

**Supplementary information for:**

**Protein adducts as biomarkers of exposure to aromatic diisocyanates in workers  
manufacturing polyurethane (PUR) foam**

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**Table S1** 2,4- and 2,6-TDI-derived plasma adducts and 2,4- and 2,6-TDA in acid hydrolysed post-shift urine samples<sup>1</sup> in workers manufacturing flexible PUR foam

Workers	2,4-TDA	2,6-TDA	Sum-TDA	% 2,6-isomer of sum	2,4-TDA	2,6-TDA	Sum-TDA	% 2,6-isomer of sum	
	nmol mL <sup>-1</sup> plasma	nmol mL <sup>-1</sup> plasma	nmol mL <sup>-1</sup> plasma		nmol mmol <sup>-1</sup> creatinine	nmol mmol <sup>-1</sup> creatinine	nmol mmol <sup>-1</sup> creatinine		
<b>Factory 1</b>									
worker 1	0.137	0.212	0.348	61	6.9	16	23	70	
worker 2	0.155	0.222	0.377	59	11	25	35	70	
worker 3	ND <sup>a</sup>	ND	ND	-	0.03	0.16	0.18	85	
worker 4	ND	0.003	0.004	100	0.15	0.14	0.29	48	
worker 5	0.010	0.080	0.090	89	0.25	3.3	3.6	93	
worker 6	0.266	0.308	0.574	54	10	29	39	74	
worker 7	0.022	0.054	0.076	71	1.0	5.6	6.6	84	
worker 8	0.089	0.192	0.281	68	3.8	17	21	82	
	AM <sup>b</sup>	0.085	0.134	0.219	72	AM	4.1	12	16
	median	0.056	0.136	0.186	68	median	2.4	11	14
<b>Factory 2</b>									
worker 1	ND	ND	ND	-	0.03	0.75	0.77	97	
worker 2	ND	ND	ND	-	0.76	4.1	4.9	84	
worker 3	0.014	0.032	0.046	69	0.49	2.1	2.6	81	
worker 4	0.010	0.016	0.027	61	0.06	0.39	0.45	86	
worker 5	0.008	0.024	0.032	75	0.03	0.47	0.50	95	
worker 6	0.014	0.028	0.042	67	0.03	0.31	0.34	91	
worker 7	0.008	0.013	0.021	63	0.03	0.13	0.15	82	
worker 8	0.006	0.005	0.011	43	1.5	5.2	6.6	78	
worker 9	ND	ND	ND	-	0.03	0.22	0.24	89	
	AM	0.007	0.014	0.020	75	AM	0.32	1.5	1.8
	median	0.008	0.013	0.021	69	median	0.03	0.47	0.50

<sup>a</sup> ND = not detected, <LOQ (0.003 nmol mL<sup>-1</sup>); <sup>b</sup> AM = arithmetic mean of all measurements, with ND defined as ½LOQ

**Table S2** 2,4- and 2,6-TDI-derived globin adducts and 2,4- and 2,6-TDA in acid hydrolysed post-shift urine samples<sup>1</sup> in workers manufacturing flexible PUR foam

Workers	2,4-TDA				2,6-TDA				Sum-TDA			
	nmol g <sup>-1</sup> globin	nmol g <sup>-1</sup> globin	nmol g <sup>-1</sup> globin	% 2,6- isomer of sum	nmol mmol <sup>-1</sup> creatinine	nmol mmol <sup>-1</sup> creatinine	nmol mmol <sup>-1</sup> creatinine	% 2,6- isomer of sum	nmol mmol <sup>-1</sup> creatinine	nmol mmol <sup>-1</sup> creatinine	nmol mmol <sup>-1</sup> creatinine	% 2,6- isomer of sum
<b>Factory 1</b>												
worker 1	ND <sup>a</sup>	ND	ND	-	6.9	16	23	70				
worker 2	0.074	0.196	0.270	73	11	25	35	70				
worker 3	ND	ND	ND	-	0.03	0.16	0.18	85				
worker 4	ND	ND	ND	-	0.15	0.14	0.29	48				
worker 5	ND	0.108	0.114	95	0.25	3.3	3.6	93				
worker 6	0.121	0.210	0.331	63	10	29	39	74				
worker 7	0.013	0.063	0.076	83	1.0	5.6	6.6	84				
worker 8	0.016	0.086	0.102	84	3.8	17	21	82				
	AM <sup>b</sup>	0.031	0.085	0.116	78	AM	4.1	12	16	70		
	median	0.009	0.074	0.089	83	median	2.4	11	14	78		
<b>Factory 2</b>												
worker 1	ND	ND	ND	-	0.03	0.75	0.77	97				
worker 2	ND	ND	ND	-	0.76	4.1	4.9	84				
worker 3	ND	0.015	0.021	72	0.49	2.1	2.6	81				
worker 4	ND	0.012	0.018	66	0.06	0.39	0.45	86				
worker 5	ND	0.017	0.023	74	0.03	0.47	0.50	95				
worker 6	ND	0.014	0.020	70	0.03	0.31	0.34	91				
worker 7	ND	0.012	0.018	67	0.03	0.13	0.15	82				
worker 8	ND	ND	ND	-	1.5	5.2	6.6	78				
worker 9	ND	ND	ND	-	0.03	0.22	0.24	89				
	AM	ND	0.010	0.016	61	AM	0.32	1.5	1.8	87		
	median	ND	0.012	0.018	66	median	0.03	0.47	0.50	86		

<sup>a</sup> ND = not detected, <LOQ (0.012 nmol g<sup>-1</sup>); <sup>b</sup> AM = arithmetic mean of all measurements, with ND defined as ½LOQ

## References

- 1 K. Kääriä, A. Hirvonen, H. Norppa, P. Piirilä, H. Vainio and C. Rosenberg, *Analyst*, 2001, **126**, 1025-1031.