

## Supporting Information

### Identification of Flame Retardants in Polyurethane Foam Collected from Baby Products

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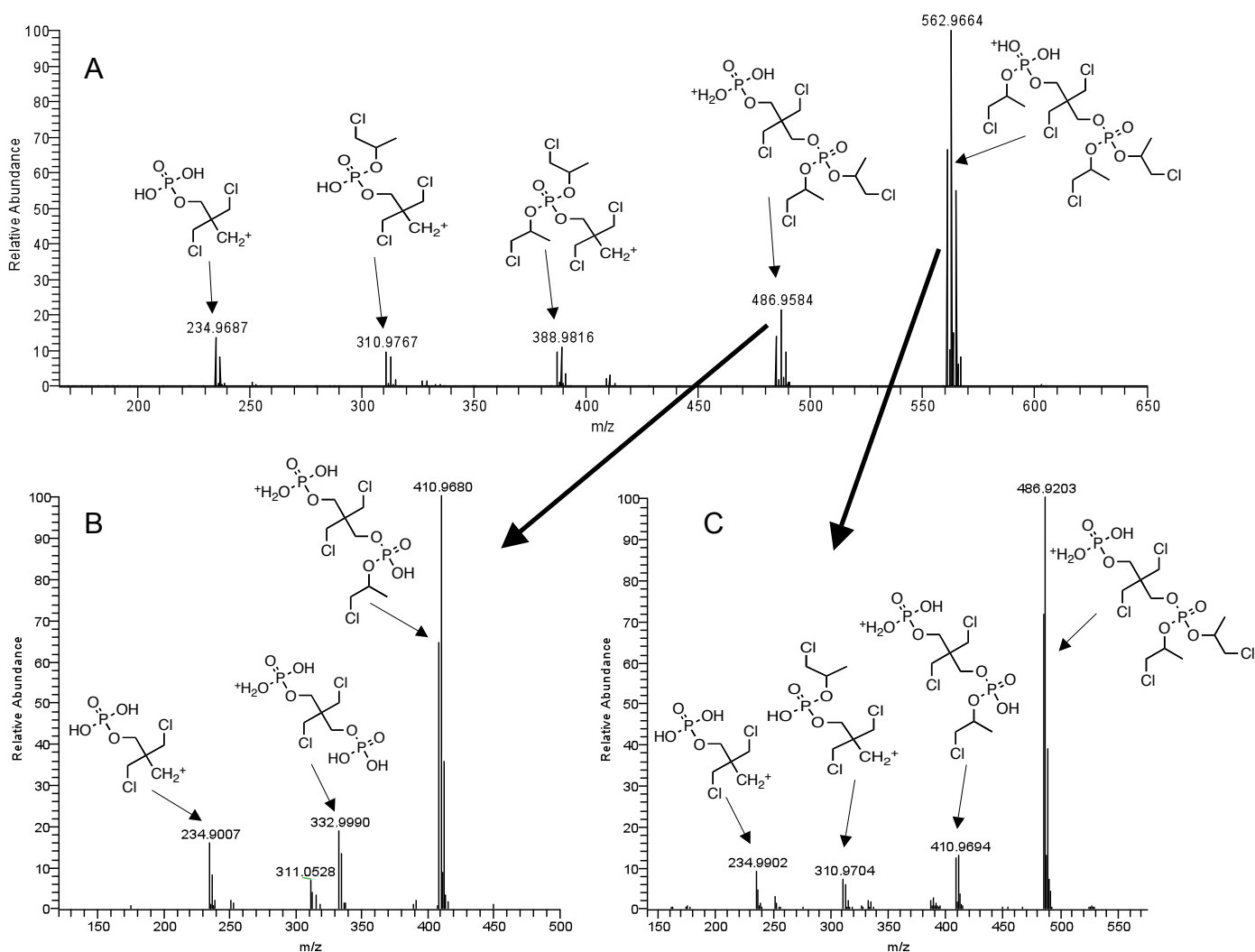
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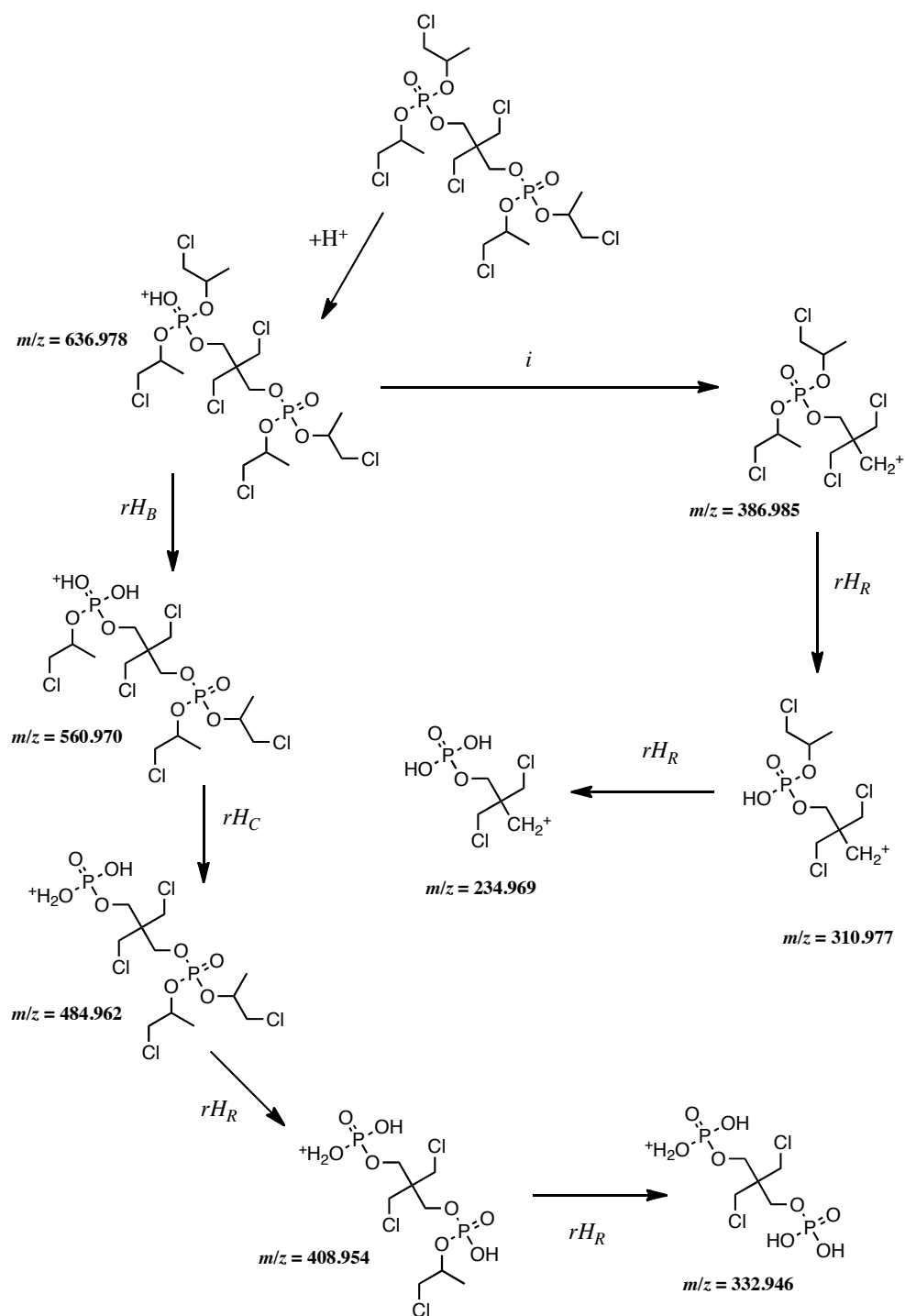
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This section contains additional information supportive of our study. Table S1 includes a detailed list of all 101 products analyzed in this study, including information on product type, flame retardants detected, estimated year of purchase, state product was donated from, if the product was a hand-me-down or not, and whether the product was known to contain a specific California flammability standard label. Figure S1 displays results from the LC/HRMS MS/MS analysis of a foam extract containing a previously unidentified chlorinated organophosphate flame retardant which we refer to as “U-OPFR”. Figure S2 is a proposed fragmentation pattern to support our identification of U-OPFR based on ion clusters observed in Figure S1.



**Figure S1:** High-resolution collision-induced dissociation (CID) MS/MS product ion spectrum (A) of the  $[M+H]^+$  ion ( $m/z = 636.9774$ ) from the putative 2,2-bis(chloromethyl)propane-1,3-diyl tetrakis(1-chloropropan-2-yl) bis(phosphate) organophosphate flame retardant compound, showing major fragment ions and proposed structures. Also shown are low resolution (LTQ) CID  $MS^3$  product ion spectra obtained from two prominent MS/MS product ions 484.962 (B) and 560.970 (C), with major fragment ions identified and proposed structures assigned accordingly. All spectra were obtained from HPLC-APCI-MS analyses of a sample of foam taken from an infant changing table pad.



**Figure S2:** Proposed fragmentation mechanisms and associated structures corresponding to CID MS/MS and MS<sup>3</sup> spectra of putative 2,2-bis(chloromethyl)propane-1,3-diyl tetrakis(1-chloropropan-2-yl) bis(phosphate) organophosphate flame retardant compound, derived from spectra shown in Figure S1. Reaction nomenclature is denoted as:  $i$  (inductive cleavage),  $rH_B$  (alpha, beta-charge site rearrangement),  $rH_C$  (gamma-charge site rearrangement), and  $rH_R$  (charge-remote fragmentation).

Sample #	Product Type	Flame retardants Detected (in order of relative abundance)	Year purchased	State From Which Sample Donated	Product a "Hand me Down"?	Label Attached Indicating CA Flammability Test?
1	Nursing pillow	V6, TCEP, TCP		California	no	117
2	Changing table pad	U-OPFR, TCP	estimated 2008	California	yes	117
3	car seat	PentaBDE, TPP	estimated 2000	California	yes	117
4	high chair	No Detects	2005	California	no	117
5	stroller/bassinnet	No Detects	2005	California	no	no (confirmed)
6	car seat (from head support)	TDCPP	2007	California	no	no (confirmed)
7	Changing table pad	Unidentified Peaks Present	2006	California	no	117
8	portable crib mattress	FM550	2004	California	yes	117
9	car seat (insert for smaller child)	TCPP, TDCPP	2008	California	no	no (confirmed)
10	car seat (insert for smaller child)	TDCPP	2007	California	no	no (confirmed)
11	high chair pad (headrest)	TDCPP	2003	California	no	Not sure because took off labels after purchasing
12	portable crib mattress (sleeping pad)	PentaBDE, TPP	2007	California	yes	Not sure because took off labels after purchasing
13	portable crib/co-sleeper	V6, TCEP	2006	California	yes	117
14	baby walker	TDCPP	2004-2005	California	yes	117
15	Nursing pillow	V6, TCEP	2006	California	yes	117
16	Nursing pillow	V6, TCEP	2008	Washington, DC	no	117
17	Changing pad	U-OPFR, TCP	2008	Washington, DC	no	117
18	baby carrier	No Detects	2007	California	yes	no (confirmed)
19	baby carrier	TDCPP	2008	California	no	no (confirmed)
20	Changing pad	TDCPP	2009	California	no	117
21	rocking chair/glider	TPP - looks like Supresta mixture AC073	2006	Nevada	no	117
22	baby carrier	No Detects	2007	Nevada	no	no (confirmed)
23	portable crib mattress	FM550/600	2006	Nevada	no	117 and 603
24	sleeping wedge	TDCPP	2006	Nevada	no	117
25	baby tub padded insert	No Detects	2002 or 2003	New Mexico	yes	116 and 117
26	rocking chair cushion (not a baby chair; FM550/600)	FM550/600	2009	California	no	117
27	bassinnet mattress	TDCPP	2006	California	no	no (confirmed)
28	baby carrier	No Detects	2006	California	no	no (confirmed)
29	car seat	FM550/600	2006	California	no	no (confirmed)
30	baby carrier	V6, TCEP	2008	Arizona	Not available	no
31	car seat	TDCPP	2006	Colorado	Not available	117
32	car seat	TDCPP	2006	Colorado	Not available	117
33	nursing pillow	V6, TCEP	2006	Colorado	yes	117
34	glider rocker	TDCPP	2006	Colorado	Not available	117
35	portable crib mattress (sleeping pad)	TDCPP	<10 (maybe 20) years old	Colorado	Not available	no
36	Changing table pad	TDCPP	2006	California	Not available	116 and 117
37	car seat	TCPP, TDCPP, TCEP	2007	California	no	no
38	changing table pad	FM550/600 and PentaBDE	2002	Nevada	yes	116 and 117
39	changing table pad	U-OPFR, TCP	2009	North Carolina	no	117 and 117
40	car seat (headrest)	TDCPP	2009	North Carolina	no	117
41	portable crib mattress	FM550/600	2009	North Carolina	no	603
42	nursing pillow	V6, TCEP	2005	North Carolina	yes	117
43	portable crib mattress (Moses basket)	Unidentified Peaks Present	2005	Not Available	yes	no
44	changing table pad	TDCPP	2006	Not Available	yes	117
45	car seat	FM550/600	2008	Not Available	yes	no
46	nursing pillow	V6, TCEP	2006	Not Available	Not available	117
47	car seat	FM550/600	2006	Not Available	Not available	117
48	sleeping wedge	TDCPP	2010	Michigan	Not available	117
49	sleeping wedge	Unidentified Peaks Present	2010	Michigan	Not available	603
50	changing table pad	TDCPP	2010	Michigan	Not available	117
51	sleeping wedge	Unidentified Peaks Present	2010	Michigan	Not available	117
52	sleeping wedge	V6, TCEP	2010	Michigan	Not available	117
53	sleeping wedge	TCPP, TDCPP	2010	Michigan	Not available	117
54	portable mattress	FM550/600	2010	Michigan	Not available	117
55	sleeping wedge	No Detects	2010	Michigan	Not available	117
56	sleeping wedge	Unidentified Peaks Present	2010	Michigan	Not available	117
57	sleeping wedge	TCPP	2010	Michigan	Not available	117
58	changing table pad	U-OPFR, TCP	2010	Michigan	Not available	117
59	changing table pad	TDCPP, TCPP, TCEP	2010	Michigan	Not available	117
60	changing table pad	TDCPP, TCPP	2010	Michigan	Not available	117
61	portable crib/co-sleeper	TDCPP	2008	Michigan	Not available	no
62	car seat	FM550/600	2005	Michigan	Not available	117
63	portable crib/co-sleeper	TCPP	2000	Michigan	Not available	117
64	changing table pad	TDCPP, FM 550	2006	Michigan	Not available	116 and 117
65	Bumbo chair	Unidentified Peaks Present	2006	Michigan	Not available	no
66	sleeping wedge	TDCPP	2003	Not Available	Not available	no
67	baby walker	TDCPP	2008	Alaska	Not available	116 and 117
68	Nursing pillow	V6, TCEP	2008	Washington	Not available	117
69	car seat	FM550/600	2004	New York	Not available	117
70	sleeping wedge	Unidentified Peaks Present	2004	New York	Not available	117
71	glider rocker	U-OPFR, TCP	2008	Vancouver BC	Not available	117
72	sleeping wedge	No Detects	2007	California	Not available	603
73	infant bath sling	TDCPP, TCEP	2002-2004	Nevada	yes	no
74	infant bath sling	V6, TCEP	2006	Nevada	no	116 and 117
75	nursing pillow	V6, TCEP	2007	Maine	Not available	117
76	bassinnet mattress	Unidentified Peaks Present	2006	Maine	Not available	603
77	booster seat (car seat?)	TDCPP	2006	Maryland	Not available	117
78	car seat	TDCPP	2002	Washington	Not available	no
79	portable mattress?	U-OPFR, TCP	2007	Washington	Not available	no
80	car seat	TDCPP	2009	Washington	Not available	no
81	nursing pillow	V6, TCEP	2003	Data not available	Not available	only the resilient filling materials contained in this article meet the CA Bureau of Home Furnishings flammability requirements
82	changing table pad	TDCPP	Not available	Data not available	Not available	only the resilient filling materials contained in this article meet the CA Bureau of Home Furnishings flammability requirements
83	sleeping wedge	TDCPP	2003	Data not available	Not available	117
84	car seat	TDCPP	2005	Data not available	Not available	Not available
85	high chair cover	Unidentified Peaks Present	2007	Data not available	Not available	no
86	changing table pad	FM550/600	2009	Data not available	Not available	117
87	Car Seat	TCPP and Unidentified Peaks Present	2010	North Carolina	no	no
88	nap mat	Unidentified Peaks Present	2004	Data not available	Not available	no
89	baby sleep positioner	Unidentified Peaks Present	2009	Data not available	Not available	117

90	booster seat (car seat)	FM550/600	2009	Data not available	Not available	no
91	high chair back pad	TDCPP	2004	Data not available	Not available	117
92	carseat	FM550/600	Not available	Data not available	Not available	Not available
93	nursing pillow	VE, TCPE	Not available	Data not available	Not available	Not available
94	sleeping wedge	low TDCPP	Not available	New York	Not available	Not available
95	Rocker	PentabDE	2003	Data not available	Not available	Not available
96	Nursing pillow	TDCPP, TCPP	2010	Data not available	Not available	117
97	Car Seat Accessory Pillow	PentabDE	estimated 2004	Data not available	Not available	no
98	Carseat	FM550/600	estimated 2000	Data not available	Not available	no
99	Foam Ball Bath Toy	No Detects	estimated 2000	Data not available	Not available	no
100	Toilet Seat	Unidentified Peaks Present	Not available	Data not available	Not available	no
101	Changing table pad	FM 550/600	2005	Data not available	Not available	117