

Supplementary materials

Table S1. Posterior classification table for the identified latent classes. XENAIR case-control study nested in the E3N cohort, 1990-2011, France.

PCB153 classes	n* (%)	Mean of the probabilities to belong to each class				
		Class 1	Class 2	Class 3	Class 4	Class 5
1	158 (1.6)	0.9446	0.0457	0.0068	0.0000	0.0029
2	9 627 (95.2)	0.0018	0.9749	0.0001	0.0009	0.0222
3	43 (0.4)	0.0119	0.0000	0.9881	0.0000	0.0000
4	91 (0.9)	0.0000	0.0299	0.0000	0.9679	0.0022
5	198 (2.0)	0.0014	0.2198	0.0020	0.0043	0.7726
BaP classes		Class 1	Class 2	Class 3	Class 4	
1	9 297 (91.9)	0.9799	0.0043	0.0158	0.0000	
2	124 (1.2)	0.0627	0.9234	0.0136	0.0003	
3	518 (5.1)	0.1291	0.0154	0.8157	0.0397	
4	178 (1.8)	0.0001	0.0005	0.0903	0.9092	

* Number of subjects a posteriori classified in the class. The higher the mean probabilities in the diagonal, the better the discrimination

Table S2. Cross-tabulation between the classes of PCB 153 exposure and BaP exposure.

PCB153 classes	BaP classes				Total
	1	2	3	4	
1	127	1	25	5	158
2	8 928	71	469	159	9 627
3	23	0	15	5	43
4	77	7	4	3	91
5	142	45	5	6	198
Total	9 297	124	518	178	10 117

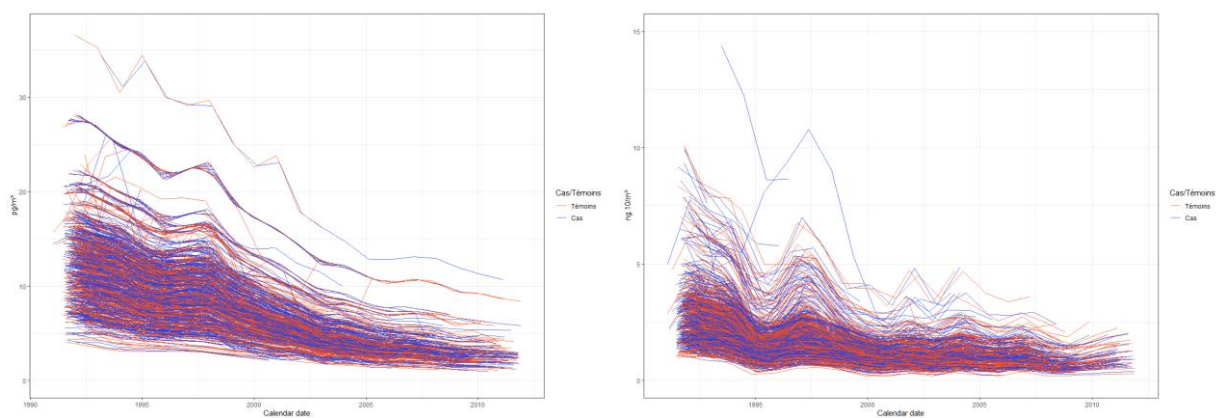


Figure S1. Observed individual trajectories over the follow-up of PCB153 (left panel) and BaP (right panel) annual average concentrations for 500 randomly selected cases and controls. XENAIR case-control study, France, 1990-2011.

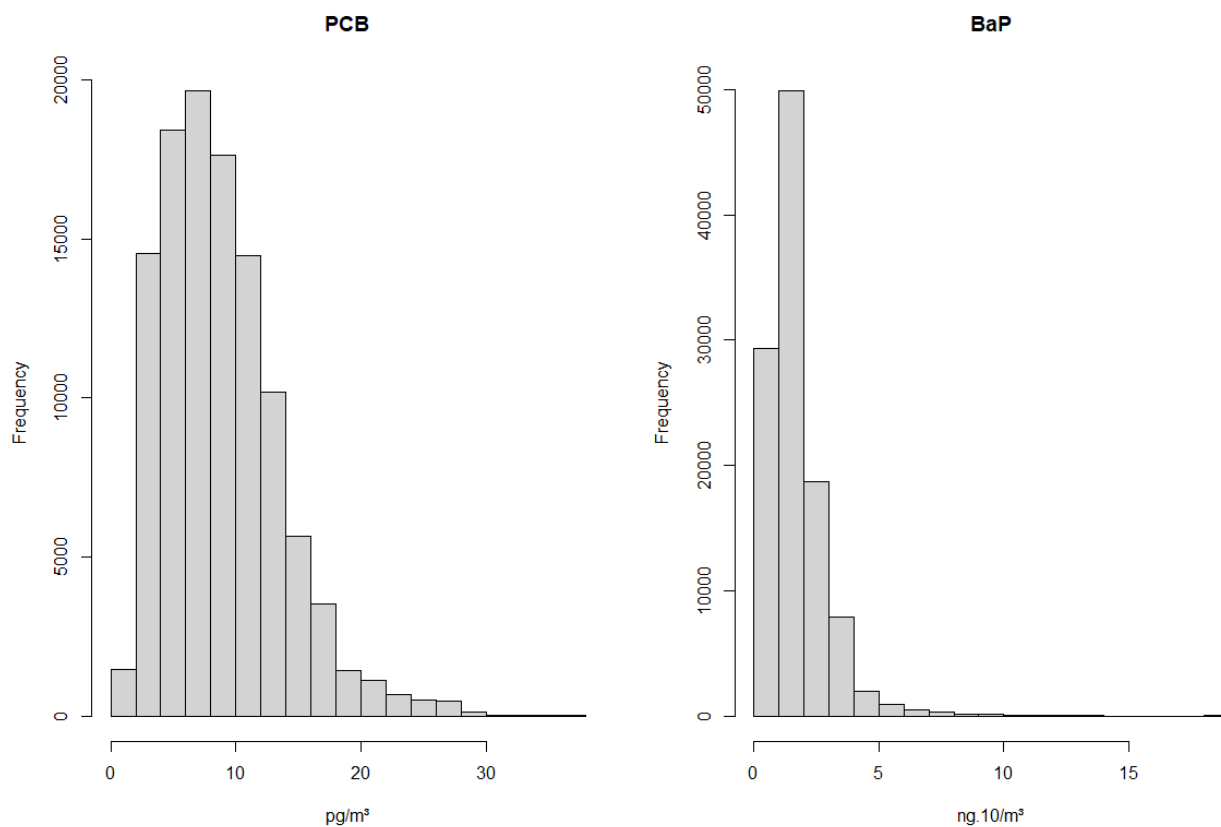
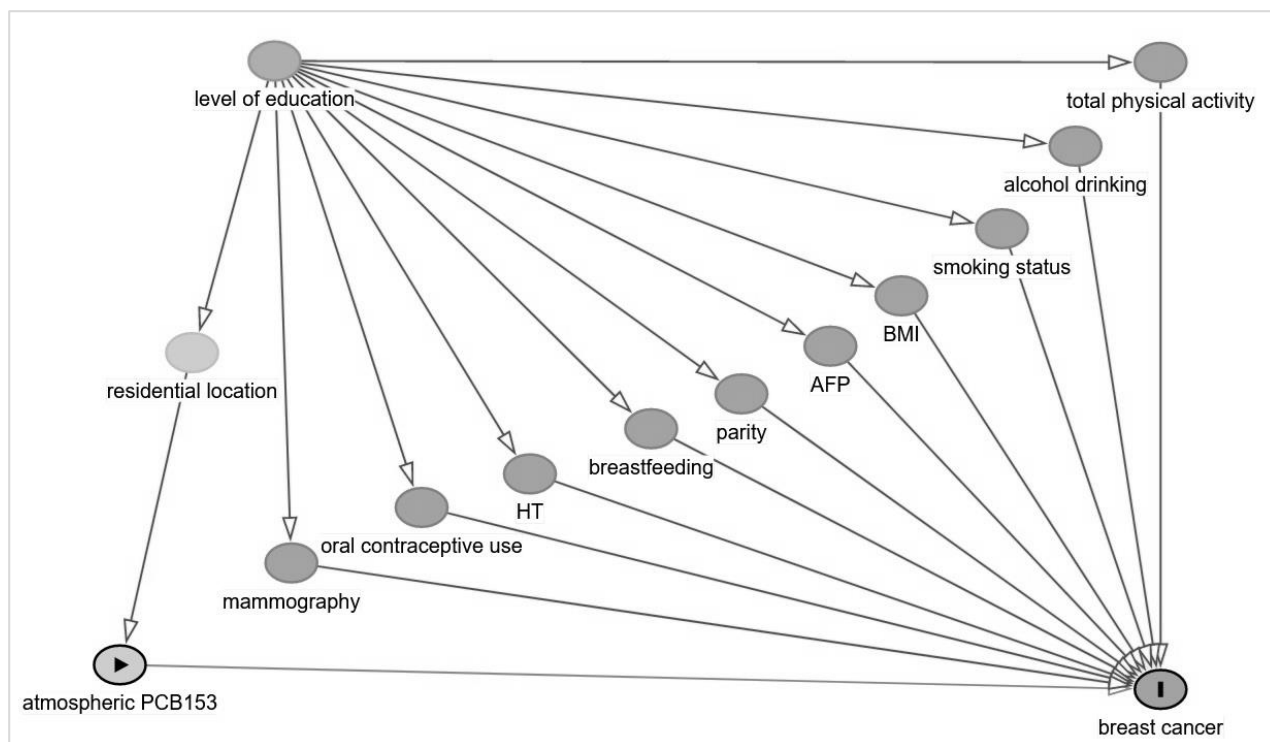


Figure S2. Distribution of all PCB153 and BaP annual average concentrations over the follow-up. XENAIR case-control study, France, 1990-2011 ($n = 110,042$ addresses.years).



AFP: age at full-term pregnancy; BMI: body mass index; HT: menopausal hormone replacement therapy use

Figure S3. Directed acyclic graph (DAG) of the association between atmospheric exposure to PCB153 and breast cancer. Reproduced from (Deygas et al. 2021). The same apply for BaP instead of PCB153.

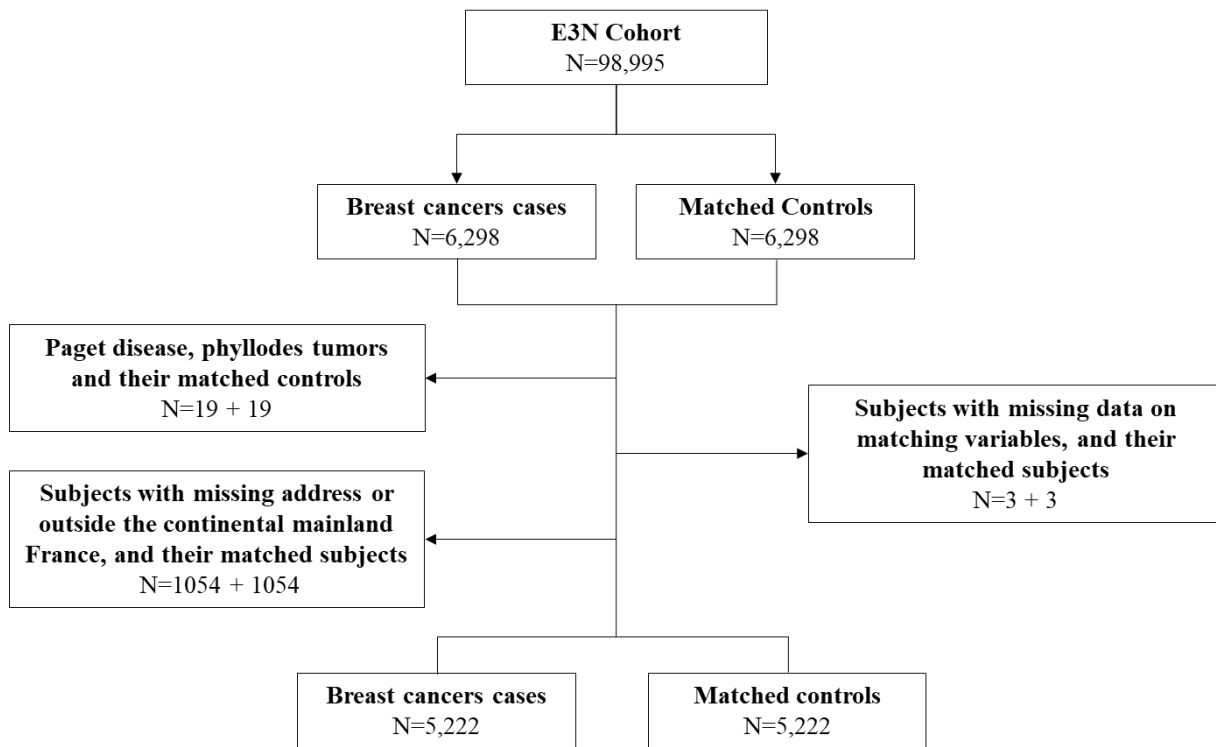


Figure S4. Selection of subjects in the XENAIR case-control study nested in the E3N cohort, France, 1990-2011. Reproduced from (Deygas et al. 2021).

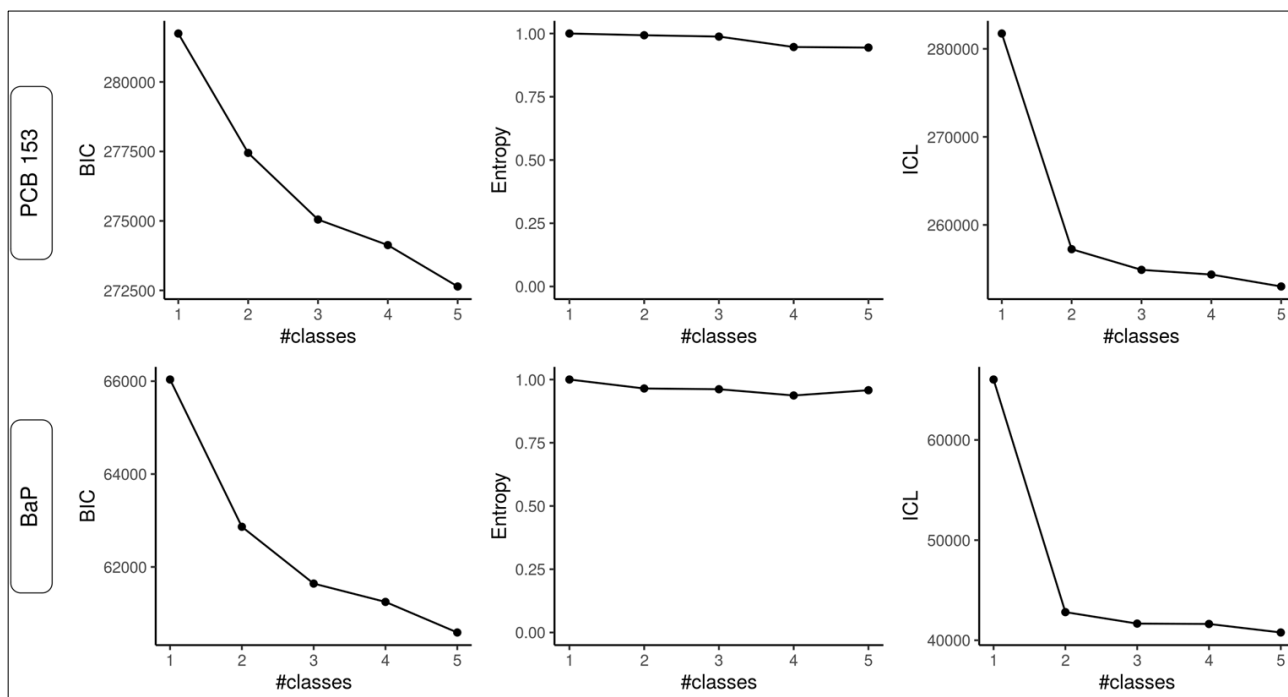


Figure S5. Bayesian Information Criterion (BIC), Entropy, and Integrated classification likelihood (ICL) of each latent class model investigated (G = 1 to 5) for each pollutant, XENAIR case-control study, France, 1990-2011.