

**Table 2.** Effect of exposure and genotypes on biomarkers of exposure and effects by environmentally exposed populations.

Group/ sample size	Exposure		Effect of exposure on biomarkers								Effect of biomarkers of susceptibility	Ref.	
	Type	Measured	Urine <sup>a</sup>	DNA adducts <sup>b</sup>	Protein adducts <sup>c</sup>	Comet	CAs	SCEs	MN	HPRT			
Bus drivers; postal workers (control)													
Exp = 107; C = 102	PAHs, VOCs	No	No E	E	E	–	–	–	–	–	–	–	(57)
Exp = 106; C = 101	PAHs, VOCs	No	–	–	–	–	No E	–	–	–	–	<i>GSTM1</i> E <i>NAT2</i> E	(59)
Bus drivers Exp = 57	VOCs	Personal	–	E	–	–	–	–	–	–	–	–	(60)
Children Exp = 87; C = 12	Ozone	Ambient	–	E	–	E	–	–	–	–	–	–	(61)
Students Exp = 42	Ozone	Ambient	–	–	–	E	–	–	–	–	–	–	(62)
General populations Exp = 65	Pyrene	Personal	No E	–	No E	–	–	–	–	–	–	–	(63)
Exp = 22; C = 40	PAHs	Ambient	No E	–	–	–	–	–	–	–	–	–	(64)
Women Exp = 51	PAHs	Personal	E	No E	–	–	–	–	–	–	–	<i>GSTM1</i> E <i>NAT2</i> E	(101)
Mothers Placenta Exp = 93; C = 65	PAHs	Ambient	–	E	–	–	No E	–	–	–	–	<i>GSTM1</i> E <i>NAT2</i> E	(65) (66)
Mothers Venous blood Exp = 54; C = 20	PM10	Ambient	–	–	–	–	No E	–	–	–	–	–	(66)
Cord blood Exp = 86; C = 29	PM10	Ambient	–	–	–	–	No E	–	–	–	–	–	(66)
Mothers Venous blood Exp = 322; C = 220	PM <sub>10</sub>	Ambient	–	–	–	No E	–	–	–	–	–	<i>GSTM1</i> No E	(69)
Cord blood Exp = 322; C = 220	PM <sub>10</sub>	Ambient	–	–	–	No E	–	–	–	–	–	<i>GSTM1</i> No E	(69)
Mothers Venous blood Exp = 70	PM <sub>10</sub>	No	–	E	–	–	–	–	–	–	–	<i>GSTM1</i> No E <i>CYP1A1</i> E	(70)
Cord blood Exp = 70	PM <sub>10</sub>	No	–	E	–	–	–	–	–	–	–	<i>GSTM1</i> No E <i>CYP1A1</i> No E	(70)
Mothers Placenta Exp = 70; C = 90	PAHs	No	–	No E	–	–	–	–	–	–	–	<i>CYP1A1</i> E	(71)
Mothers Placenta Exp = 52; C = 30	PCBs, PCDFs	No	–	E	–	–	–	–	–	–	–	–	(73)
Traffic police Exp = 34; C = 36	B[a]P	Personal	–	E (summer)	–	–	–	–	–	–	–	–	(74)
Exp = 54; C = 35	PAHs	Personal	–	–	–	–	–	No E	–	–	–	–	(75)
Exp = 82; C = 34	PAHs	Personal	–	–	–	–	–	–	No E	–	–	–	(76)
Exp = 94; C = 52	PAHs	Personal	No E	–	–	–	–	–	–	–	–	<i>GSTM1</i> No E <i>GSTT1</i> No E <i>CYP1A1</i> No E	(77)

(Continued)

Table 2. (Continued)

Group/ sample size	Exposure		Effect of exposure on biomarkers								Effect of biomarkers of susceptibility	Ref.
	Type	Measured	Urine <sup>a</sup>	DNA adducts <sup>b</sup>	Protein adducts <sup>c</sup>	Comet	CAs	SCEs	MN	HPRT		
Exp = 87; C = 56 General population	PAHs	No	—	—	—	—	—	E	E	—	—	(78)
Exp = 26; C = 9 Waste site	Crude oil	No	—	No E	—	—	—	—	—	No E	—	(79)
Exp = 24; C = 24 Physical exercise	Uranium mining	No	—	—	—	—	E <sup>d</sup>	—	—	—	—	(80)
Exp = 6 Rural population		No	—	—	—	—	—	—	E	—	—	(82)
Exp = 31; C = 27	Arsenic	Personal in urine	—	—	—	—	E	—	E	—	—	(83)
Exp = 32; C = 18	Arsenic	Personal in urine	—	—	—	—	E	—	E	—	—	(84)
Mothers Placenta	Tobacco smoke, ETS											
Exp = 30 Smoker	Tobacco smoke	No	—	No E	—	—	—	—	—	—	—	(85)
Exp = 57; C = 45 Newborns	Tobacco smoke	No	—	No E	—	—	—	—	—	—	—	(86)
Exp = 42; C = 21 Newborns	Tobacco smoke, ETS	No	—	—	—	—	—	—	—	No E	—	(87)
Exp = 12; C = 12 Children	ETS	No	—	—	—	—	—	—	—	E	—	(88)
Exp = 109 Smokers	ETS	No	E	—	E	—	—	No E	—	—	—	(89)
Exp = 23; C = 42	Tobacco smoke	No	—	—	—	—	—	—	—	E	—	(90)
Exp = 55; C = 4	Tobacco smoke	No	—	E	E	—	—	—	—	—	—	(91)
Exp = 119; C = 40	Tobacco smoke	No	E	E	—	—	—	—	—	—	—	(92)
Exp = 54; C = 5	Tobacco smoke	No	—	E	—	—	—	—	—	—	—	(16)
Exp = 33; C = 64	Tobacco smoke	No	—	E	—	—	—	—	—	—	—	(93)
Exp = 9; C = 12	Tobacco smoke	No	—	E	—	—	—	—	—	—	—	(94)
Exp = 20; C = 20	Tobacco smoke	No	—	E	—	—	—	—	—	—	—	(95)
Exp = 427; C = 823	Tobacco smoke	No	—	—	—	—	—	E	No E	—	—	(97)
Exp = 147	Tobacco smoke	No	—	—	—	—	—	E	—	—	—	(13)
Exp = 47; C = 40	Tobacco smoke	No	—	—	—	No E	—	—	—	—	—	(98)
Exp = 40; C = 40 Smokers	Tobacco smoke	No	—	—	—	E	—	—	—	—	—	(99)
Exp = 17; C = 17	Marihuana	No	—	—	—	—	—	—	—	E	—	(100)

<sup>a</sup>Metabolites in urine. <sup>b</sup>By <sup>32</sup>P-postlabeling or ELISA. <sup>c</sup>Hemoglobin or albumin adducts. <sup>d</sup>Effect on CAs only using challenge assay.