

Ambient air pollution and adverse birth outcomes: a systematic review and meta-analysis

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Table S2 Characteristics of primary studies

Study ID	Study years	Study setting	Study design	Sample size	Exposure period	Air pollutants	Outcomes	Data source	Exposure type	Covariates	NOS
Arabian <i>et al.</i> 2012	2007	Tehran, Iran	cohort study	225	EP, TS	PM ₁₀ , NO ₂ , SO ₂ , CO, O ₃	LBW	Monitoring network data	Continuous	gestational age, maternal age, education, other	7
Ballester <i>et al.</i> 2010	2003-2005	Valencia, Spain	cohort study	785	EP, TS	NO ₂	SGA	Land use model based on monitoring network data	Continuous	smoking, maternal age, parity, education, season	8
Brauer <i>et al.</i> 2008	1999-2002	Vancouver, Canada	cohort study	70249	EP	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ , CO	LBW, SGA	Monitoring network data	Continuous	smoking, sex, parity, maternal age, education, other	7
DeFranco <i>et al.</i> 2016	2007-2010	Ohio, USA	cohort study	224921	EP, TS	PM _{2.5}	PTB	Monitoring network data	Categorical	sex, parity, season, other	8
Dugandzic <i>et al.</i> , 2006	1988-2000	Nova Scotia, Canada	cohort study	89133	TS	PM ₁₀ , SO ₂ , O ₃	LBW	Monitoring network data	Continuous, categorical	smoking, sex, gestational age, maternal age, parity, other	9
Ghosh <i>et al.</i> , 2012	1995-2006	California, USA	case-control study	209843	EP, TS	NO ₂ , NOx	LBW	Land use model based on monitoring network data	Continuous	gestational age, maternal age, education, parity, other	8
Giorgis-Allemand <i>et al.</i> , 2017	1994-2011	European countries	cohort study	56977	EP, TS	PM ₁₀ , PM _{2.5} , NO ₂	PTB	Land use model based on monitoring network data	Continuous	smoking, atmospheric pressure, maternal age, parity, season, educational, other	9
Habermann and 2007	2007	Brazil	case-control	11586	EP	PM ₁₀	LBW	Land use regression	Categorical	maternal age, education, other	6

Hannam <i>et al.</i> , 2014	2004-2008	Northwest England	cohort study	29181	TS	PM ₁₀ , PM _{2.5} , NO ₂ , NOx, CO	PTB, SGA	Monitoring network data	Categorical	smoking, maternal age, parity, season, other	9
Hansen <i>et al.</i> , 2006)	2000-2003	Brisbane, Australia	cohort study	28200	EP, TS	PM ₁₀ , NO ₂ , O ₃	PTB	Monitoring network data	Continuous, categorical	sex, maternal age, parity, other	8
Huynh <i>et al.</i> , 2006	1999-2000	California, USA	case-control	42692	EP	PM _{2.5} , CO	PTB	Monitoring network data	Continuous, categorical	maternal age, education, parity, other	7
Kim <i>et al.</i> , 2007	2001-2004	Seoul, South Korea	cohort study	1514	TS	PM ₁₀	LBW, PTB	Monitoring network data	Continuous, categorical	sex, maternal age, education, season, other	8
Laurent <i>et al.</i> , 2016	2000-2008	California, USA	case-control	442314	EP	NOx, CO	PTB	Monitoring network data	Continuous	maternal age, educational, other	8
Leem <i>et al.</i> , 2006	2001-2002	Incheon, South Korea	case-control	52113	TS	PM ₁₀ , NO ₂ , SO ₂ , CO	PTB	Monitoring network data	Categorical	sex, maternal age, parity, season, education, other	7
Lin <i>et al.</i> , 2004	1995-1997	Taiwan	cohort study	23145	EP, TS	PM ₁₀ , NO ₂ , SO ₂ , CO, O ₃	LBW	Monitoring network data	Categorical	sex, gestational age, maternal age, season, educational, other	8
Llop <i>et al.</i> , 2010	2003-2005	Valencia, Spain	cohort study	772	TS	NO ₂	PTB	Land use regression model based on monitoring network data	Categorical	smoking, sex, maternal age, season, alcohol, education, other	7
Madsen <i>et al.</i> , 2010	1999-2002	Oslo, Norway	cohort study	6307	EP	PM ₁₀ , PM _{2.5} , NO ₂	LBW, SGA	Monitoring network data	Continuous, categorical	smoking, sex, maternal age, education, parity, other	8
Olsson <i>et al.</i> , 2013	1997-2006	Sweden	cohort study	120251	TS	NOx, O ₃	PTB, SGA	Monitoring network data	Continuous	maternal age, parity, education, season, other	9
Pedersen, <i>et al.</i> , 2013	1994-2011	European countries	cohort study	50151	EP	PM ₁₀ , PM _{2.5} , NO ₂ , NOx	LBW	Land use regression model based on monitoring network data	Continuous	sex, gestational age, maternal age, parity, education, season, other	9
Pereira <i>et al.</i> , 2014	2000-2006	Connecticut, USA	cohort study	29175	EP, TS	PM _{2.5}	PTB	Monitoring network data	Continuous	smoking, maternal age, parity, other	9

Pereira <i>et al.</i> , 2016	1997-2007	Perth, Australia	cohort study	31567	EP, TS	PM _{2.5}	PTB	Monitoring network data	Continuous, categorical	smoking, maternal age, parity, other	9
Pereira <i>et al.</i> , 2013	2004-2012	Rochester, NY, USA	cohort study	3264	EP, TS	PM _{2.5}	PTB	Monitoring network data	Continuous, categorical	smoking, maternal age, parity, other	9
Poirier <i>et al.</i> , 2015	2008-2012	Halifax, Nova Scotia, Canada	cohort study	14415	EP	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂	LBW, PTB, SGA	Land use regression model based on monitoring network data	Continuous, categorical	smoking, maternal age, parity, other	9
Qian <i>et al.</i> , 2016	2011-2013	Wuhan, China	cohort study	65930	EP, TS	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂ , CO, O ₃	PTB	Land use regression model based on monitoring network data	Continuous	temperature, sex, maternal age, parity, season, educational, other	8
Ritz, 1999	1989-1993	California, USA	cohort study	125573	TS	CO	LBW	Monitoring network data	Categorical	sex, maternal age, parity, education, season, other	9
Ritz <i>et al.</i> , 2007a	2003	California, USA	cohort study	58316	EP, TS	PM _{2.5} , NO ₂ , CO, O ₃	PTB	Monitoring network data	Categorical	maternal age, education, season, parity, other	7
Romao <i>et al.</i> , 2013	2000-2006	Brazil	cohort study	57392	TS	PM ₁₀	LBW	Monitoring network data	Categorical	maternal age, other	8
Rudra <i>et al.</i> , 2011	1996-2006	Washington, USA	cohort study	3509	EP	PM _{2.5} , CO	PTB	Monitoring network data	Continuous, categorical	smoking, maternal age, season, other	9
Salam <i>et al.</i> , 2005	1975-1987	California, USA	cohort study	3901	EP, TS	PM ₁₀ , NO ₂ , CO, O ₃	LBW	Monitoring network data	Continuous	smoking, sex, maternal age, parity, other	9
Salihu <i>et al.</i> , 2012	2000-2007	Florida, USA	cohort study	103961	EP	PM ₁₀ , PM _{2.5}	LBW, PTB, SGA	Monitoring network data	Continuous	smoking, maternal age, education, parity, other	9
Stieb <i>et al.</i> , 2016	1999-2008	Canada	cohort study	2402545	EP, TS	PM _{2.5} , NO ₂	LBW, PTB, SGA	Monitoring network data	Continuous	sex, maternal age, season, parity, other	9
Wang <i>et al.</i> , 1997	1988-1991	Beijing, China	cohort study	74671	TS	SO ₂	LBW	Monitoring network data	Continuous, categorical	sex, gestational age, maternal age, other	8
Wilhelm <i>et al.</i> , 2011	1994-2000	California, USA	case-control	115091	EP, TS	PM ₁₀ , PM _{2.5} , CO	LBW, PTB	Monitoring network data	Continuous, categorical	sex, gestational age, maternal age, education, season, parity, other	8
Wilhelm <i>et al.</i> , 2012	2004-2006	California, USA	case-control	66619	EP	PM ₁₀ , NO ₂ , NOx	PTB	Land use regression model based on	Continuous	maternal age, education, parity, other	8

Wilhelm <i>et al.</i> , 2005	2004-2006	California, USA	case-control study	76277	EP	PM ₁₀ , NO ₂ , NOx	LBW	monitoring network data	Continuous	gestational age, maternal age, education, parity, other	8
Wu <i>et al.</i> , 2011	1997-2006	Los Angeles, USA	case-control study	23568	EP	PM ₁₀ , PM _{2.5} , NO ₂ , NOx, CO, O ₃	PTB	Land use regression monitoring network data	Continuous	maternal age, parity, season, other	7
Wu, <i>et al.</i> , 2011	1997-2006	Orange, USA	case-control study	16704	EP	PM ₁₀ , PM _{2.5} , NO ₂ , NOx, CO, O ₃	PTB	Land use regression monitoring network data	Continuous	maternal age, parity, season, other	7
Xu <i>et al.</i> , 2011	1994-2000	Pennsylvania, USA	case-control study	92447	EP, TS	PM ₁₀	LBW	Monitoring network data	Continuous	smoking, gender, gestational age, parity, maternal age, education, other	8
Yorifuji <i>et al.</i> , 2015	2001	Japan	cohort study	44109	EP	NO ₂ , SO ₂ , O ₃	LBW	Monitoring network data	Continuous	smoking, sex, gestational age, maternal age, season, parity, educational, other	7
Zhao <i>et al.</i> , 2015	2010-2012	Lanzhou, China	cohort study	8969	EP, TS	PM ₁₀	PTB	Monitoring network data	Continuous, categorical	smoking, temperature, maternal age, parity, season, education, other	8

NOS, Newcastle-Ottawa quality score; EP, entire pregnancy; TS, trimester-specific; LBW, low birth weight; PTB, preterm birth; SGA, small for gestational age;

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