

## COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD CONSUMER PRODUCTS AND THE ENVIRONMENT

### DISCUSSION PAPER ON EXPOSURE MONITORING OF THE AIRCRAFT CABIN ENVIRONMENT

TABLE 1. INCLUSION AND EXCLUSION CRITERIA FOR LITERATURE SEARCH

<p><b>Inclusion Criteria</b></p> <ul style="list-style-type: none"><li>• Original data from exposure monitoring of aircraft cabin environment</li><li>• Original data from exposure monitoring of indoor air environment in airport buildings</li><li>• Peer-reviewed publications on exposure monitoring</li><li>• Relevant reviews</li></ul>
<p><b>Exclusion Criteria</b></p> <ul style="list-style-type: none"><li>• Studies not reporting original results: comments, letters, editorials, abstracts, and most of the retrieved reviews (a few reviews thought to be particularly relevant will be included)</li><li>• Papers concerned only with methodology</li><li>• Studies reporting animal or <i>in vitro</i> data</li><li>• Studies dealing with health outcomes or biomonitoring</li><li>• Studies dealing with exposures other than those relating to chemical exposure from oil/hydraulic fluid and flame retardants, for example tobacco smoke, solar radiation, infectious disease particles, ozone, pesticides</li><li>• Papers dealing with organophosphates being reviewed by COT</li></ul>

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**TABLE 2. SEARCHES IN PUBMED AND WEB OF SCIENCE**

2(a) PUBMED 2007-2013 'Cabin air' and 'aircraft' searches				
Search No.	Search Terms/ Details	No.of references retrieved	Relevant references	New references
1	Cabin air	171	4	4 (Allen 2012, Denola 2011, Solbu 2011, Chaturvedi 2011)
2	Cabin air quality	18	1	0
3	Aircraft air contamination	15	2	0
4	BDPP	6	0	0
5	DBPP	5	1	1 (Solbu 2010)
6	TOCP	39	2	1 (Denola 2008)
7	TCP	879	0	0
8	Tri-cresyl phosphate	3	0	0
9	Tricresyl phosphate	63	4	0
10	TBP	946	0	0
11	Tributyl phosphate	74	0	0
12	TCP AND aircraft	7	2	0
13	TBP AND aircraft	4	0	0
14	TCE AND aircraft	3	0	0
15	TOCP AND aircraft	5	2	0
16	Toluene AND aircraft	4	0	0
17	Xylene AND aircraft	3	0	0
18	Limonene AND aircraft	0	0	0
19	Undecane AND aircraft	0	0	0
20	Tributyl phosphate AND aircraft	4	0	0
21	Tricresyl phosphate AND aircraft	13	3	0
22	BDPP AND aircraft	0	0	0
23	DBPP AND aircraft	1	1	0
24	Aircraft AND fumes	4	1	0
25	Aircraft AND oil	37	3	0
26	Air quality AND (airline OR airplane OR aircraft OR cockpit OR "passenger cabin" OR flight deck)	133	1	0
27	aircrew OR "airline crew" OR "cabin attendants" OR "cabin crew" OR "cockpit crew" OR "crew members" OR "flying crew" OR "flight engineers" OR "flight attendants" OR flight deck OR "airline pilots" OR "aircraft pilots" OR "airplane pilots" OR stewardesses OR "flight deck crew" NOT "aircraft carrier"	439	1	1 (Allen 2013)
28	Search #27 AND ((fume OR fumes) OR smoke OR haze OR mist OR (smell OR smells) OR (odor OR odors) OR (odour OR odours) OR (vapor OR vapors) OR (vapour OR vapours) OR particulates OR dust OR (aerosol OR aerosols) OR (gas OR gases))	35	1	0
29	Air quality AND airport	23	0	0
30	Air quality AND "airport building" OR "airport buildings"	0	0	0
31	Air quality AND "airport offices"	1	0	0
32	Cabin air AND flame retardants	2	0	0
33	Aircraft AND flame retardants	5	3	1 (Christiansson 2008)
<b>TOTAL</b>		2,942	32	<b>8</b>

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<b>2(b) PUBMED 2007-2013 'Indoor air' searches</b>				
<b>Search Number</b>	<b>Search Terms/ Details</b>	<b>No.of references retrieved</b>	<b>Relevant references</b>	<b>New references</b>
34	Toluene AND indoor air	147	1	0
35	Xylene AND indoor air	86	1	0
36	Limonene AND indoor air	43	0	0
37	TCE AND indoor air	16	0	0
38	Undecane AND indoor air	4	0	0
39	TBP AND indoor air	4	0	0
40	Tributyl phosphate AND indoor air	1	0	0
41	TCP AND indoor air	9	1	0
42	Tricresyl phosphate AND indoor air	4	1	0
43	TOCP AND indoor air	0	0	0
44	BDPP AND indoor air	0	0	0
45	DBPP AND indoor air	1	1	0
<b>TOTAL</b>		<b>315</b>	<b>5</b>	<b>0</b>

<b>2(c) PUBMED 2007-2013 'Particles or particulates' searches</b>				
<b>Search Number</b>	<b>Search Terms/ Details</b>	<b>No.of references retrieved</b>	<b>Relevant references</b>	<b>New references</b>
46	Toluene AND particles OR particulates	242	0	0
47	Xylene AND particles OR particulates	64	0	0
48	Limonene AND particles OR particulates	28	0	0
49	TCE AND particles OR particulates	35	0	0
50	Undecane AND particles OR particulates	0	0	0
51	TBP AND particles OR particulates	11	0	0
52	Tributyl phosphate AND particles OR particulates	2	0	0
53	TCP AND particles OR particulates	131	0	0
54	Tricresyl phosphate AND particles OR particulates	0	0	0
55	TOCP AND particles OR particulates	0	0	0
56	BDPP AND particles OR particulates	0	0	0
57	DBPP AND particles OR particulates	0	0	0
<b>TOTAL</b>		<b>513</b>	<b>0</b>	<b>0</b>

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2(d) Web of Science 2007-2013 Cabin air' and 'aircraft' searches				
Search No.	Search Terms/ Details	No.of references retrieved	Relevant references	New references
58	Cabin air	462	4	0
59	Cabin air quality	116	1	0
60	Aircraft air contamination	25	2	0
61	BDPP	20	0	0
62	DBPP	4	2	0
63	TOCP	26	0	0
64	TCP	(8,447)*	-	-
65	Tri-cresyl phosphate	3	0	0
66	Tricresyl phosphate	84	4	0
67	TBP	(1,879)*	-	-
68	Tributyl phosphate	352	2	0
69	TCP AND aircraft	19	4	0
70	TBP AND aircraft	2	0	0
71	TCE AND aircraft	5	0	0
72	TOCP AND aircraft	2	0	0
73	Toluene AND aircraft	26	2	0
74	Xylene AND aircraft	8	2	0
75	Limonene AND aircraft	6	0	0
76	Undecane AND aircraft	0	0	0
77	Tributyl phosphate AND aircraft	6	2	0
78	Tricresyl phosphate AND aircraft	12	4	0
79	BDPP AND aircraft	0	0	0
80	DBPP AND aircraft	2	2	0
81	Aircraft AND fumes	5	0	0
82	Aircraft AND oil	284	4	0
83	Air quality AND (airline OR airplane OR aircraft OR cockpit OR "passenger cabin" OR flight deck)	547	4	0
84	aircrew OR "airline crew" OR "cabin attendants" OR "cabin crew" OR "cockpit crew" OR "crew members" OR "flying crew" OR "flight engineers" OR "flight attendants" OR flight deck OR "airline pilots" OR "aircraft pilots" OR "airplane pilots" OR stewardesses OR "flight deck crew" NOT "aircraft carrier"	828	3	1 Rosenberger 2013
85	Search #27 AND ((fume OR fumes) OR smoke OR haze OR mist OR (smell OR smells) OR (odor OR odors) OR (odour OR odours) OR (vapor OR vapors) OR (vapour OR vapours) OR particulates OR dust OR (aerosol OR aerosols) OR (gas OR gases))	58	3	0
86	Air quality AND airport	169	13	0
87	Air quality AND "airport building" OR "airport buildings"	2	0	0
88	Air quality AND "airport offices"	0	0	0
89	Cabin air AND flame retardants	7	2	0
90	Aircraft AND flame retardants	14	3	0
<b>TOTAL</b>		3,094	63	1

\*these references were not scanned individually, and are not included in the Total below

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<b>2(e) Web of Science 2007-2013 'Indoor air' searches</b>				
<b>Search Number</b>	<b>Search Terms/ Details</b>	<b>No.of references retrieved</b>	<b>Relevant references</b>	<b>New references</b>
91	Toluene AND indoor air	392	1	0
92	Xylene AND indoor air	179	1	0
93	Limonene AND indoor air	88	0	0
94	TCE AND indoor air	28	0	0
95	Undecane AND indoor air	13	0	0
96	TBP AND indoor air	4	0	0
97	Tributyl phosphate AND indoor air	2	0	0
98	TCP AND indoor air	7	2	0
99	Tricresyl phosphate AND indoor air	5	2	0
100	TOCP AND indoor air	0	0	0
101	BDPP AND indoor air	0	0	0
102	DBPP AND indoor air	0	0	0
<b>TOTAL NEW REFERENCES</b>		718	6	<b>0</b>

<b>2(f) Web of Science 2007-2013 'Particles or particulates' searches</b>				
<b>Search Number</b>	<b>Search Terms/ Details</b>	<b>No.of references retrieved</b>	<b>Relevant references</b>	<b>New references</b>
103	Toluene AND (particles OR particulates) AND aircraft	6	0	0
104	Xylene AND particles OR particulates	414	0	0
105	Limonene AND particles OR particulates	170	0	0
106	TCE AND particles OR particulates	218	0	0
107	Undecane AND particles OR particulates	13	0	0
108	TBP AND particles OR particulates	59	0	0
109	Tributyl phosphate AND particles OR particulates	16	1	0
110	TCP AND particles OR particulates	477	1	0
111	Tricresyl phosphate AND particles OR particulates	2	1	0
112	TOCP AND particles OR particulates	0	0	0
113	BDPP AND particles OR particulates	0	0	0
114	DBPP AND particles OR particulates	0	0	0
<b>TOTAL NEW REFERENCES</b>		1,375	3	<b>0</b>