P3"[Text Word]) OR "NCTC clone"[Text Word]) OR "NOZ"[Text Word]) OR "OCUG-1"[Text Word]) OR "PLC/PRF/5"[Text Word]) OR "RI-T"[Text Word]) OR "RL-34"[Text Word]) OR "RLC"[Text Word]) OR "RLN"[Text Word]) OR "TLR"[Text Word]) OR "T51B"[Text Word]) OR "rel cell*"[Text Word]) OR "IAR20"[Text Word]) OR "IAR 20"[Text Word]) OR "IAR203"[Text Word]) OR "IAR27E"[Text Word]) OR "IAR6-1"[Text Word]) OR "IAR27F"[Text Word]) OR "IAR"[Text Word]) OR "Clone 9"[Text Word]) OR "RLEC"[Text Word]) OR "H4IIE"[Text Word]) OR "MH1C1"[Text Word]) OR "MIHA"[Text Word]) OR "HepaRG"[Text Word])

B. Literature strategy in SCOPUS through October 30, 2020

TOPIC: ("primary liver cell*" OR "liver" OR "hepatic" OR "oval cell*" OR "hepatic cell*" OR "sinusoidal endothelial cell*" OR "Kupffer cell*" OR "stellate cell*" OR "liver endothelial cell*" OR "liver epithelial cell line" OR "liver slice" OR "parenchymal cell*" OR "nonparenchymal cell*" OR "non-parenchymal cell*" OR "liver cell*" OR "hepatocyte*" OR "Ito cell*" OR "ARL 18" OR "ARL18" OR "Ac2F" OR "AH601" OR "AH66tc" OR "AH70Btc" OR "AH-7974.P3" OR "Alexander cell*" OR "ARLJ301-3" OR "AML12" OR "FAH cell*" OR "CFH cell*" OR "Hep3B" OR "F344" OR "WB-F344" OR "WB F344" OR "WBF344" OR "WB cell*" OR "WB-a/32-10" OR "WB-aB1" OR "WBHa-ras" OR "Chang liver" OR "MTR6" OR "T51B" OR "BRL" OR "BRL-3A" OR "mRLh" OR "dRLa-74" OR "dRLh" OR "dRLN" OR "FLS" OR "Hep G2" OR "HepG2" OR "Huh7" OR "Huh" OR "Huh-7" OR "HLE" OR "HLF" OR "HuCCT1" OR "JHH" OR "JTC-16" OR "P3" OR "LMH" OR "M.P3" OR "NCTC clone" OR "NOZ" OR "OCUG-1" OR "PLC/PRF/5" OR "RI-T" OR "RL-34" OR "RLC" OR "RLN" OR "TLR" OR "T51B" OR "REL cell*" OR "IAR20" OR "IAR 20" OR "IAR203" OR "IAR 203" OR "IAR27E" OR "IAR 27E" OR "IAR6-1" OR "IAR27F" OR "IAR" OR "Clone 9" OR "RLEC" OR "H4IIE" OR "MH1C1" OR "MIHA" OR "HepaRG") AND TOPIC: ("Chemicals and Drugs Category" OR "Xenobiotics" OR "Inorganic Chemicals" OR "Organic Chemicals" OR "Pharmaceutical Preparations"[Mesh] OR "Polycyclic Compounds" OR "Heterocyclic Compounds" OR "Pesticides" OR "Toxins" OR "Toxin" OR "Cyanotoxin" OR "Cyanotoxins" OR "Agent*" OR "Anthracene*" OR "Aromatic Polycyclic Hydrocarbon*" OR "Bisphenol*" OR "BPA" OR "BPF" OR "BPS" OR "Brominated Flame Retardant*" OR "Cadmium" OR "Carbon" OR "Carbon Tetrachloride" OR "Carcinogen*" OR "Chemical*" OR "Chlorpyriphos" OR "Compound*" OR "Contaminant*" OR "DBP" OR "DDE" OR "DDT" OR "DEHP" OR "Dibutyl phthalate" OR "Dieldrin" OR "Diethylhexyl" OR "Diethylhexyl phthalate" OR "DINCH" OR "Dioxin*" OR "Drug*" OR "Fluorene*" OR "Furan" OR "Metal*" OR "Naphthalene*" OR "Organophosphate*" OR "Paraben" OR "PCB" OR "PCBs" OR "Perchlorate" OR "Perfluorinated chemical*" OR "Pesticide*" OR "Herbicide*" OR "Insecticide*" OR "PFOA" OR "PFOS" OR "Phenol" OR "Phthalate*" OR "Phytoestrogen*" OR "Personal care product" OR "Personal care products" OR "Pollutant*" OR "Polychlorinated Biphenyl*" OR "Polychlorinated dibenzodioxin*" OR "Polycyclic Aromatic Hydrocarbon*" OR "Polynuclear Aromatic Hydrocarbon*" OR "Pyrene*" OR "TCDD" OR "Tetrachloride" OR "Tetrachloromethane" OR "Tetracycline" OR "Thioacetamide" OR "Toxicant*" OR "Tributyltin" OR "Triclosan" OR "Tumor promotor*" OR "Volatile Organic Compound*" OR "Xenobiotic*" OR "Heterocyclic Compounds" OR "Inorganic Chemicals" OR "Organic Chemicals" OR "Pesticides" OR "Pharmaceutical Preparations" OR "Polycyclic Compounds" OR "Biological Toxins " OR "Ionizing Radiation" OR "Ionizing Radiations") AND TOPIC: ("Cell Junction" OR "Cell Junctions" OR "Gap Junction Channel Proteins" OR "Gap Junction Protein" OR "Gap Junction Proteins" OR "Gap Junction" OR "Gap junctional intercellular communication" OR "Gap junctional intercellular communications" OR "Gap Junctions" OR "Gap Junctions" OR "GJIC")

Timespan: All years. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC.

C. Literature strategy in Web of Science through October 30, 2020

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Tables

Table S1 Results of 328 chemicals assessed using SL-DT assay in WB-F344 cells

No.	Chemical group / Chemical	CASRN	GJIC SL-DT assay – ↓	GJIC SL-DT assay EC_{50} (μM)	GJIC SL-DT assay ET_{50} (min)	GJIC SL-DT assay Ref.	MC assay [1,2]	Genotoxicity Ames Overall [3,4]	Genotoxicity Other assays [3,4]	Genotoxicity Over all	Carcinogenicity OncoLogic 9.0/8.0 [6]	Carcinogenicity IARC [7]	Carcinogenicity CompTox/ ToxRefDB [5,8]
	Aldehydes												
1	Formaldehyde	50-00-0	—	**>100** (0.5 h)	*n.d.*	[9]	—	+	+	+	**High-moderate**	**Group 1**	+
	Anilides												
2	Vinclozolin M2	83792-61-4	↓	**250** (2 h)	**120** (250 μM)	[10]							**N.A.**
	Aromatic amine derivates												
3	N-OH-MBOCA		—	**>4** (0.5 h)	*n.d.*	[11]							
4	NO-MBOCA		—	**>72** (0.5 h)	*n.d.*	[11]							
5	o-OH-MBOCA		—	**>180** (0.5 h)	*n.d.*	[11]							
	Benzopyrans												
6	Epigallocatechin gallate	989-51-5	↓	150 (1 h)	**150** (200 μM)	[12]							**N.A.**
	Cannabinoids												
7	Cannabinol	521-35-7	↓	**13** (0.5 h)	**10** (20 μM)	[13]							**N.A.**
8	THC	1972-08-3	↓	**13** (0.5 h)	**10** (20 μM)	[13]							+
	Carbamates												
9	Carbofuran	1563-66-2	—	**>452** (1 h)	*n.d.*	[14]					**Uncertain/ Unknown**		+
	Catechins												
10	Epicatechin	490-46-0	—	**>96** (1, 24 h)	*n.d.*	[12,15]							**N.A.**
	Chalcone derivates												

11	2',3',3-Trihydroxychalcone		↓	**181** (0.5 h)	*n.d.*	[26]				
12	2',3-Dihydroxychalcone		↓	**9** (0.5 h)	*n.d.*	[26]				
13	2',3-Dihydroxydihydrochalcone		↓	**74** (0.5 h)	*n.d.*	[26]				
14	2,4,4'-Trihydroxychalcone	83616-07-3	—	**>200** (0.5 h)	*n.d.*	[26]				**N.A.**
15	2',4',4-Trihydroxychalcone		—	**>200** (0.5 h)	*n.d.*	[26]				
16	2',4',4-Trihydroxydihydrochalcone		—	**>200** (0.5 h)	*n.d.*	[26]				
17	2',4'-Dihydroxy-3-methoxychalcone		—	**>200** (0.5 h)	*n.d.*	[26]				
18	2',4-Dihydroxy-3-methoxychalcone		↓	**140** (0.5 h)	*n.d.*	[26]				
19	2',4'-Dihydroxy-3-methoxydihydrochalcone		—	**>200** (0.5 h)	*n.d.*	[26]				
20	2',4-Dihydroxychalcone	13323-66-5	↓	**49** (0.5 h)	*n.d.*	[26]				**N.A.**
21	2',4-Dihydroxydihydrochalcone		—	**>200** (0.5 h)	*n.d.*	[26]				
22	2'-Hydroxy-2,4-dimethoxychalcone		↓	**33** (0.5 h)	*n.d.*	[26]				
23	2'-Hydroxy-2,4-dimethoxydihydrochalcone		↓	**40** (0.5 h)	*n.d.*	[26]				
24	2'-Hydroxy-3,4-dimethoxychalcone		↓	**76** (0.5 h)	*n.d.*	[26]				
25	2'-Hydroxy-3,4-dimethoxydihydrochalcone		—	**>200** (0.5 h)	*n.d.*	[26]				
26	2'-Hydroxy-3-methoxychalcone		↓	**34** (0.5 h)	*n.d.*	[26]				
27	2'-Hydroxy-3-methoxydihydrochalcone		↓	**60** (0.5 h)	*n.d.*	[26]				
28	2'-Hydroxy-4-methoxychalcone	3327-24-0	↓	**83** (0.5 h)	*n.d.*	[26]				
29	2'-Hydroxy-4-methoxydihydrochalcone		↓	**50** (0.5 h)	*n.d.*	[26]				
30	2'-Hydroxychalcone	888-12-0	↓	**8** (0.5 h)	*n.d.*	[26]				

31	2-Hydroxychalcone	644-78-0	↓	**9** (0.5 h)	*n.d.*	[26]						**Low-moderate to Moderate**		**N.A.**
32	2'-Hydroxydihydrochalcone		↓	**13** (0.5 h)	*n.d.*	[26]								
33	2-Hydroxydihydrochalcone		↓	**>200** (0.5 h)	*n.d.*	[26]								
34	4'-Hydroxy-2,4-dimethoxychalcone		↓	**190** (0.5 h)	*n.d.*	[26]								
35	4'-Hydroxy-2,4-dimethoxydihydrochalcone		↓	**>200** (0.5 h)	*n.d.*	[26]								
36	4'-Hydroxychalcone	2657-25-2	—	**>200** (0.5 h)	*n.d.*	[26]						**Low-moderate to Moderate**		**N.A.**
37	4-Hydroxychalcone	20426-12-4	—	**>200** (0.5 h)	*n.d.*	[26]						**Low-moderate to Moderate**		**N.A.**
38	4'-Hydroxydihydrochalcone		—	**>200** (0.5 h)	*n.d.*	[26]								
39	4-Hydroxydihydrochalcone		↓	**>200** (0.5 h)	*n.d.*	[26]								
	Chloroanilines													
40	MBOCA	101-14-4	↓	**12** (0.5 h)	*n.d.*	[11]		+	+	+		**Low to High-moderate**	**Group 1**	+
	Chlorobenzilate metabolite													
41	4,4′-Dichlorobenzohydrol		—	**>60** (*n.s.*)	*n.d.*	[23]								
	Chlorohydroxyfuranones													
42	3-Chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone	77439-76-0	↓	**8 or 18** (1, 2 h) **>18** (24 h)	**90** (18 μM)	[22,27]	↓	+	+	+		**Low-moderate to Moderate**	**Group 2B**	**N.A.**
43	3,4-Dichloro-5-hydroxy-2(5H)-furanone	766-40-5	↓	**40** (1, 12 h)	*n.d.*	[22]						**Marginal to Low-moderate**		**N.A.**
	Coumarins													

44	Dicumarol	66-76-2	↓	**<100** (1 h)	*n.d.*	[16]				**Low-moderate**	**+**
45	Warfarin	81-81-2	↓	**5000** (1 h)	*n.d.*	[16]	↓			**Moderate**	**N.A.**
	Diarylmethanes										
46	Diacylglycerol kinase inhibitor I	93076-89-2	↓	**<30** (0.2 h)	*n.d.*	[17]					**N.A.**
	Ethylenediamines										
47	BAPTA-AM	126150-97-8	↓	**3 to 20** (0.8 h)	*n.d.*	[18]					**N.A.**
	Fatty acid derivates										
48	Arachidonic acid, 15-Hydroperoxy		↓	**<20** (0.2 h)	*n.d.*	[19]					
49	Arachidonic acid, 15-Hydroxy		↓	**<20** (0.2 h)	*n.d.*	[19]					
50	Arachidonic acid, Methyl ester		—	**>20** (0.2 h)	*n.d.*	[19]					
	Fatty acid esters										
51	1-Monolaurin	142-18-7	↓	**<150** (0.2 h)	*n.d.*	[17]					**N.A.**
52	L-Ascorbic acid 6-palmitate	137-66-6	↓	**35** (0.5, 1 h)	*n.d.*	[20]					**N.A.**
	Fatty acids										
53	Arachidonic acid	506-32-1	↓	**5 or <70** (0.2, 0.3 h)	**2** (20 μM)	[17,19]	↓				**N.A.**
54	Decanoic acid	334-48-5	—	**>375** (0.3 h)	*n.d.*	[21]				**Marginal**	**N.A.**
55	Docosahexaenoic acid	6217-54-5	↓	**<20** (0.2 h)	*n.d.*	[19]					**N.A.**
56	Eicosanoic acid	506-30-9	—	**>20** (0.2 h)	*n.d.*	[19]					**N.A.**
57	Eicosapentaenoic acid	10417-94-4	↓	**<20** (0.2 h)	*n.d.*	[19]					**N.A.**
58	γ-Linolenic Acid	506-26-3	↓	**<20** (0.2 h)	*n.d.*	[19]	↓				**N.A.**
59	Octanoic acid	124-07-2	—	**>375** (0.3 h)	*n.d.*	[21]					**N.A.**
60	PUFA 23:4 (n-6)		↓	**>20** (0.2 h)	*n.d.*	[19]					

	Furans												
61	3-Chloro-4-methyl-5-hydroxy-2(5H)-furanone	112309-61-2	↓	**700** (1, 12 h)	*n.d.*	[22]					**Low to Moderate**		**N.A.**
62	3-Chloro-4-(chloromethyl)-5-hydroxyfuran-2(5H)-one	125974-08-5	↓	**25** (1, 12 h)	*n.d.*	[22]					**Low-moderate to Moderate**		**N.A.**
	Ginsenosides												
63	Ginsenoside-Rb2	11021-13-9	—	**>210** (1 h)	*n.d.*	[15]							**N.A.**
	Halogenated Diphenyl Compounds												
64	4,4′-Dichlorobenzophenone	90-98-2	—	**>30** (*n.s.*)	*n.d.*	[23]					**Low-moderate**		**N.A.**
	Heterocyclic Compounds												
65	Fenarimol	60168-88-9	—	**>50** (0.5 h)	*n.d.*	[23]	**E**				**Low-moderate**		**N.A.**
	Hydroquinone derivates												
66	Tetrachlorohydroquinone	87-87-6	—	**>75** (1 h)	*n.d.*	[24]					**Moderate**		**N.A.**
67	tert-Butylhydroquinone	1948-33-0	—	**>10** (0.5 h)	*n.d.*	[18]		—	**E**	**E**			**N.A.**
	Hydroxybenzoic acids												
68	Propyl gallate	121-79-9	—	**>200** (1 h)	*n.d.*	[25]							**+**
	Inorganic compounds												
69	Arsenic trioxide	15502-74-6	↓	**25** (8 h)	**1152** (13 μM)	[28]					**High**		**N.A.**
	Lysophospholipids												
70	Lysophosphatidic acid	325465-93-8	↓	**<25** (0.25 h)	*n.d.*	[29]							**N.A.**
	Metals												
71	Cadmium chloride	10108-64-2	↓	**25** (4 h)	**30** (200 μM)	[30]	—	**E**	**+**	**+**	**High**	**Group 1**	**+**
	Monocarboxylic acid amides												
72	Flutamide	13311-84-7	—	**>100** (0.5-24 h)	**>1440** (100 μM)	[10]					**Moderate**		**+**
73	DEET	134-62-3	↓	>1000 (0.5 h)	*n.d.*	[31]							**+**

	Methoxychlor metabolites											
74	HPTE	2971-36-0	↓	**100** (0.5-24 h)	**360** (100 µM)	[10]						**N.A.**
	Nanoparticles											
75	SWCNTs		—	**>26** (0.5, 24 h)	*n.d.*	[32]						**N.A.**
	Organic peroxides											
76	Benzoylperoxide	94-36-0	↓	**150** or **<200** (0.25, 0.3 h)	**10** (50 µM)	[17,33]					**Group 3**	+
77	Dicumyl peroxide	80-43-3	↓	**10** or **<50** (0.25, 0.3 h)	**10** (200 µM)	[17,33]						**N.A.**
78	Di-tert-butyl peroxide	110-05-4	—	**>200** (0.25 h)	*n.d.*	[33]						**N.A.**
	Organobromine compounds											
79	Bromopropylate	18181-80-1	↓	**<20** (0.5 h)	*n.d.*	[34]	↓					**N.A.**
	Organochlorine compounds											
80	2,4-Dichlorophenoxyacetic acid	94-75-7	↓	**>450** (1 h)	*n.d.*	[14]	↓	—	**E**	**E**	**Low** **Group 2B**	+
81	Alachlor	15972-60-8	↓	**<186 to 149** (0.4, 1 h)	**10** (186 µM)	[14,17]						+
82	Atrazine	1912-24-9	—	**>463** (0-20 h)	**>20** (463 µM)	[14]		—	**E**	**E**	**Low-moderate to Moderate** **Group 3**	+
83	Chlorobenzilate	510-15-6	↓	<25 (0.5 h)	*n.d.*	[23,34]	↓	—	**I**	—	**Group 3**	+
84	DDT (p,p' or o,p')	50-29-3 or 789-02-6	↓	**13 to 40** (0.25-1 h)	**35** (30 µM)	[17,18,31,34–36]	↓				**Low-moderate to Moderate** **Group 2A**	+
85	Dicofol	115-32-2	↓	**<10 to 30** (0.5 h)	*n.d.*	[34]	↓				**Low to Moderate** **Group 3**	+
86	Dieldrin	60-57-1	↓	**<25** or **<10** (0.5, 1 h)	*n.d.*	[11,37]	↓	—	**E**	**E**	**Marginal to High-moderate** **Group 2A**	+
87	Lindane	58-89-9	↓	**43 to <70** (0.25-1 h)	**10** (52 µM)	[14,17,35]					**Moderate** **Group 1**	+

88	Methoxychlor	72-43-5	↓	**10** (0.5 h)	**4** (25 µM)	[10]	↓	—	E	E		Group 3	+
89	Ochratoxin A	303-47-9	↓	**>4** (16 h)	**960** (3 µM)	[38]	—	—	+	E	Low	Group 2B	+
90	Pentachlorophenol	87-86-5	↓	**<50** (0.2, 0.3 h) **>40** (1-24 h)	*n.d.*	[17,24,35]					Moderate	Group 1	+
	Organophosphates												
91	Malathion	121-75-5	↓	**600** (0.25 h)	**35** (500 µM)	[31]		—	+	E		Group 2A	+
	Organosulfonic acids												
92	Octanesulfonic acid	3944-72-7	—	**>375** (0.3 h)	*n.d.*	[21]							N.A.
	Organotin compounds												
93	Triphenyltin chloride	639-58-7	↓	**3** (0.5 h)	**25** (4 µM)	[39]							+
	Oxazolidinones												
94	Vinclozolin	50471-44-8	↓	**126** (0.5 h)	**1** (250 µM)	[10]					Marginal		+
	Oxoanions												
95	Peroxynitrite	19059-14-4	↓	**<150** (0.07 h)	*n.d.*	[40]							N.A.
	PAH metabolites												
96	Benzo[a]pyrene-7,8-diol-9,10-epoxide	55097-80-8	↓	**0.1** (0.5 h)	**20** (1 µM)	[41]							
	PAHs												
97	4H-Cyclopentano[*def*] phenanthrene	203-64-5	↓	**23** (0.5 h)	*n.d.*	[47]					Low		N.A.
98	7,12-dimethylbenz[a]anthracene	57-97-6	↓	**21** (0.5 h)	*n.d.*	[47,48]	—	+	+	+	High-moderate		+
99	Anthracene	120-12-7	—/↓	**>350** (0.25-1.5 h)	*n.d.*	[42,43,45–47,49]					Marginal	Group 3	+
100	Benz[a]anthracene	56-55-3	↓	**>100** (0.5 h)	*n.d.*	[47]	—	+	E	E	Low-moderate	Group 2B	+
101	Benzo[a]perylene	191-85-5	—	**>100** (0.5 h)	*n.d.*	[47]					High-moderate		N.A.
102	Benzo[a]pyrene	50-32-8	↓	**10 to 100**	*n.d.*	[41,47–49]	—	+	+	+	High	Group 1	+

				(0.5-1.5 h)										
103	Benzo[b]chrysene	214-17-5	—	**>100** (1 h)	*n.d.*	[50]					**Marginal**	**Group 3**	**N.A.**
104	Benzo[b]fluoranthene	205-99-2	↓	**>100** (0.5 h)	*n.d.*	[47]					**Low**	**Group 2B**	**+**
105	Benzo[c]chrysene	194-69-4	↓	**111** (1 h)	*n.d.*	[50]					**Moderate**		**N.A.**
106	Benzo[c]phenanthrene	195-19-7	↓	**29** (0.5 h)	*n.d.*	[47]					**Low-moderate**	**Group 2B**	**N.A.**
107	Benzo[e]pyrene	192-97-2	**E**	**>100** or **>79** (0.5, 1.5 h)	*n.d.*	[47,49]	—				**Marginal**	**Group 3**	**+**
108	Benzo[g]chrysene	196-78-1	↓	**60** (1 h)	*n.d.*	[50]					**Moderate**	**Group 3**	**N.A.**
109	Benzo[ghi]perylene	191-24-2	↓	**>100** (0.5 h)	*n.d.*	[47]					**Marginal**	**Group 3**	**+**
110	Benzo[j]fluoranthen	205-82-3	—	**>100** (0.5 h)	*n.d.*	[47]						**Group 2B**	**+**
111	Benzo[k]fluoranthene	207-08-9	—	**>100** (0.5 h)	*n.d.*	[47]						**Group 2B**	**+**
112	Chrysene	218-01-9	↓	**>100** (0.5 h)	*n.d.*	[47]		**+**	**+**	**+**	**Low-moderate**	**Group 2B**	**+**
113	Coronene	191-07-1	—	**>100** (0.5 h)	*n.d.*	[47]						**Group 3**	**N.A.**
114	Cyclopenta[cd]pyrene	27208-37-3	↓	**28** (0.5 h)	*n.d.*	[47]		**+**	**+**	**+**		**Group 2A**	**+**
115	Dibenz[a,c]anthracene	215-58-7	**E**	**>100** or **42** (1, 0.5 h)	*n.d.*	[47,50]					**Low-moderate**	**Group 3**	**N.A.**
116	Dibenz[a,h]anthracene	53-70-3	—	**>100** (0.5, 1 h)	*n.d.*	[47,50]		**+**	**+**	**+**	**High**		**+**
117	Dibenz[a,j]anthracene	224-41-9	**E**	**>100** (0.5, 1 h)	*n.d.*	[47,50]					**Moderate**	**Group 3**	**N.A.**
118	Dibenzo[a,e]fluoranthene	5385-75-1	—	**>100** (0.5 h)	*n.d.*	[47]					**Marginal**	**Group 3**	**N.A.**
119	Dibenzo[a,e]pyrene	192-65-4	↓	**>100** (0.5 h)	*n.d.*	[47]					**Moderate**	**Group 3**	**+**
120	Dibenzo[a,h]pyrene	189-64-0	↓	**>100** (0.5 h)	*n.d.*	[47]					**High**	**Group 2B**	**+**
121	Dibenzo[a,i]pyrene	189-55-9	—	**>100** (0.5 h)	*n.d.*	[47]					**High**	**Group 2B**	**+**
122	Dibenzo[a,k]fluoranthene	84030-79-5	—	**>100**	*n.d.*	[47]							**N.A.**

				(0.5 h)									
123	Dibenzo[a,l]pyrene	191-30-0	↓	**>100** (0.5 h)	*n.d.*	[47]					**High**	**Group 2A**	**+**
124	Fluoranthene	206-44-0	↓	**9 to <70** (0.2-24 h)	**3** or **10** (80, 50 µM)	[17,26,35,43,45,47,49,51,52]						**Group 3**	**+**
125	Fluorene	86-73-7	↓	**38 to >90** (0.17-1.5 h)	**2** (125 µM)	[17,43,45,47,49]					**Marginal**	**Group 3**	**+**
126	Indeno[1,2,3-cd]pyrene	193-39-5	—	**>100** (0.5 h)	*n.d.*	[47]					**Low**	**Group 2B**	**+**
127	Naphthalene	91-20-3	↓	**>350** (0.07 h)	*n.d.*	[45,49]						**Group 2B**	**+**
128	Naphtho[2,3-a]pyrene	196-42-9	—	**>100** (0.5 h)	*n.d.*	[47]					**Low-moderate**		**N.A.**
129	Perylene	198-55-0	—	**>100** (0.5 h)	*n.d.*	[47]					**Low**	**Group 3**	**+**
130	Phenanthrene	85-01-8	↓	**28 to <70** (0.17-1.5 h) **>80** (24 h)	**3** (50 µM)	[17,43,45,47,49,51]					**Low**	**Group 3**	**+**
131	Picene	213-46-7	↓	**13** (0.5 h)	*n.d.*	[47]					**Moderate**	**Group 3**	**N.A.**
132	Pyrene	129-00-0	↓	**25 to 74** (0.2-1.5 h) **>80** (24 h)	**15** (49 µM)	[17,47,49,51,53,54]		**+**	**—**	**E**	**Low**	**Group 3**	**+**
133	Triphenylene	217-59-4	↓	**>100** (0.5 h)	*n.d.*	[47]					**Low**	**Group 3**	**N.A.**
	PAHs chlorinated												
134	1-Chloroanthracene	4985-70-0	↓	**45** (0.25 h)	**3** (80 µM)	[46]					**Marginal**		**N.A.**
135	2-Chloroanthracene	17135-78-3	—	**>350** (0.25 h)	*n.d.*	[46]					**Marginal**		**N.A.**
136	9-Chloroanthracene	716-53-0	↓	**42** (0.25 h)	**3** (80 µM)	[46]					**Marginal**		**N.A.**
	PAHs methylated												
137	10-Methylbenz[a]anthracene	2381-15-9	↓	**25** (0.5 h)	*n.d.*	[48]					**Marginal**		**N.A.**
138	11-Methylbenz[a]anthracene	6111-78-0	↓	**14** (0.5 h)	*n.d.*	[48]					**Marginal**		**N.A.**

139	12-Methylbenz[a]anthracene	2422-79-9	—	**>50** (0.5 h)	*n.d.*	[48]					**Low-moderate**		**N.A.**
140	1-Methylanthracene	610-48-0	↓	**11 to 40** (0.17-0.5 h)	**2-10** (32-75 μM)	[10,17,42–46]					**Marginal**		**N.A.**
141	1-Methylbenz[a]anthracene	2498-77-3	↓	**10** (0.5 h)	*n.d.*	[48]					**Marginal**		**N.A.**
142	1-Methylchrysene	3351-28-8	—	**>80** (1 h)	*n.d.*	[55]					**Marginal**	**Group 3**	**N.A.**
143	1-Methylfluorene	1730-37-6	↓	**<70 to 25** (0.2-1 h)	**2** (80 μM)	[17,43,45,49]							**N.A.**
144	1-Methylnaphthalene	90-12-0	↓	**200** or **<225** (0.07 h)	**0.4** or **0.9** (200 μM)	[43,45]							**+**
145	1-Methylpyrene	2381-21-7	↓	**24** or **<70** (0.2, 0.5 h)	*n.d.*	[17,47]					**Marginal**		**N.A.**
146	2-Methylanthracene	613-12-7	—/↓	**>400** (0.17-0.5 h)	**>480** (75 μM)	[42–46]					**Marginal**		**N.A.**
147	2-Methylbenz[a]anthracene	2498-76-2	↓	**15** (0.5 h)	*n.d.*	[48]					**Low**		**N.A.**
148	2-Methylchrysene	3351-32-4	—	**>80** (1 h)	*n.d.*	[55]					**Low-moderate**	**Group 3**	**N.A.**
149	2-Methylnaphthalene	91-57-6	↓	**>350** (0.07 h)	**0.8** or **0.45** (325, 320 μM)	[43,45]							**N.A.**
150	3-Methylbenz[a]anthracene	2498-75-1	—	**>50** (0.5 h)	*n.d.*	[48]					**Marginal**		**N.A.**
151	3-Methylchrysene	3351-31-3	—	**>80** (1 h)	*n.d.*	[55]					**Low-moderate**	**Group 3**	**N.A.**
152	4-Methylbenz[a]anthracene	316-49-4	—	**>50** (0.5 h)	*n.d.*	[48]					**Moderate**		**N.A.**
153	4-Methylchrysene	3351-30-2	—	**>80** (1 h)	*n.d.*	[55]					**Low-moderate**	**Group 3**	**N.A.**
154	5-Methylbenz[a]anthracene	2319-96-2	—	**>50** (0.5 h)	*n.d.*	[48]					**Marginal**		**N.A.**
155	5-Methylchrysene	3697-24-3	↓	**12** or **18** (0.5, 1 h)	*n.d.*	[47,55]					**High**	**Group 2B**	**+**
156	6-Methylbenz[a]anthracene	316-14-3	—	**>50** (0.5 h)	*n.d.*	[48]					**Moderate**		**N.A.**
157	6-Methylchrysene	1705-85-7	↓	**37** (1 h)	*n.d.*	[55]					**Low-moderate**	**Group 3**	**N.A.**
158	7-Methylbenz[a]anthracene	2541-69-7	—	**>50** (0.5 h)	*n.d.*	[48]					**High-moderate**		**N.A.**

159	8-Methylbenz[a]anthracene	2381-31-9	↓	**13** (0.5 h)	*n.d.*	[48]					**Moderate**		**N.A.**
160	9,10-Dimethylanthracene	781-43-1	↓	**45 to <70** (0.17 to 0.25 h)	2 to 3 (50 to 70 µM)	[17,43,45,46]					**Uncertain/ Unknown**		**N.A.**
161	9-Methylanthracene	779-02-2	↓	**26 to <50** (0.17-1.5 h)	2 to 15 (37 to 70 µM)	[42,43,45,46,49]					**Marginal**		**N.A.**
162	9-Methylbenz[a]anthracene	2381-16-0	—	**>50** (0.5 h)	*n.d.*	[48]					**Marginal**		**N.A.**
	PAHs N-heterocyclic													
163	Dinaphtho[2,1-b:2',3'-d]furan	204-91-1	—	**>50** (0.5 h)	*n.d.*	[56]							**N.A.**
164	7H-Dibenzo[c,g]carbazole	194-59-2	↓	**12** (0.5-24 h)	*n.d.*	[57]	**+**	**E**	**E**		**Marginal**	**Group 2B**	**+**
165	N-Methyl-7H-dibenzo[c,g]carbazole	27093-62-5	↓	**41** (0.5 h)	*n.d.*	[57]	**+**	**+**	**+**				**N.A.**
	PAHs N-heterocyclic, methylated													
166	5,9-Dimethyl-7H-dibenzo[c,g]carbazole	88193-04-8	↓	**39** (0.5 h)	*n.d.*	[57]	**+**	**E**	**E**				**N.A.**
	PAHs O-heterocyclic													
167	Dinaphtho[1,2-b:1',2'-d]furan	68518-20-7	—	**>50** (0.5 h)	*n.d.*	[56]							**N.A.**
168	Dinaphtho[1,2-b:2',1'-d]furan	239-69-0	—	**>50** (0.5 h)	*n.d.*	[56]							**N.A.**
169	Dinaphtho[1,2-b:2',3'-d]furan	239-90-7	—	**>50** (0.5 h)	*n.d.*	[56]							**N.A.**
170	Dinaphtho[2,1-b:1',2'-d]furan	194-63-8	—	**>50** (0.5 h)	*n.d.*	[56]							**N.A.**
171	Dinaphtho[2,3-b:2',3'-d]furan	242-51-3	—	**>50** (0.5 h)	*n.d.*	[56]							**N.A.**
	PBBs													
172	2,2',4,4',5,5'-Hexabromobiphenyl	59080-40-9	↓	**5** (12 h)	*n.d.*	[58]					**Low-moderate**		**N.A.**
	PCBs													
173	PCB 18	37680-65-2	↓	**10** (0.5 h)	*n.d.*	[59]					**Marginal**		**N.A.**
174	PCB 19	38444-73-4	↓	**6** (1 h)	*n.d.*	[60]					**Marginal**		**N.A.**

175	PCB 28	7012-37-5	↓	**15** or **31** (1, 0.5 h)	*n.d.*	[59,60]				**Low-moderate**		**N.A.**
176	PCB 31	16606-02-3	↓	**16** (0.5 h)	*n.d.*	[59]				**Marginal**		**N.A.**
177	PCB 47	2437-79-8	↓	**10** or **13** (0.5, 1 h)	*n.d.*	[59,60]				**Low-moderate**		**N.A.**
178	PCB 49	41464-40-8	↓	**19** (0.5 h)	*n.d.*	[59]				**Low-moderate**		**N.A.**
179	PCB 51	68194-04-7	↓	**7** (1 h)	*n.d.*	[60]				**Marginal**		**N.A.**
180	PCB 52	35693-99-3	↓	**9** or **24** (1, 0.5 h)	*n.d.*	[59,60]				**Low-moderate**		**N.A.**
181	PCB 53	41464-41-9	↓	**6** (1 h)	*n.d.*	[60]				**Marginal**		**N.A.**
182	PCB 66	32598-10-0	↓	**16** (0.5 h)	*n.d.*	[59]				**Low-moderate**		**N.A.**
183	PCB 70	32598-11-1	↓	**19** (0.5 h)	*n.d.*	[59]				**Low-moderate**		**N.A.**
184	PCB 74	32690-93-0	↓	**11** or **18** (0.5, 1 h)	*n.d.*	[59,60]				**Low-moderate**		**N.A.**
185	PCB 77	32598-13-3	—	**>100** (0.5 h)	*n.d.*	[59]				**Moderate**	**Group 1**	**+**
186	PCB 80	33284-52-5	—	**>50** (0.5 h)	*n.d.*	[60]				**Low-moderate**		**N.A.**
187	PCB 81	70362-50-4	—	**>100** (0.5 h)	*n.d.*	[59]				**Moderate**	**Group 1**	**+**
188	PCB 95	38379-99-6	↓	**8** or **17** (1, 0.5 h)	*n.d.*	[59,60]				**Marginal**		**N.A.**
189	PCB 99	38380-01-7	↓	**22** (0.5 h)	*n.d.*	[59]				**Low-moderate**		**N.A.**
190	PCB 100	39485-83-1	↓	**16** (1 h)	*n.d.*	[60]				**Marginal**		**N.A.**
191	PCB 101	37680-73-2	↓	**13** or **16** (1, 0.5 h)	*n.d.*	[59,60]				**Low-moderate**		**N.A.**
192	PCB 104	56558-16-8	↓	**8** (1 h)	*n.d.*	[60]				**Marginal**		**N.A.**
193	PCB 105	32598-14-4	↓	**21** (0.5 h)	*n.d.*	[59]				**Low-moderate**	**Group 1**	**+**
194	PCB 110	38380-03-9	↓	**16** (0.5 h)	*n.d.*	[59]				**Low-moderate**		**N.A.**

195	PCB 114	74472-37-0	↓	**23** (0.5 h)	*n.d.*	[59]				Low-moderate	Group 1	+
196	PCB 118	31508-00-6	↓	**17** or **19** (0.5, 1 h)	*n.d.*	[59,60]				Low-moderate	Group 1	+
197	PCB 119	56558-17-9	↓	**26** (0.5 h)	*n.d.*	[59]				Low-moderate		N.A.
198	PCB 122	76842-07-4	↓	**22** (1 h)	*n.d.*	[60]				Low-moderate		N.A.
199	PCB 123	65510-44-3	↓	**18** (0.5 h)	*n.d.*	[59]				Low-moderate	Group 1	+
200	PCB 125	74472-39-2	↓	**13** (1 h)	*n.d.*	[60]				Low-moderate		N.A.
201	PCB 126	57465-28-8	—	**>50** (0.5, 1 h)	**>2880** (50 µM)	[59,60]				High-moderate	Group 1	+
202	PCB 128	38380-07-3	↓	**13** (1 h)	*n.d.*	[60]				Marginal		N.A.
203	PCB 129	55215-18-4	↓	**23** (0.5 h)	*n.d.*	[59]				Low-moderate		N.A.
204	PCB 132	38380-05-1	↓	**18** (0.5 h)	*n.d.*	[59]				Marginal		N.A.
205	PCB 136	38411-22-2	↓	**5** or **16** (1, 0.5 h)	*n.d.*	[59,60]				Marginal		N.A.
206	PCB 138	35065-28-2	↓	**14** or **20** (1, 0.5 h)	*n.d.*	[59,60]				Low-moderate		N.A.
207	PCB 149	38380-04-0	↓	**21** (0.5 h)	*n.d.*	[59]				Marginal		N.A.
208	PCB 153	35065-27-1	↓	**15 to <50** (0.5-48 h)	*n.d.*	[17,52,59–61]				Low-moderate		+
209	PCB 156	38380-08-4	↓	**17** (0.5 h)	*n.d.*	[59]				Low-moderate	Group 1	+
210	PCB 157	69782-90-7	↓	**16** (0.5 h)	*n.d.*	[59]				Low-moderate	Group 1	+
211	PCB 163	74472-44-9	↓	**40** (0.5 h)	*n.d.*	[59]				Low-moderate		N.A.
212	PCB 167	52663-72-6	↓	**22** (0.5 h)	*n.d.*	[59]				Low-moderate	Group 1	+
213	PCB 168	59291-65-5	↓	**23** (1 h)	*n.d.*	[60]				Low-moderate		N.A.
214	PCB 169	32774-16-6	—	**>100** (0.5 h)	*n.d.*	[59]				High-moderate	Group 1	+

215	PCB 170	35065-30-6	↓	**30** or **62** (1, 0.5 h)	*n.d.*	[59,60]				**Low-moderate**	**N.A.**
216	PCB 180	35065-29-3	↓	**43** or **71** (1, 0.5 h)	*n.d.*	[59,60]				**Low-moderate**	**+**
217	PCB 187	52663-68-0	↓	**60** (0.5 h)	*n.d.*	[59]				**Marginal**	**N.A.**
218	PCB 189	39635-31-9	↓	**>100** (0.5 h)	*n.d.*	[59]				**Low-moderate**	**Group 1** **+**
219	PCB 190	41411-64-7	↓	**23** (1 h)	*n.d.*	[60]				**Low-moderate**	**N.A.**
220	PCB 194	35694-08-7	—	**>100** (0.5 h)	*n.d.*	[59]				**Low-moderate**	**N.A.**
	PCBs metabolites										
221	2-(2′,4′,5′-tri-Cl-phenyl)-1,4-Hydroquinone		↓	**>100** (0.5 h)	*n.d.*	[62]					
222	2-(2′-Cl-phenyl)-1,4-Benzoquinones		↓	**>100** (0.5 h)	*n.d.*	[62]					
223	2-(2′-Cl-phenyl)-1,4-Hydroquinone		—	**>100** (0.5 h)	*n.d.*	[62]					
224	2-(3′,4′,5′-tri-Cl-phenyl)-1,4-Benzoquinones		↓	**42** (0.5 h)	*n.d.*	[62]					
225	2-(3′,4′,5′-tri-Cl-phenyl)-1,4-Hydroquinone		↓	**>100** (0.5 h)	*n.d.*	[62]					
226	2-(3′,4′-di-Cl-phenyl)-1,4-Benzoquinones		↓	**49** (0.5 h)	*n.d.*	[62]					
227	2-(3′,4′-di-Cl-phenyl)-1,4-Hydroquinone		↓	**>100** (0.5 h)	*n.d.*	[62]					
228	2-(3′,5′-di-Cl-phenyl)-1,4-Benzoquinones		↓	**37** (0.5 h)	*n.d.*	[62]					
229	2-(3′,5′-di-Cl-phenyl)-1,4-Hydroquinone		—	**>100** (0.5 h)	*n.d.*	[62]					
230	2-(3′-Cl-phenyl)-1,4-Benzoquinones		↓	**70** (0.5 h)	*n.d.*	[62]					
231	2-(3′-Cl-phenyl)-1,4-Hydroquinone		—	**>100** (0.5 h)	*n.d.*	[62]					
232	2-(4′-Cl-phenyl)-1,4-Benzoquinones		↓	**73** (0.5 h)	*n.d.*	[62]					
233	2-(4′-Cl-phenyl)-1,4-Hydroquinone		↓	**>100** (0.5 h)	*n.d.*	[62]					
234	2,2′-Biphenyldiol	1806-29-7	↓	**225**	**45**	[63]					**N.A.**

				(0.5 h)	(250 μM)						
235	2′-Hydroxy-PCB 3	64181-76-6	—	**>100** (0.5 h)	*n.d.*	[62]			**Low-moderate**		
236	2-Biphenylol	90-43-7	↓	**>300** (0.5 h)	**480** (230 μM)	[63]				**Group 3**	**+**
237	3,3′-Biphenyldiol	612-76-0	↓	**>300** (0.5 h)	**1440** (250 μM)	[63]					
238	3′,4′-Dihydroxy-PCB 3		↓	**43** (0.5 h)	*n.d.*	[62]					
239	3′,4′-Dihydroxy-PCB 5		↓	**16** (0.5 h)	*n.d.*	[62]					
240	3′,4′-Dihydroxy-PCB 12		↓	**19** (0.5 h)	*n.d.*	[62]					
241	3′-Hydroxy-PCB 3		↓	**37** (0.5 h)	*n.d.*	[62]					
242	3-Biphenylol	580-51-8	↓	**>300** (0.5 h)	**1440** (150 μM)	[63]					**N.A.**
243	3-Chloro-2-biphenylol	85-97-2	↓	**>300** (0.5 h)	**>1440** (100 μM)	[63]			**Marginal**		**N.A.**
244	4,4′-Dichloro-3-biphenylol	53459-39-5	↓	**30** (0.5 h)	**10** (40 μM)	[63]			**Low-moderate**		**N.A.**
245	4′-Hydroxy-PCB 3		↓	**31** (0.5 h)	*n.d.*	[62]					
246	4′-Hydroxy-PCB 36		↓	**38** (0.5 h)	*n.d.*	[62]					
247	4′-Hydroxy-PCB 68		↓	**22** (0.5 h)	*n.d.*	[62]					
248	4′-Hydroxy-PCB 79		↓	**27** (0.5 h)	*n.d.*	[62]					
249	4-Hydroxy-PCB 14		↓	**38** (0.5 h)	*n.d.*	[62]					
250	4-Hydroxy-PCB 34		↓	**32** (0.5 h)	*n.d.*	[62]					
251	4-Hydroxy-PCB 35		↓	**31** (0.5 h)	*n.d.*	[62]					
252	4-Hydroxy-PCB 36		↓	**30** (0.5 h)	*n.d.*	[62]					
253	4-Hydroxy-PCB 39		↓	**27** (0.5 h)	*n.d.*	[62]					
254	4-Hydroxy-PCB 107	152969-11-4	↓	**20**	*n.d.*	[62]			**Marginal**		**N.A.**

				(0.5 h)									
255	4-Hydroxy-PCB 187	158076-68-7	↓	**9** (0.5 h)	*n.d.*	[62]				**Low**		**N.A.**
256	4-Hydroxy-PCB-146		↓	**13** (0.5 h)	*n.d.*	[62]						
257	6′-Hydroxy-PCB 35		↓	**24** (0.5 h)	*n.d.*	[62]						
258	6′-Hydroxy-PCB 36		↓	**20** (0.5 h)	*n.d.*	[62]						
	PCDDs												
259	TCDD	1746-01-6	↓	**>0.001** (24 h)	**>48** (0.001 μM)	[26,64]	—			**High**	**Group 1**	**+**
	Peptides												
260	Cylindrospermopsin	143545-90-8	—	**>60** (0.5 h)	*n.d.*	[52]						**N.A.**
261	EGF	62229-50-9	↓	**<0.001 to <0.008** (0.2-0.5 h)	**2** (0.002 μM)	[17,29,59,65,66]	—					**N.A.**
262	Microcystin-LR	101043-37-2	—	**>100** (0.5 h)	*n.d.*	[52]					**Group 2B**	**+**
263	TNFα	308079-78-9	↓	**<0.0003** (24 h)	*n.d.*	[51]						**N.A.**
264	TRAP 6	141136-83-6	↓	**<50** (0.5 h)	*n.d.*	[17]						**N.A.**
	Peroxides												
265	Hydrogen peroxide H_2O_2	7722-84-1	↓	**<100 to >1000** (0.5-1 h)	*n.d.*	[15,20,67–81]	—	+	+	+	**Group 3**	**+**
	PFASs												
266	Perfluorobutanesulfonic acid PFBS	375-73-5	—	**>160** (0.3 h)	*n.d.*	[82]						**N.A.**
267	Perfluorobutanoic acid PFBA	375-22-4	—	**>300** (0.3 h)	*n.d.*	[21]						**N.A.**
268	Perfluorodecanoic acid PFDA	335-76-2	↓	**25** or **<50** (0.3 h)	**2** (350 μM)	[17,21]				**Low-moderate**		**+**
269	Perfluoroheptanoic acid PFHpA	375-85-9	↓	**140** (0.3 h)	*n.d.*	[21]						**N.A.**
270	Perfluorohexadecanoic acid PFHA	67905-19-5	—	**>300** (0.3 h)	*n.d.*	[21]						**N.A.**

271	Perfluorohexanesulfonic acid PFHS	355-46-4	↓	**122** (0.5 h)	*n.d.*	[82]						**N.A.**
272	Perfluorononanoic acid PFNA	375-95-1	↓	**90** (0.3 h)	*n.d.*	[21]						**N.A.**
273	Perfluorooctadecanoic acid PFODA	16517-11-6	—	**>300** (0.3 h)	*n.d.*	[21]						**N.A.**
274	Perfluorooctane sulfonate PFOS	1763-23-1	↓	**30** or **<40** (0.5, 0.3 h)	**2** (50 μM)	[17,82]						**N.A.**
275	Perfluorooctanesulfonamide PFOSA	754-91-6	↓	**25** or **37** (0.3, 0.5 h)	**2** or **10** (50, 350 μM)	[21]						**N.A.**
276	Perfluorooctanoic acid PFOA	335-67-1	↓	**50 to 100** (0.08-0.3 h)	**2** (350 μM)	[17,21,35,83]					**Group 2B**	+
277	Perfluoropentanoic acid PFPeA	2706-90-3	—	**>200** (0.3 h)	*n.d.*	[21]						**N.A.**
278	Perfluoropropanoic acid PFPA	422-64-0	—	**>300** (0.3 h)	*n.d.*	[21]						**N.A.**
279	Trifluoroacetic acid TFA	76-05-1	—	**>300** (0.3 h)	*n.d.*	[21]						**N.A.**
	Phenothiazines											
280	Mesoridazine	5588-33-0	↓	**5** (1 h)	*n.d.*	[37]						**N.A.**
	Phorbols											
281	TPA	16561-29-8	↓	**0.002 to 0.02** (0-1 h)	**<10** (0.016 μM)	[15,17,62,64,66,68,77,84–88,35,89,90,36,47,55–57,59,61]	↓					+
	Phthalates											
282	Benzyl butyl phthalate BBP	85-68-7	↓	**21** (0.5 h)	**2** (80 μM)	[91]			+	+		+
283	Di(2-ethylhexyl) phthalate DEHP	117-81-7	↓	**>200** (0.5 h)	**207** (80 μM)	[91]	**E**	—	—	—	**Group 2B**	+
284	Diallyl phthalate DAP	131-17-9	↓	**100** (0.5 h)	**>1440** (80 μM)	[91]		—	+	**E**		**N.A.**
285	Dibutyl phthalate DBP	84-74-2	↓	**13** (0.5 h)	**2** (80 μM)	[91]						+
286	Dicyclohexyl phthalate DCHP	84-61-7	↓	**22** (0.5 h)	**10** (80 μM)	[91]						**N.A.**
287	Didecyl phthalate DDP	84-77-5	—	**>200** (0.5 h)	**>1440** (80 μM)	[91]						**N.A.**
288	Diethyl phthalate DEP	84-66-2	—	**>200**	**>1440**	[91]	—					+

				(0.5 h)	(80 µM)							
289	Diheptyl phthalate DHpP	3648-21-3	↓	**58** (0.5 h)	**25** (80 µM)	[91]						+
290	Diisibutyl phthalate DIBP	84-69-5	↓	**17** (0.5 h)	**10** (80 µM)	[91]						
291	Diisodecyl phthalate DIDP	26761-40-0	—	**>200** (0.5 h)	**>1440** (80 µM)	[91]						N.A.
292	Diisoheptyl phthalate DIHpP	41451-28-9	↓	**44** (0.5 h)	**17** (80 µM)	[91]						N.A.
293	Diisononyl phthalate DINP	28553-12-0	↓	**>200** (0.5 h)	**711** (80 µM)	[91]						N.A.
294	Diisopropyl phthalate DIPrP	605-45-8	↓	**86** (0.5 h)	**>1440** (80 µM)	[91]						N.A.
295	Dimethyl phthalate DMP	131-11-3	—	**>200** (0.5 h)	**>1440** (80 µM)	[91]						+
296	Dioctyl phthalate DOP	117-84-0	↓	**>200** (0.5 h)	**292** (80 µM)	[91]						+
297	Dipentyl phthalate DPeP	131-18-0	↓	**16** (0.5 h)	**10** (80 µM)	[91]						N.A.
298	Diphenyl phthalate DPhP	84-62-8	↓	**39** (0.5 h)	**10** (80 µM)	[91]						N.A.
299	Dipropyl phthalate DPrP	131-16-8	↓	**39** (0.5 h)	**<10** (80 µM)	[91]						N.A.
300	Monobutyl phthalate MBP	131-70-4	—	**>200** (0.5 h)	**>1440** (80 µM)	[91]						N.A.
301	Monomethyl phthalate MMP	4376-18-5	—	**>200** (0.5 h)	**>1440** (80 µM)	[91]						N.A.
	Piperidines											
302	Thioridazine	50-52-2	↓	**5** (1 h)	**5** (10 µM)	[37]						N.A.
	Platinum compounds											
303	Cisplatin	15663-27-1	—	**>10** (0-8 h)	**>480** (10 µM)	[90]		+	+	+	**Moderate**	+
304	Platinum complex LA-12	250611-20-2	↓	**1** or **1.5** (2, 3 h)	**40** or **60** (10, 8 µM)	[90]						N.A.
	Polyphenolic compounds											
305	Gossypol	303-45-7	↓	**<3** (24 h)	*n.d.*	[92]	—				**Low to Moderate**	N.A.

										to Marginal	
	Polysaccharides										
306	Lambda-Carrageenan (extract)		↓	**0.00005%** (0.5 h)	**10** (0.001%)	[93]					
	Pyrene ozonation byproducts										
307	1,2,3,4-Tetrahydro-9-phenanthrene carboxaldehyde		↓	**25** (0.5 h)	**15** (*n.s.*)	[54]					
308	2-Biphenyl carboxylic acid	947-84-2	↓	**>200** (0.5 h)	*n.d.*	[54]					**N.A.**
309	4-Biphenyl carboxaldehyde	3218-36-8	↓	**110** (0.5 h)	**15** (*n.s.*)	[54]				**Low-moderate to Moderate**	**N.A.**
310	4-Biphenyl carboxylic acid	92-92-2	↓	**>200** (0.5 h)	*n.d.*	[54]					**N.A.**
311	4-Carboxy-5-phenanthrene (4C5P)		↓	**>100** (0.5 h)	*n.d.*	[54]					
312	4-Carboxy-phenanthrene (4CP)		↓	**>100** (0.5 h)	*n.d.*	[54]					
313	9-Oxo-1-fluorene carboxaldehyde		↓	**25** (0.5 h)	**15** (*n.s.*)	[54]					
314	Biphenyl-2,2',6,6'-tetracarbaldehyde	4371-26-0	↓	**23** (0.5 h)	**60** (5 µM)	[53]					**N.A.**
315	Biphenyl-2,2',6,6'-tetracarboxylic acid	4371-27-1	—	**>100** (0.5 h)	**>360** (500 µM)	[53]					**N.A.**
316	Diphenic acid	482-05-3	↓	**>200** (0.5 h)	*n.d.*	[54]					**N.A.**
	Retinoids										
317	11-cis-Retinaldehyde	564-87-4	↓	**<10** (0.5 h)	*n.d.*	[9]					**N.A.**
318	All-trans-Retinaldehyde	116-31-4	↓	**2.5** (0.5 h)	*n.d.*	[9]				**Low**	**N.A.**
319	All-trans-Retinoic acid	302-79-4	↓	**30** (0.5 h)	*n.d.*	[9]	↓				**+**
	Sphingolipids										
320	C2-Ceramide	3102-57-6	↓	**>40** (0-4 h)	**>240** (40 µM)	[94]					**N.A.**
321	C6-Ceramide	124753-97-5	↓	**15**	**7**	[94]					**N.A.**

				(0.5 h)	(40 µM)							
322	C8-Ceramide	74713-59-0	↓	**15** (0.5 h)	**15** (40 µM)	[94]						
	Steroids											
323	17β-Estradiol	50-28-2	↓	**>250** (24 h)	*n.d.*	[10]	—	—	E	E	**Group 1 ***	+
324	Fulvestrant	129453-61-8	—	**>250** (0.5-24 h)	**>1440** (250 µM)	[10]						**N.A.**
325	Testosterone	58-22-0	—	**>250** (0.5-24 h)	**>1440** (1-250 µM)	[10]	E					+
	Trihydroxybenzoic acids											
326	Gallic acid	149-91-7	↓	**<100** (0.5, 1 h)	*n.d.*	[25,76,78]						**N.A.**
	Triterpenoids											
327	18α-glycyrrhetinic acid	1449-05-4	↓	**65** (0.5 h)	*n.d.*	[9]	↓					**N.A.**
328	18β-glycyrrhetinic acid	471-53-4	↓	**<30** (0.3 h)	*n.d.*	[17]	↓					**N.A.**

CASRN, Chemical Abstracts Service Registry Number; **DDT**, dichlorodiphenyltrichloroethane; **EC_{50}**, the concentration causing 50% GJIC inhibition; **EGF**, epidermal growth factor; **ET_{50}**, the exposure time causing 50% GJIC inhibition; **GJIC**, gap junctional intercellular communication; **MBOCA**, 4,4'-methylene bis (2-chloroaniline); **MC**, metabolic cooperation; **NA**, not available; ***n.d.***, not determined; ***n.s.***, not specified; **PAHs**, polycyclic aromatic hydrocarbons; **PBBs**, polybrominated biphenyls; **PCBs**, polychlorinated biphenyls; **PCDDs,** polychlorinated dibenzo-p-dioxins; **PFASs**, perfluoroalkyl and polyfluoroalkyl substances; **Ref.**, reference; **TCDD**, tetrachlorodibenzo-p-dioxin; **THC**, delta-9-tetrahydrocannabinol; **TNFα**, tumor necrosis factor-alpha; **TRAP 6**, thrombin receptor activator peptide 6; **SL-DT**, scrape loading-dye transfer
*(oestrogen-only menopausal therapy)

Legend:

SL-DT assay

↓	Significant GJIC inhibition and the EC_{50} value could be calculated
↓	Significant GJIC inhibition, but less then 50% of a negative control (the EC_{50} value could not be calculated)
—	No GJIC inhibition
—/↓	More studies report no GJIC inhibition than significant GJIC inhibition
E	Equivocal result (no GJIC inhibition:significant GJIC inhibition = 1:1)

Genotoxicity

+	Positive
—	Negative
E	Equivocal result, when response is weak or not reproduced between experiments or between laboratories
I	Inconclusive or (more usually) inadequately tested (e.g. not tested both - and + S9, insufficient concentrations, insufficient toxicity etc.)

IARC

Group 1	"Carcinogenic to humans" There is enough evidence to conclude that it can cause cancer in humans.
Group 2A	"Probably carcinogenic to humans" There is strong evidence that it can cause cancer in humans, but at present it is not conclusive.
Group 2B	"Possibly carcinogenic to humans" There is some evidence that it can cause cancer in humans but at present it is far from conclusive.
Group 3	"Unclassifiable as to carcinogenicity in humans" There is no evidence at present that it causes cancer in humans.

CompTox/ToxRefDB

+	Positive
NA	Not available

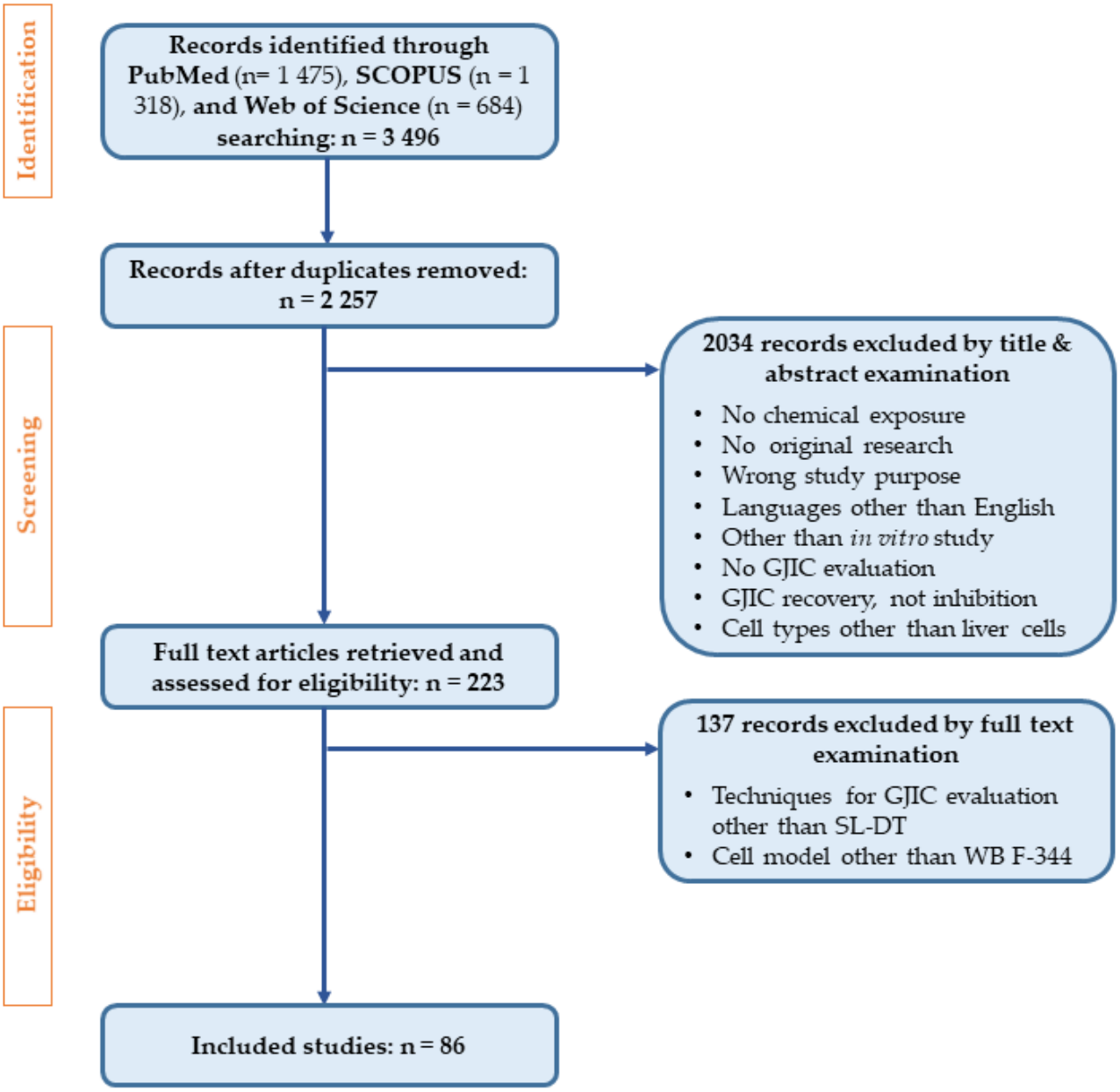
MC assay

↓	GJIC inhibition
—	No GJIC inhibition
E	Equivocal result / Uncertain

OncoLogic

Low	Unlikely to be a carcinogen
Marginal	Likely to have equivocal carcinogenic activity
Low-moderate	Likely to be weakly carcinogenic
Moderate	Likely to be moderately active carcinogen
High-moderate	Highly likely to be a moderately active carcinogen
High	Highly likely to be a potent carcinogen
Low-moderate to Moderate	Likely to be weakly carcinogenic to Likely to be moderately active carcinogen
Uncertain/ Unknown	Uncertain
Marginal to High-moderate	Uncertain
Marginal to Low-moderate	Uncertain
Low to Moderate to Marginal	Uncertain
Low to Moderate (High-moderate)	Uncertain

Supplementary Figures



Supplementary Figure S1. A study flow for the systematic literature search and exclusion criteria.

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