Construction of a job exposure matrix to dust, fluoride and polycyclic aromatic hydrocarbons in the Norwegian Aluminum Industry using prediction models

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Online supplement tables 1.1 – 1.7
Overall standard deviation, variance between and within groups and their ratio, units for total dust and total fluorides are (mg/m^3) and polycyclic hydrocarbons (PAH) µg/m^3.

Table 1.1 Year

	Standard Deviation GSD				Variance			Ratio: Between/Within	
	Overall	Between	Within		Overall	Between	Within	Standard Dev.	Variance
Dust	3.30	1.40	3.15	Dust	10.88	1.97	9.91	0.45	0.20
TotF	3.44	1.49	3.23	TotF	11.81	2.22	10.43	0.46	0.21
PAH	3.73	1.71	3.39	PAH	13.93	2.92	11.50	0.50	0.25

Table 1.2 Department

	Standard Deviation				Variance			Ratio: Between/Within	
	Overall	Between	Within		Overall	Between	Within	Standard Dev	Variance
Dust	3.30	1.91	3.23	Dust	10.88	3.65	10.44	0.59	0.35
TotF	3.44	2.94	2.89	TotF	11.81	8.63	8.35	1.02	1.03
PAH	3.73	1.74	3.65	PAH	13.93	3.03	13.29	0.48	0.23

Table 1.3 Group

	Standard Deviation				Variance			Ratio: Between/Within	
	Overall	Between	Within		Overall	Between	Within	Standard Dev.	Variance
Dust	3.30	2.05	3.17	Dust	10.88	4.21	10.03	0.65	0.42
TotF	3.44	3.53	2.83	TotF	11.81	12.43	7.98	1.25	1.56
PAH	3.73	2.55	3.58	PAH	13.93	6.52	12.80	0.71	0.51

Table 1.4 Job Category

	Standard Deviation			Variance			Ratio: Between/Within	
	Overall	Between	Within	Overall	Between	Within	Standard Dev.	Variance
Dust	3.30	1.91	3.23	10.88	3.65	10.44	0.59	0.35
TotF	3.44	2.94	2.89	11.81	8.63	8.35	1.02	1.03
PAH	3.73	1.74	3.65	13.93	3.03	13.29	0.48	0.23

Table 1.5 Plant

	Standard Deviation			Variance			Ratio: Between/Within	
	Overall	Between	Within	Overall	Between	Within	Standard Dev.	Variance
Dust	3.30	1.57	3.08	10.88	2.46	9.50	0.51	0.26
TotF	3.44	1.59	3.18	11.81	2.53	10.12	0.50	0.25
PAH	3.73	2.54	3.24	13.93	6.43	10.53	0.78	0.61

Table 1.6 Process

	Standard Deviation			Variance			Ratio: Between/Within	
	Overall	Between	Within	Overall	Between	Within	Standard Dev.	Variance
Dust	3.30	5.14	3.26	10.88	26.39	10.63	1.58	2.48
TotF	3.44	1.54	3.31	11.81	2.37	10.97	0.46	0.22
PAH	3.73	2.30	3.53	13.93	5.28	12.46	0.65	0.42

Table 1.7 Subject

	Standard Deviation			Variance			Ratio: Between/Within	
	Overall	Between	Within	Overall	Between	Within	Standard Dev.	Variance
Dust	3.30	3.10	1.95	10.88	9.63	3.82	1.59	2.52
TotF	3.44	3.26	1.87	11.81	10.62	3.51	1.74	3.03
PAH	3.73	3.66	1.93	13.93	13.40	3.74	1.89	3.58

Table 3.1 a, online supplement. Coefficients of time dependent interactions terms with p-value < 0.1 for total dust: Model 1. Standard errors in parentheses.

	Year of follow-up									
Covariates	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plant										
1	0	0	0	0	0	0	0	0	0	0
2	0	-0.32 (0.10)	-0.59 (0.11)	ns	ns	ns	-0.86 (0.12)	na	na	-1.53 (0.27)
3	0	0.41 (0.13)	ns	0.43 (0.13)	0.58 (0.12)	1.21 (0.13)	0.64 (0.13)	0.45 (0.13)	0.82 (0.15)	0.34 (0.13)
4	0	ns	ns	ns	0.59 (0.11)	0.74 (0.12)	ns	ns	ns	ns
5	0	ns	-0.81 (0.10)	-0.36 (0.10)	ns	0.76 (0.12)	ns	ns	ns	ns
6	0	ns	ns	ns	0.41 (0.13)	0.83 (0.14)	ns	ns	ns	ns
7	0	ns	ns	ns	ns	ns	-0.60 (0.11)	-0.82 (0.11)	-1.12 (0.11)	-0.47 (0.11)
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	ns	ns	ns	ns	ns	-0.25 (0.09)	-0.55 (0.10)	ns
Department										
Electrolysis	0	0	0	0	0	0	0	0	0	0
Scrubber	0	ns	ns	1.02 (0.36)	ns	ns	ns	ns	ns	ns
Cast house	0	ns	ns	0.57 (0.21)	ns	ns	ns	ns	ns	ns
Rodding	0	na	ns	ns	ns	ns	ns	ns	1.37 (0.38)	ns
Paste	0	0.93 (0.41)	ns	0.99 (0.28)	ns	0.68 (0.31)	ns	ns	0.90 (0.34)	ns
Anode	0	na	na	ns	ns	ns	ns	ns	1.34 (0.52)	na
Mechanics	0	ns	ns	1.46 (0.36)	ns	ns	ns	ns	ns	ns

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 3.1 b, online supplement. Time independent interactions (department × plant, process × plant and department × process) with logarithm of total dust as the outcome variable: Model 1.

	Plant							Process		
Covariates	1	2	3	4	5	6	7	S	Prebake	Other
Department										
Electrolysis	0	0	0	0	0	0	0	0	ns	ns
Scrubber	0	2.85 (0.84)	ns	1.44 (0.34)	na	na	-0.66 (0.38)	0	ns	ns
Relining	0	ns	na	ns	na	na	-0.74 (0.16)	0	0.24 (0.14)	ns
Cast house	0	ns	na	ns	na	na	-0.62 (0.16)	0	na	ns
Rodding	0	-1.33 (0.48)	-2.35 (0.54)	na	na	na	-1.22 (0.45)	0	na	ns
Paste	0	na	na	-1.01 (0.28)	na	na	na	0	na	ns
Mechanics	0	na	ns	0.83 (0.36)	na	na	ns	0	na	ns
Transport	0	na	ns	-3.07 (0.56)	na	na	ns	0	na	ns
Process										
Søderberg	0	0	0	0	0	0	0	ni	ni	ni
Prebake	0	ns	ns	na	0.48 (0.11)	na	-0.33 (0.08)	ni	ni	ni
Other	0	na	0.83 (0.32)	na	na	na	na	ni	ni	ni

S: Søderberg, na: not available, **i.e. no data**, ni: not investigated, ns: not significant (p≥0.1)

Table 3.2 a, online supplement. Coefficients of time dependent interactions terms with p-value < 0.1 for total fluorides: Model 1. Standard errors in parentheses.

	Year of follow-up									
Covariates	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plant										
1	0	0	0	0	0	0	0	0	0	0
2	0	ns	ns	ns	ns	0.30 (0.14)	ns	na	na	-0.79 (0.26)
3	0	0.23 (0.13)	ns	ns	0.39 (0.12)	0.91 (0.16)	0.32 (0.12)	0.24 (0.13)	ns	-1.06 (0.15)
4	0	ns	ns	ns	0.35 (0.10)	0.62 90.14)	ns	ns	-0.40 (0.13)	-0.37 (0.16)
5	0	ns	-0.56 (0.09)	ns	ns	0.55 (0.13)	ns	ns	ns	ns
6	0	ns	0.45 (0.11)	0.28 (0.12)	0.42 (0.12)	1.12 (0.16)	ns	0.49 (0.13)	ns	0.84 (0.16)
7	0	4.35 (0.45)	4.56 (0.45)	4.56 (0.45)	1.99 (0.49)	2.46 (0.51)	3.42 (0.50)	3.83 (0.45)	3.61 (0.45)	3.86 (0.46_
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	ns	ns	ns	ns	ns	ns	ns	-0.49 (0.11)
Department										
Electrolysis	0	0	0	0	0	0	0	0	0	0
Cast house	0	ns	ns	ns	ns	ns	-1.07 (0.24)	-1.09 (0.19)	-2.09 (0.22)	-2.31 (0.23)
Rodding	0	na	na	-2.06 (0.53)	ns	ns	ns	ns	-0.86 (0.39)	-0.84 (0.42)
Anode	0	na	ns	ns	ns	na	1.31 (0.53)	ns	ns	ns
Transport	0	na	na	na	na	2.30 (1.16)	6.68 (1.15)	na	na	na

S: Søderberg, na: not available, **i.e. no data**, ni: not investigated, ns: not significant (p≥0.1)

Table 3.2 b, online supplement. Time independent interactions (department × plant, process × plant and department × process) with logarithm of total fluorides as the outcome variable: Model 1.

	Plant							Process		
Covariates	1	2	3	4	5	6	7	S	Prebake	Other
Department										
Electrolysis	0	0	0	0	0	0	0	0	ns	ns
Scrubber	0	3.29 (0.73)	ns	2.77 (0.26)	na	na	ns	0	ns	ns
Relining	0	ns	na	ns	na	na	-0.73 (0.18)	0	ns	0.80 (0.26)
Cast house	0	na	na	ns	na	na	ns	0	na	na
Rodding	0	-1.15 (0.45)	-4.04 (0.43)	ns	na	na	ns	0	na	na
Paste	0	na	na	-0.95 (0.26)	na	na	na	0	na	na
Anode	0	na	na	na	na	na	2.37 (0.83)	0	na	na
Mechanics	0	na	ns	1.64 (0.35)	na	na	na	0	na	na
Transport	0	na	na	2.06 (0.78)	na	na	na	0	na	na
Process										
Søderberg	0	0	0	0	0	0	0	ni	ni	ni
Prebake	0	-0.22 (0.09)	ns	na	ns	na	ns	ni	ni	ni
Other	0	na	2.22 (0.32)	na	na	na	na	ni	ni	ni

S: Søderberg, na: not available, **i.e. no data**, ni: not investigated, ns: not significant (p≥0.1)

Table 3.3 a, online supplement. Coefficients of time dependent interactions terms with p-value < 0.1 for polycyclic aromatic hydrocarbons: Model 1. Standard errors in parentheses.

	Year of follow-up									
Covariates	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plant										
1	0	0	0	0	0	0	0	0	0	0
2	0	ns	ns	ns	ns	ns	0.87 (0.23)	na	na	ns
3	0	1.36 (0.27)	1.34 (0.28)	1.59 (0.27)	2.95 (0.29)	2.70 (0.25)	2.79 (0.28)	3.13 (0.31)	2.48 (0.35)	1.64 (0.27)
4	0	0.89 (0.15)	1.22 (0.16)	0.87 (0.18)	2.51 (0.20)	1.84 (0.17)	1.96 (0.20)	2.38 (0.19)	0.99 (0.18)	ns
5	0	0.55 (0.15)	0.40 (0.16)	ns	1.10 (0.21)	0.68 (0.18)	0.97 (0.21)	0.91 (0.26)	-0.51 (0.28)	ns
7	0	ns	ns	-0.49 (0.14)	0.88 (0.20)	ns	ns	ns	ns	ns
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	0.52 (0.19)	ns	3.40 (0.72)	1.08 (0.25)	1.36 (0.23)	1.07 (0.26)	0.81 (0.18)	ns

ns: not significant (p≥0.1)

Table 3.3 b, online supplement. Time independent interactions (department × plant and process × plant) with logarithm of polycyclic aromatic hydrocarbons as the outcome variable. Model 1.

	Plant						
Department	1	0	3	4	5	6	7
Electrolysis	0	ns	0	0	na	na	0
Relining	0	-8.13 (1.00)	na	ns	na	na	ns
Paste	0		na	-8.13 (1.00)	na	na	-6.79 (1.01)
Process		0					
Søderberg	0	ns	0	0	0	0	0
Prebake	0	-1.20 (0.21)	ns	na	na	na	ns
Other	0	na	ns	na	na	na	na

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 4.1 a online supplement. Coefficients of time dependent interactions with p-value < 0.1 for total dust: Model 2. Standard errors in parentheses.

	Year of follow-up									
Plant	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	0	0	0	0	0	0	0	0	0	0
2	0	-0.43 (0.10)	-0.57 (0.10)	ns	ns	ns	-1.05 (0.13)	na	na	-1.40 (0.27)
3	0	ns	ns	0.20 (0.11)	0.31 (0.11)	0.98 (0.12)	ns	ns	0.51 (0.13)	ns
4	0	ns	ns	0.36 (0.14)	0.76 (0.14)	0.83 (0.15)	ns	ns	ns	ns
5	0	ns	-0.86 (0.10)	-0.34 (0.10)	ns	0.73 (0.12)	-0.22 (0.12)	ns	ns	ns
6	0	ns	ns	ns	0.53 (0.13)	0.90 (0.14)	ns	ns	ns	ns
7	0	-0.24 (0.10)	ns	ns	ns	ns	-0.85 (0.13)	-0.77 (0.11)	-1.05 (0.12)	-0.42 (0.11)
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	ns	ns	na	ns	ns	-0.28 (0.09)	-0.46 (0.10)	ns
Group										
0101	0	0	0	0	0	0	0	0	0	0
0102	0	ns	-0.17 (0.11)	ns	-0.16 (0.11)	ns	ns	ns	ns	ns
0103	0	ns	0.21 (0.12)	ns	ns	ns	ns	na	ns	ns
0104	0	ns	ns	ns	ns	ns	ns	ns	ns	ns
0105	0	ns	ns	ns	0.40 (0.14)	ns	ns	ns	ns	ns

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 4.1 b online supplement. Time independent interactions (department × plant) with logarithm of total dust as the outcome variable. Model 2.

	Plant							Process	
	1	2	3	4	5	6	7	S	Prebake
Group									
0101	0	0	0	0	0	0	0		
0102	0	-0.79 (0.14)	-0.45 (0.16)	-0.51 (0.18)	-0.52 (0.19)	-0.72 (0.16)	-0.58 (0.13)	ns	ns
0103	0	na	na	ns	0.56 (0.14)	ns	ns	ns	ns
0104	0	-0.54 (0.13)	ns	na	ns	na	-0.45 (0.13)	ns	-0.33 (0.10)
0105	0	-0.77 (0.14)	ns	-1.53 (0.67)	ns	ns	-0.43 (0.15)	ns	ns
Process									
Søderberg	0	0	0	0	0	0	0	ni	ni
Prebake	0	-0.29 (0.12)	ns	na	0.25 (0.11)	na	ns	ni	ni

S: Søderberg, ns: not significant (p≥0.1), na: not available, **i.e. no data**, ni: not investigated

Table 4.2 a, online supplement. Coefficients of time dependent interactions with p-value < 0.1 for total fluorides model 2. Standard errors in parentheses.

	Year of follow-up									
Plant	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	0	0	0	0	0	0	0	0	0	0
2	0	ns	ns	ns	ns	0.35 (0.14)	ns	na	na	ns
3	0	0.56 (0.18)	0.40 (0.18)	0.49 (0.17)	0.70 (0.18)	1.41 (0.21)	0.72 (0.18)	0.69 (0.20)	0.52 (0.18)	-0.58 (0.19)
4	0	ns	ns	ns	0.23 (0.13)	0.73 (0.15)	ns	-0.34 (0.16)	ns	-0.43 (0.19)
5	0	ns	-0.58 (0.09)	ns	ns	0.58 (0.13)	0.29 (0.12)	ns	ns	ns
6	0	ns	0.45 (0.11)	0.30 (0.12)	0.51 (0.12)	1.28 (0.16)	0.52 (0.14)	0.49 (0.14)	ns	0.96 (0.16)
7	0	4.01 (0.36)	4.28 (0.36)	4.25 (0.36)	ns	ns	na	3.82 (0.37)	3.50 (0.37)	3.87 (0.37)
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	ns	ns	ns	ns	ns	ns	ns	-0.41 (0.11)
Group										
0101	0	0	0	0	0	0	0	0	0	0
0102	0	ns	ns	ns	-0.28 (0.11)	ns	ns	ns	ns	-0.55 (0.16)
0103	0	0.27 (0.12)	ns	ns	ns	ns	ns	ns	ns	ns
0104	0	ns	ns	ns	0.31 (0.16)	ns	ns	0.41 (0.14)	ns	ns

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 4.2 b, online supplement. Time independent interactions (department × plant) with logarithm of total fluorides as the outcome variable. Model 2.

	Plant							Process	
Group	1	2	3	4	5	6	7	S	Prebake
0101	0	0	0	0	0	0	0	0	ns
0102	0	ns	-0.42 (0.14)	ns	ns	-0.34 (0.13)	ns	0	ns
0103	0	ns	ns	ns	0.38 (0.14)	ns	ns	0	-0.52 (0.12)
0104	0	ns	ns	ns	0.57 (0.13)	0.86 (0.16)	ns	0	-0.28 (0.11)
Process									
Søderberg	0	0	0	0	0	0	0	ni	ni
Prebake	0	-0.31 (0.09)	ns	na	ns	na	-0.56 (0.09)	ni	ni

S: Søderberg, ns: not significant (p≥0.1), na: not available, **i.e. no data**, ni: not investigated

Table 4.3 a, online supplement. Coefficients of time dependent interactions with p-value < 0.1 for polycyclic aromatic hydrocarbons model 2. Standard errors in parentheses.

	Year of follow-up									
Plant	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
1	0	0	0	0	0	0	0	0	0	0
2	0	ns	ns	ns	ns	-0.91 (0.33)	ns	na	na	ns
3	0	1.48 (0.27)	1.26 (0.28)	1.80 (0.27)	2.71 (0.27)	2.61 (0.25)	2.87 (0.28)	3.37 (0.31)	2.49 (0.36)	1.81 (0.270
4	0	0.81 (0.18)	0.91 (0.18)	0.69 (0.19)	1.95 (0.19)	1.58 (0.18)	1.56 (0.23)	2.20 (0.23)	0.87 (0.22)	ns
5	0	0.53 (0.14)	ns	ns	0.68 (0.17)	ns	0.82 (0.20)	0.99 (0.26)	-0.59 (0.28)	ns
7	0	ns	-0.32 (0.14)	-0.57 (0.14)	ns	ns	ns	ns	ns	ns
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	0.45 (0.19)	ns	ns	ns	1.41 (0.27)	0.90 (0.28)	0.60 (0.22)	ns
Group										
0101	0	0	0	0	0	0	0	0	0	0
0102	0	ns	ns	ns	ns	ns	ns	ns	0.49 (0.27)	0.72 (0.23)
0103	0	ns	ns	ns	0.96 (0.35)	ns	ns	ns	ns	ns
0104	0	ns	ns	ns	ns	ns	ns	0.89 (0.23)	ns	ns
0105	0	ns	0.32 (0.17)	ns	0.63 (0.20)	0.51 (0.21)	ns	ns	ns	ns

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 4.3 b, online supplement. Time independent interactions (department × plant) with logarithm of polycyclic aromatic hydrocarbons as the outcome variable. Model 2.

	Plant						
Group	1	2	3	4	5	6	7
0101	0	0	0	0	0	0	0
0102	0	ns	ns	ns	-0.87 (0.19)	ns	-0.45 (0.14)
0103	0	ns	ns	ns	0.62 (0.19)	ns	ns
0104	0	ns	1.02 (0.35)	ns	ns	ns	ns

Other time independent interactions: none, ns: not significant (p≥0.1)

Table 5.1 a online supplement. Coefficients of time dependent interactions terms with p-value < 0.1 for total dust: Model 3. Standard errors in parentheses.

	Year of follow-up									
Covariates	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plant										
1	0	0	0	0	0	0	0	0	0	0
2	0	-0.36 (0.10)	-0.51 (0.10)	ns	ns	ns	-0.77 (0.12)	na	na	ns
3	0	-0.25 (0.11)	-0.55 (0.10)	ns	ns	ns	ns	ns	ns	ns
4	0	ns	ns	ns	ns	ns	ns	ns	ns	ns
5	0	ns	-0.87 (0.10)	-0.48 (0.10)	ns	0.33 (0.10)	-0.20 (0.11)	ns	ns	ns
6	0	ns	ns	ns	0.46 (0.12)	0.57 (0.13)	ns	ns	ns	ns
7	0	ns	ns	ns	-0.30 (0.12)	ns	-0.63 (0.12)	-0.54 (0.11)	-1.13 (0.11)	-0.20 (0.11)
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	ns	ns	ns	ns	-0.15 (0.08)	-0.23 (0.09)	-0.36 (0.10)	ns
Job Category										
010101	0	0	0	0	0	0	0	0	0	0
010102	0	0.28 (0.09)	ns	ns	ns	ns	0.22 (0.10)	ns	0.25 (0.12)	0.31 (0.10)
010103	0	ns	-0.33 (0.13)	-0.25 (0.13)	-0.34 (0.15)	-0.29 (0.14)	ns	-0.26 (0.19)	-0.37 (0.20)	ns
010104	0	ns	ns	0.32 (0.10)	ns	ns	ns	ns	ns	ns
010201	0	0	0	0	0	0	0	0	0	0
010202	0	-0.56 (0.26)	-0.79 (0.39)	ns	ns	ns	ns	ns	1.20 (0.65)	ns
010204	0	-0.77 (0.29)	ns	ns	ns	-0.60 (0.26)	ns	ns	ns	ns
010205	0	-0.55 (0.19)	-0.53 (0.20)	-0.49 (0.23)	-1.11 (0.22)	-0.60 (0.25)	ns	ns	ns	ns
010401	0	0	0	0	0	0	0	0	0	0
010404	0	ns	ns	0.68 (0.38)	na	ns	ns	1.03 (0.26)	0.85 (0.47)	0.69 (0.36)
010501	0	0	0	0	0	0	0	0	0	0
010502	0	ns	ns	0.49 (0.17)	0.39 (0.17)	ns	ns	ns	ns	ns
010503	0	ns	ns	ns	ns	ns	0.98 (0.54)	-2.80 (0.92)	-2.73 (1.06)	na

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 5.1 b online supplement. Time independent interactions (department × plant, process × plant and department × process) with logarithm of dust as the outcome variable. Model 3.

	Plant							Process	
Covariates	1	2	3	4	5	6	7	S	Prebake
Job category									
010101	0	0	0	0	0	0	0	0	0
010102	0	ns	ns	ns	ns	ns	ns	0	1.23 (0.07)
010103	0	ns	ns	na	ns	ns	0.30 (0.13)	0	0.67 (0.11)
010104	0	ns	ns	0.40 (0.13)	0.54 (0.08)	0.50 (0.11)	ns	0	ns
010201	0	0	0	0	0	0	0	0	ns
010202	0	-1.18 (0.48)	ns	na	-0.60 (0.32)	na	-0.90 (0.30)	0	na
010203	0	na	na	4.90 (1.41)	na	ns	2.94 (1.06)	0	3.12 (1.00)
010204	0	-0.87 (0.22)	ns	ns	na	ns	ns	0	ns
010205	0	ns	ns	ns	0.83 (0.34)	-0.76 (0.21)	-0.58 (0.220	0	0.55 (0.21)
010401	0	0	0	0	0	0	0	0	ns
010402	0	ns	ns	1.29 (0.25)	ns	na	na	0	na
010405	0	na	-3.30 (0.67)	-1.18 (0.27)	na	na	na	0	na
010501	0	0	0	0	0	0	0	0	ns
010502	0	ns	ns	na	0.59 (0.14)	na	na	0	ns
010503	0	-1.96 (0.68)	na	na	-1.26 (070)	na	na	0	ns
Process									
Søderberg	0	0	0	0	0	0	0	ni	ni
Prebake	0	-0.28 (0.09)	-0.22 (0.10)	na	ns	na	-0.74 (0.09)	ni	ni

S: Søderberg, ns: not significant (p≥0.1), na: not available, **i.e. no data**, ni: not investigated.

Table 5.2 a online supplement. Coefficients of time dependent interactions terms with p-value < 0.1 for total fluorides: Model 3. Standard errors in parentheses.

	Year of follow-up									
Covariates	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plant										
1	0	0	0	0	0	0	0	0	0	0
2	0	ns	ns	ns	ns	0.45 (0.13)	ns	na	na	ns
3	0	ns	ns	ns	ns	0.80 (0.14)	ns	ns	ns	-1.24 (0.11)
4	0	ns	ns	ns	ns	0.66 (0.15)	ns	-0.38 (0.13)	-0.44 (0.15)	ns
5	0	0.38 (0.09)	-0.35 (0.09)	ns	ns	0.59 (0.12)	ns	ns	ns	ns
6	0	-0.37 (0.10)	0.28 (0.10)	ns	ns	0.91 (0.15)	ns	ns	ns	0.42 (0.13)
7	0	4.26 (0.34)	4.53 (0.34)	4.44 (0.34)	ns	ns	na	3.82 (0.34)	3.65 (0.35)	3.92 (0.35)
Job Category										
010101	0	0	0	0	0	0	0	0	0	0
010103	0	ns	-0.59 (0.13)	-0.45 (0.13)	-0.44 (0.15)	-0.47 (0.15)	-0.48 (0.15)	-0.61 (0.18)	-0.76 (0.19)	-0.68 (0.20)
010104	0	ns	0.27 (0.09)	0.39 (0.09)	0.14 (0.09)	ns	ns	ns	ns	ns
010201	0	0	0	0	0	0	0	0	0	0
010202	0	-0.66 (0.25)	ns	-0.67 (0.36)	ns	ns	ns	ns	ns	ns
010205	0	ns	ns	-0.47 (0.19)	-1.01 (0.18)	ns	ns	ns	ns	ns
010401	0	0	0	0	0	0	0	0	0	0
010404	0	ns	ns	ns	ns	ns	ns	0.70 (0.25)	ns	ns

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 5.2 b online supplement. Time independent interactions (department × plant, process × plant and department × process) with logarithm of total fluorides as the outcome variable. Model 3.

	Plant							Process	
Covariates	1	2	3	4	5	6	7	S	Prebake
Job Category									
010101	0	0	0	0	0	0	0	0	0
010102	0	ns	0.38 (0.09)	ns	ns	0.44 (0.11)	ns	0	1.34 (0.07)
010103	0	ns	ns	na	-0.35 (0.10)	0.90 (0.13)	ns	0	ns
010104	0	ns	ns	ns	0.32 (0.08)	0.79 (0.11)	0.26 (0.11)	0	ns
010105	0	ns	ns	0.99 (0.27)	na	ns	ns	0	ns
010201	0	0	0	0	0	0	0	0	0
010204	0	-1.45 (0.22)	ns	ns	na	ns	ns	0	ns
010205	0	ns	ns	ns	1.45 (0.28)	ns	ns	0	ns
010401	0	0	0	0	0	0	0	0	0
010402	0	ns	ns	1.09 (0.22)	na	ns	na	0	na
010404	0	na	na	na	na	0.91 (0.22)	ns	0	ns
Process									
Søderberg	0	0	0	0	0	0	0	ni	ni
Prebake	0	-0.19 (0.08)	ns	ns	ns	ns	ns	ni	ni

S: Søderberg, ns: not significant (p≥0.1), na: not available, **i.e. no data**, ni: not investigated.

Table 5.3 a online supplement. Coefficients of time dependent interactions terms with p-value < 0.1 for polycyclic aromatic hydrocarbons: Model 3. Standard errors in parentheses.

	Year of follow-up									
Covariates	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Plant										
1	0	0	0	0	0	0	0	0	0	0
2	0	ns	ns	ns	ns	ns	ns	ns	ns	ns
3	0	1.39 (0.26)	1.07 (0.26)	1.62 (0.26)	2.21 (0.25)	2.63 (0.26)	2.49 (0.27)	3.17 (0.30)	2.50 (0.34)	1.62 (0.26)
4	0	0.74 (0.18)	1.00 (0.17)	0.73 (0.19)	1.75 (0.18)	1.71 (0.19)	1.44 (0.22)	2.52 (0.21)	1.07 (0.21)	ns
5	0	0.38 (0.14)	ns	ns	ns	0.58 (0.17)	0.71 (0.18)	1.02 (0.25)	ns	ns
7	0	-0.54 (0.13)	ns	ns	ns	ns	ns	ns	ns	ns
Process										
Søderberg	0	0	0	0	0	0	0	0	0	0
Prebake	0	ns	ns	ns	ns	ns	ns	ns	ns	ns
Job Category										
010101	0	0	0	0	0	0	0	0	0	0
010102	0	ns	ns	ns	-0.31 (0.16)	-0.57 (0.16)	ns	-0.43 (0.21)	ns	ns
010103	0	ns	ns	ns	ns	-0.53 (0.27)	ns	ns	ns	ns
010104	0	ns	0.31 (0.16)	ns	ns	-0.59 (0.18)	ns	ns	ns	ns
010105	0	ns	ns	ns	ns	1.45 (0.48)	ns	ns	ns	ns
010201	0	0	0	0	0	0	0	0	0	0
010202	0	ns	ns	ns	ns	ns	ns	ns	ns	1.36 (0.57)
010205	0	-0.56 (0.28)	ns	ns	ns	ns	ns	ns	ns	ns
010401	0	0	0	0	0	0	0	0	0	0
010404	0	-0.80 (0.28)	-0.91 (0.35)	-1.20 (0.51)	ns	-1.91 (0.69)	ns	ns	ns	ns
010501	0	0	0	0	0	0	0	0	0	0
010502	0	ns	0.40 (0.21)	ns	0.75 (0.20)	ns	ns	ns	ns	ns

na: not available, **i.e. no data**, ns: not significant (p≥0.1)

Table 5.3 b online supplement. Time independent interactions (department × plant, process × plant and department × process) with logarithm of polycyclic aromatic hydrocarbons as the outcome variable. Model 3.

	Plant						Process	
Covariates	1	2	3	4	5	7	S	Prebake
Job Category								
010101	0	0	0	0	0	0	0	0
010102	0	ns	ns	-0.35 (0.16)	-0.94 (0.14)	0.43 (0.14)	0	-0.72 (0.16)
010103	0	ns	na	na	0.76 (0.22)	ns	0	ns
010104	0	ns	ns	ns	ns	ns		1.04 (0.17)
010201	0	0	0	0	0	0	0	0
010202	0	ns	ns	na	-1.19 (0.31)	-0.86 (0.31)	0	na
010205	0	na	ns	ns	-0.75 (0.33)	ns	0	0.92 (0.42)
Process								
Søderberg	0	ns	0	0	0	0	ni	ni
Prebake	0	ns	na	na	na	-0.50 (0.16)	ni	ni

S: Søderberg, ns: not significant (p≥0.1), na: not available, **i.e. no data**, ni: not investigated.

Stata code for exposure estimation : Models 1D – 3D, 1F – 3F and 1P – 3P.

Abbreviations: v=plant, a=department, y=year,

```
* Model 1D: dust
gen dust_m1 = 1.0239 + 0.4317*v3 - 0.2595*v4 - 0.2146*v5 -0.2727*v6 + 0.8834*v7 + 0.1372*v8 + 0.1573*a02 + 0.407*a03 + 0.4455*a05/*
*/ + 2.0673*a06  + 0.2778*a07 - 0.02716*a08 - 0.6371*a09 + 2.4142*a12 - 0.00154*prebake - 0.7235*other -0.171*y87 - 0.2794*y88 - 0.6669*y89  /*
*/ - 0.8681*y90 - 1.2557*y91 - 0.7003*y92 - 0.3419*y93 - 0.4267*y94 - 0.627*y95 + 2.8534*v3*a02 + 1.4441*v5*a02 - 0.6556*v8*a02 /*
*/ - 0.7383*v8*a03 - 0.6213*v8*a05 - 1.3254*v3*a06 - 2.3526*v4*a06 - 1.2169*v8*a06 -1.008*v5*a07 + 0.83*v5*a09 - 3.0716*v5*a12 /*
*/ + 0.4751*v6*prebake - 0.3349*v8*prebake + 0.8282*v4*other - 0.3224*v3*y87 - 0.59*v3*y88 - 0.8612*v3*y92 - 1.5282*v3*y95 + 0.4126*v4*y87 /*
*/ + 0.4313*v4*y89 + 0.5837*v4*y90 + 1.2181*v4*y91 + 0.6386*v4*y92 + 0.4521*v4*y93 + 0.82*v4*y94 + 0.3393*v4*y95 + 0.592*v5*y90 /*
*/ + 0.7389*v5*y91 - 0.8103*v6*y88 - 0.3602*v6*y89 + 0.7601*v6*y91 + 0.4078*v7*y90 + 0.8317*v7*y91 -0.6045*v8*y92 -0.8214*v8*y93 /*
*/ - 1.1198*v8*y94 - 0.47*v8*y95 + 0.2411*a03*prebake + 1.0232*a02*y89 + 0.5727*a05*y89 + 1.3685*a06*y94 + 0.9342*a07*y87/*
*/ + 0.987*a07*y89 + 0.6847*a07*y91 + 0.9008*a07*y94 + 1.3378*a08*y94 + 1.4598*a09*y87 - 0.254*prebake*y93 - 0.5545*prebake*y94
gen lmm1_dust = exp(dust_m1)

* Model 2D: dust, abbreviation: g=group, otherwise as Model 1
gen dust_m2 =0.7284 + 0.8426*v3 - 0.09892*v4 - 0.1695*v5 - 0.09804*v6 + 0.8469*v7 + 0.5375*v8 + 0.373*g0102 - 0.5059*g0103 + 0.6912*g0104 /*
*/ +0.654*g0105 */ + 0.3276*prebake - 0.1102*y87 -0.309*y88 - 0.6771*y89 - 0.8708*y90 - 1.2092*y91 - 0.4571*y92 - 0.28*y93 - 0.452*y94/*
*/ - 0.6112*y95 - 0.792*v3*g0102 - 0.4532*v4*g0102 - 0.512*v5*g0102 - 0.5219*v6*g0102 - 0.7207*v7*g0102 - 0.5817*v8*g0102/*
*/ + 0.5563*v6*g0103  - 0.5427*v3*g0104  - 0.4698*v8*g0104 -0.7746*v3*g0105 - 1.5287*v5*g0105 - 0.4246*v8*g0105 - 0.2874*v3*prebake /*
*/ + 0.2462*v6*prebake -0.7645*v8*prebake - 0.4274*v3*y87 - 0.5674*v3*y88 - 1.0532*v3*y92 - 1.4043*v3*y95 + 0.2043*v4*y89 + 0.3106*v4*y90/*
*/ + 0.9812*v4*y91 + 0.5096*v4*y94 + 0.3626*v5*y89 + 0.7608*v5*y90 + 0.8294*v5*y91 - 0.8605*v6*y88 - 0.3435*v6*y89 + 0.7337*v6*y91/*
*/ - 0.22*v6*y92 + 0.5281*v7*y90 + 0.8959*v7*y91- 0.2427*v8*y87 - 0.8549*v8*y92 - 0.7703*v8*y93 - 1.1518*v8*y94 - 0.4246*v8*y95 /*
*/ - 0.3326*g0104*prebake -0.1743*g0102*y88 - 0.1648*g0102*y90 + 0.207*g0103*y88 + 0.3968*g0105*y90 - 0.2779*prebake*y93 /*
*/ - 0.4574*prebake*y94
gen lmm2_dust = exp(dust_m2)


* Model 3D: dust, abbreviation: jk=job category, otherwise as Model 1.
gen dust_m3 = 1.0306    + 0.6578*v3 + 0.2566*v4 - 0.1145*v5 - 0.01052*v6 + 0.8002*v7 + 0.3627*v8 - 1.0448*jk010102 - 0.5729*jk010103 /*
*/ - 0.2992*jk010104 + 0.06027*jk010105 + 0.3291*jk010106 + 0.004002*jk010109 - 0.03086*jk010202 - 3.6021*jk010203 + 0.1739*jk010204/*
*/ + 0.2148*jk010205 - 0.09234*jk010206 - 0.2776*jk010209 + 0.4663*jk010402 + 0.6087*jk010403 + 0.1603*jk010404 + 1.5115*jk010405/*
*/ + 0.01242*jk010409 - 0.1621*jk010502 + 1.5105*jk010503 - 0.713*jk010504 - 1.1829*jk010509 + 0.233*jk010909 - 0.5264*g0103 /*
```

```
*/ + 0.01258*prebake - 0.1086*y87 - 0.1701*y88 - 0.6354*y89 - 0.6999*y90 - 0.812*y91 - 0.588*y92 - 0.4701*y93 - 0.5122*y94 -0.849*y95 /*
*/ + 0.2967*v8*jk010103 + 0.3973*v5*jk010104 + 0.5369*v6*jk010104 + 0.496*v7*jk010104 -1.1778*v3*jk010202 - 0.5953*v6*jk010202 /*
*/ - 0.9003*v8*jk010202 + 4.9098*v5*jk010203 + 2.9355*v8*jk010203 - 0.8707*v3*jk010204 + 0.8314*v6*jk010205 - 0.7594*v7*jk010205 /*
*/ - 0.576*v8*jk010205+ 1.2945*v5*jk010402 - 3.3006*v4*jk010405 - 1.1757*v5*jk010405 + 0.5873*v6*jk010502 - 1.9574*v3*jk010503  /*
*/ -1.2613*v6*jk010503 - 0.2819*v3*prebake - 0.2216*v4*prebake - 0.7388*v8*prebake - 0.3628*v3*y87 - 0.5111*v3*y88 - 0.767*v3*y92 /*
*/- 0.248*v4*y87 - 0.5469*v4*y88 - 0.8712*v6*y88 - 0.4751*v6*y89 + 0.3256*v6*y91 -0.2004*v6*y92 + 0.4554*v7*y90 + 0.5701*v7*y91 /*
*/ - 0.3026*v8*y90 - 0.6309*v8*y92 - 0.5384*v8*y93 - 1.1284*v8*y94 - 0.2005*v8*y95 + 1.2284*jk010102*prebake + 0.6699*jk010103*prebake /*
*/ + 3.1198*jk010203*prebake + 0.5492*jk010205*prebake + 0.2808*jk010102*y87 + 0.2216*jk010102*y92 + 0.2459*jk010102*y94 /*
*/ + 0.3114*jk010102*y95 -  0.3302*jk010103*y88 - 0.2504*jk010103*y89 - 0.3418*jk010103*y90 - 0.2863*jk010103*y91 - 0.255*jk010103*y93 /*
*/  - 0.3658*jk010103*y94 + 0.3231*jk010104*y89 - 0.5557*jk010202*y87 - 0.7897*jk010202*y88 + 1.1962*jk010202*y94 -0.7653*jk010204*y88 /*
*/ - 0.5953*jk010204*y91 - 0.8584*jk010204*y95 - 0.547*jk010205*y87 - 0.5273*jk010205*y88 - 0.4854*jk010205*y89 - 1.1104*jk010205*y90 /*
*/ - 0.5953*jk010205*y91 + 0.6842*jk010404*y89 + 1.0344*jk010404*y93 + 0.854*jk010404*y94 + 0.6945*jk010404*y95 + 0.4923*jk010502*y89 /*
*/ + 0.3852*jk010502*y90 + 0.9825*jk010503*y92- 2.7955*jk010503*y93 - 2.7323*jk010503*y94 - 0.1528*prebake*y92 - 0.2298*prebake*y93 /*
*/ - 0.3585*prebake*y94
gen lmm3_dust = exp(dust_m3)


* Model 1F: TotF
gen totf_m1 =-0.6305 + 0.301*v3 + 0.1445*v4 + 0.06572*v5 + 0.01309*v6 - 0.2921*v7 - 4.6391*v8 - 0.09142*a02 - 0.2459*a03 /*
*/ + 0.9521*a05 + 3.3038*a06 + 0.9537*a07 - 1.3053*a08 - 0.1894*a09 - 1.2072*a12 + 0.3701*prebake - 2.2539*other /*
*/ - 0.2403*y87 -0.4926*y88 - 0.6763*y89 - 0.8653*y90 - 1.327*y91 - 0.8343*y92 - 0.6577*y93 - 0.5216*y94 /*
*/ - 0.4261*y95 + 3.294*v3*a02 + 2.769*v5*a02 -0.7326*v8*a03 - 1.145*v3*a06 - 4.0354*v4*a06 - 0.945*v5*a07 /*
*/ + 2.3695*v8*a08 + 1.6395*v5*a09 + 2.0551*v5*a12 - 0.2242*v3*prebake + 2.2218*v4*other + 0.3009*v3*y91 /*
*/ - 0.7851*v3*y95 + 0.2296*v4*y87 + 0.1646*v4*y89 + 0.3914*v4*y90 + 0.9191*v4*y91 + 0.3216*v4*y92 + 0.2406*v4*y93 /*
*/ - 1.0556*v4*y95 + 0.3546*v5*y90 + 0.624*v5*y91 - 0.4002*v5*y94 -0.3661*v5*y95 - 0.5649*v6*y88 + 0.5468*v6*y91 /*
*/ + 0.4507*v7*y88 + 0.2817*v7*y89 + 0.4155*v7*y90 + 1.1215*v7*y91 + 0.4917*v7*y93 + 0.8444*v7*y95 + 4.3492*v8*y87 /*
*/ + 4.5648*v8*y88 + 4.5625*v8*y89 + 1.9935*v8*y90 + 2.459*v8*y91 + 3.4204*v8*y92 + 3.8285*v8*y93 + 3.6081*v8*y94 /*
*/ + 3.8586*v8*y95 + 0.8003*a03*other - 1.0657*a05*y92 - 1.0901*a05*y93 - 2.0852*a05*y94 - 2.307*a05*y95 /*
*/ - 2.0551*a06*y89 - 0.8619*a06*y94 - 0.8374*a06*y95 + 1.3147*a08*y92 + 2.3004*a12*y91 + 6.6753*a12*y92 - 0.493*prebake*y95

gen lmm1_totf = exp(totf_m1)
```

```
* Model 2F: TotF
gen totf_m2 = -0.7147   + 0.4282*v3 - 0.2478*v4 + 0.1122*v5 + 0.01414*v6 - 0.4113*v7 - 4.0893*v8 - 0.2463*g0102 - 0.1148*g0103 /*
*/ + 0.1592*g0104 + 0.3838*g0105 + 0.6097*prebake - 0.2954*y87 - 0.5336*y88 - 0.6814*y89 - 0.8222*y90 /*
*/ -1.3706*y91 - 1.0461*y92 - 0.7414*y93 - 0.7117*y94 - 0.6164*y95 - 0.4156*v4*g0102 - 0.3431*v7*g0102 + 0.3802*v6*g0103 /*
*/ + 0.5701*v5*g0104 + 0.8591*v7*g0104 - 0.4455*v3*g0105 - 0.604*v4*g0105 - 0.3135*v3*prebake -0.5598*v8*prebake + 0.351*v3*y91 /*
*/ + 0.5617*v4*y87 + 0.399*v4*y88 + 0.4913*v4*y89 + 0.7033*v4*y90 + 1.4085*v4*y91 + 0.723*v4*y92 + 0.6865*v4*y93 + 0.5211*v4*y94 /*
*/ - 0.5831*v4*y95 + 0.2275*v5*y90 + 0.7295*v5*y91 - 0.3447*v5*y93 - 0.4286*v5*y95 - 0.5801*v6*y88 + 0.5779*v6*y91 + 0.2872*v6*y92 /*
*/ + 0.446*v7*y88 + 0.3066*v7*y89 + 0.5085*v7*y90 + 1.278*v7*y91 + 0.5201*v7*y92 + 0.4908*v7*y93 + 0.9307* v7*y95 + 4.0058*v8*y87 /*
*/ + 4.2755*v8*y88 + 4.245*v8*y89 + 3.8204*v8*y93 + 3.5037*v8*y94 + 3.8682*v8*y95 - 0.5197*g0103*prebake -0.3134*g0104*prebake /*
*/ - 0.2802*g0102*y90 - 0.5478*g0102*y95 + 0.2731*g0103*y87 + 0.3135*g0104*y90 + 0.4106*g0104*y93 -0.4098*prebake*y95

gen lmm2_totf = exp(totf_m2)



* Model 3F: TotF
gen totf_m3 = -0.4734   + 0.3542*v3 - 0.1196*v4 + 0.05424*v5 + 0.01643*v6 - 0.2948*v7 - 4.5405*v8 - 1.0298*jk010102 - 0.09692*jk010103 /*
*/ - 0.1019*jk010104 - 0.1003*jk010105 - 0.1057*jk010106 + 0.003762*jk010109 - 0.8324*jk010202 + 0.05908*jk010203 /*
*/ + 0.3145*jk010204 - 0.1801*jk010205 + 0.1669*jk010206 - 0.1521*jk010209 + 0.7468*jk010402 + 1.0953*jk010403 /*
*/ + 0.01498*jk010404 + 0.6137*jk010405 -0.2106*jk010409 + 0.1761*jk010502 - 0.6221*jk010503 - 1.166*jk010504 - 0.5723*jk010509 /*
*/ + 0.5279*jk010909 - 0.2972*g0103 + 0.1044*prebake - 0.2147*y87 - 0.4975*y88 -0.6303*y89 - 0.6873*y90 - 1.2687*y91 /*
*/ - 0.8374*y92 - 0.5622*y93 - 0.625*y94 - 0.7479*y95 + 0.3763*v4*jk010102 + 0.4439*v7*jk010102 - 0.3517*v6*jk010103 /*
*/ + 0.8987*v7*jk010103 + 0.3211*v6*jk010104 + 0.7889*v7*jk010104 + 0.2644*v8*jk010104 + 0.994*v5*jk010105 -1.4524*v3*jk010204 /*
*/ + 1.445*v6*jk010205 + 1.0942*v5*jk010402 + 0.9071*v7*jk010404 - 0.1872*v3*prebake + 0.4483*v3*y91 + 0.8035*v4*y91 /*
*/ - 1.2448*v4*y95 + 0.664*v5*y91 - 0.3825*v5*y93 - 0.4406*v5*y94 + 0.3837*v6*y87 - 0.3513*v6*y88 + 0.5943*v6*y91 - 0.3696*v7*y87 /*
*/ + 0.2804*v7*y88 + 0.908*v7*y91 + 0.4237*v7*y95 + 4.2623*v8*y87 + 4.5339*v8*y88 + 4.4407*v8*y89 + 3.8199*v8*y93 + 3.6512*v8*y94 /*
*/ + 3.9217*v8*y95 + 1.3366*jk010102*prebake - 0.5871*jk010103*y88 - 0.4477*jk010103*y89 - 0.4356*jk010103*y90 - 0.4681*jk010103*y91 /*
*/ - 0.4842*jk010103*y92 - 0.6097*jk010103*y93 - 0.7601*jk010103*y94 - 0.6814*jk010103*y95 + 0.2737*jk010104*y88 + 0.3903*jk010104*y89 /*
*/ + 0.1424*jk010104*y90 - 0.6633*jk010202*y87 - 0.6738*jk010202*y89 - 0.4686*jk010205*y89 -1.0135*jk010205*y90 + 0.6996*jk010404*y93

gen lmm3_totf = exp(totf_m3)
```

```
*Model 1P: PAH
gen pah_m1 = 3.6376    + 1.5131*v3 - 1.4585*v4 - 0.421*v5 + 1.0223*v6 - 0.9729*v7 + 0.1833*v8 + 0.5745 *a02 - 0.6251*a03 - 1.1121*a05 /*
*/ - 0.1894*a06 + 8.1602*a07 + 0.05483*a08 + 0.3183*a09 + 0.2172*a12 - 1.1639*prebake -0.5866*other - 0.8077*y87 /*
*/ - 1.1925*y88 - 1.1019*y89 - 2.7289*y90 - 2.1912*y91 - 2.5101*y92 - 2.6628*y93 - 2.0172*y94 - 1.5373*y95 /*
*/ + 1.0306*v3*a03 - 8.1305*v5*a07 - 6.7925*v8*a07 - 1.1988*v3*prebake + 0.8681*v3*y92 + 1.3577*v4*y87 + 1.3435*v4*y88 /*
*/ + 1.5857*v4*y89 + 2.9466*v4*y90 + 2.6973*v4*y91 + 2.7902*v4*y92 + 3.1271*v4*y93 + 2.4831*v4*y94 + 1.6409*v4*y95 /*
*/ + 0.8914*v5*y87 + 1.2176*v5*y88 + 0.8743*v5*y89 + 2.5086*v5*y90 + 1.8387 + v5*y91 + 1.8566*v5*y92 + 2.382*v5*y93 /*
*/ + 0.9872*v5*y94 + 0.546*v6*y87 + 0.3978*v6*y88 + 1.1049*v6*y90 + 0.6834*v6*y91 + 0.9687*v6*y92 + 0.9164*v6*y93 /*
*/ - 0.5076*v6*y94 - 0.4938*v8*y89 + 0.8835*v8*y90 + 0.5215*prebake*y88 + 3.3988*prebake*y90 + 1.0787*prebake*y91 /*
*/ + 1.3538*prebake*y92 + 1.0796*prebake*y93 + 0.8097*prebake*y94

gen lmm1_pah = exp(pah_m1)



* Model 2P: PAH
gen pah_m2 = 3.6045    + 2.3738*v3 - 1.6792*v4 - 0.1927*v5 + 1.2432*v6 -0.9232*v7 + 0.4445*v8 - 0.1644*g0102 - 0.3857*g0103 - 0.09676*g0104 /*
*/ - 0.1702*g0105  - 1.1788*prebake - 0.8094*y87 - 1.0378*y88 - 1.1509*y89 - 2.4803*y90 - 2.0162*y91 - 2.4992*y92 /*
*/ - 2.8754*y93 - 2.0557*y94 - 1.6821*y95 - 0.867*v6*g0102 - 0.4456*v8*g0102 + 0.6181*v6*g0103 + 1.0216*v4*g0104 -0.9073*v3*y91 /*
*/ + 1.4777*v4*y87 + 1.2629*v4*y88 + 1.8014*v4*y89 + 2.7193 + v4*y90 + 2.6085*v4*y91 + 2.869*v4*y92 + 3.3701*v4*y93 + 2.49*v4*y94 /*
*/ + 1.8055*v4*y95 + 0.8071*v5*y87 + 0.9141*v5*y88 + 0.6929*v5*y89 + 1.9503*v5*y90 + 1.5849*v5*y91 + 1.562*v5*y92 + 2.2041*v5*y93 /*
*/ + 0.871*v5*y94 + 0.5299*v6*y87 + 0.684*v6*y90 + 0.8185*v6*y92 + 0.9891*v6*y93 - 0.5916*v6*y94 - 0.3203*v8*y88 - 0.5745*v8*y89 /*
*/ + 0.4877*g0102*y94 + 0.7219*g0102*y95 + 0.9648*g0103*y90 + 0.8885*g0104*y93 + 0.3165*g0105*y88 + 0.6334*g0105*y90 + 0.5091*g0105*y91
/*
*/ + 0.369*g0105*y95 + 0.4475*prebake*y88 + 1.4094*prebake*y92 + 0.8989*prebake*y93 + 0.5953*prebake*y94

gen lmm2_pah = exp(pah_m2)

* Model 3P: PAH
gen pah_m3 = 3.4013    + 1.8743*v3 - 1.5466*v4 - 0.1662*v5 + 1.5276*v6 - 1.1365*v7 + 0.382*v8 + 0.6572*jk010102 - 0.265*jk010103 /*
*/ - 0.188*jk010104 - 0.2595*jk010105 -0.287*jk010106 + 0.02468*jk010109 + 0.2352*jk010202 - 0.369*jk010203 /*
*/ - 0.06128*jk010204 - 0.4793*jk010205 + 0.08*jk010209 + 0.742*jk010402 + 0.6933*jk010404 - 0.3696*jk010405 /*
*/ + 0.5446*jk010409 - 0.2306*jk010502 + 0.09548*jk010503 + 0.4441*jk010509 + 0.4222*jk010909 -0.08259*g0103 /*
*/ - 0.7975*prebake - 0.7093*y87 - 1.0561*y88 - 1.0816*y89 - 2.0196*y90 - 1.9078*y91 - 2.2969*y92 -2.7243*y93 /*
```

```
*/ - 2.1362*y94 - 1.5355*y95 - 0.3531*v5*jk010102 -0.9433*v6*jk010102 + 0.4263*v8*jk010102 + 0.7579*v6*jk010103 /*
*/ - 1.1902*v6*jk010202 - 0.8645*v8*jk010202 - 0.7488*v6*jk010205 - 0.5043*v8*prebake + 1.3885*v4*y87 + 1.1681*v4*y88 /*
*/ + 1.6261*v4*y89 + 2.2085*v4*y90 + 2.652*v4*y91 + 2.4925*v4*y92 + 3.1681*v4*y93 + 2.5042*v4*y94 + 1.6212*v4*y95 /*
*/ + 0.7419*v5*y87 + 0.9971*v5*y88 + 0.7344*v5*y89 + 1.7525*v5*y90 + 1.7323*v5*y91 + 1.4421*v5*y92 + 2.5208*v5*y93 /*
*/ + 1.0754*v5*y94 + 0.3744*v6*y87 + 0.6038*v6*y91 + 0.7175*v6*y92 + 1.0189*v6*y93 - 0.5361*v8*y89 - 0.7219*jk010102*prebake /*
*/ + 1.0445*jk010104*prebake + 0.9199*jk010205*prebake -0.3114*jk010102*y90 - 0.5595*jk010102*y91 -0.4246*jk010102*y93 /*
*/ - 0.5086*jk010103*y91 + 0.3074*jk010104*y88 - 0.5771*jk010104*y91 + 1.4758*jk010105*y91 + 1.3645*jk010202*y95 /*
*/ - 0.5621*jk010205*y87 - 0.8041*jk010404*y87 - 0.9146*jk010404*y88 - 1.2037*jk010404*y89 - 1.8757*jk010404*y91 /*
*/ + 0.3915*jk010502*y88 + 0.7457*jk010502*y90 + 1.2572*prebake*y92 + 0.7574*prebake*y93 + 0.7532*prebake*y94


gen lmm3_pah = exp(pah_m3)
```