

Supplemental Table S1-1. Epidemiologic studies of health effects not evaluated in the ISA for Oxides for Nitrogen

Study Location Sample Size	Mean (SD) NO ₂ (ppb) Exposure Assessment	NO ₂ Averaging Time and Lag in Days	Effect Estimate (95% CI)		
Short-term NO ₂ Exposure					
Malerbi et al. (2012)	45.4 (20.5)		% change (min/max) ^a per 20 ppb NO ₂		
São Palo, Brazil (N=200)	study monitoring site set up 3.5 km from health care unit; all subjects lived within 3 km of health care unit	24-h avg Lag 0 Lag 1 Lag 2 Lag 0-2 avg	<i>Eyelid Debris</i> 0.0 (-1.4, 1.4) 0.7 (-0.4, 1.9) 1.2 (0.1, 2.3) 1.5 (-0.2, 3.3)	<i>Meibomian Gland Secretion</i> 2.2 (0.1, 4.2) -0.2 (-2.3, 1.8) -0.4 (-2.4, 1.5) -	
Novaes et al. (2007)	São Palo: 17.3 (5.2) Divinolândia, Brazil (N=29) Divinolândia: 10.3 (2.8) Personal passive sampler	24-h avg Lag 0-6 avg	Mean (SD) goblet cells in the eye/10 HPF São Paulo: 325.80 (147.90) Divinolândia: 243.37 (132.67)		
Novaes et al. (2010)	Q1: 5.3-10.6 Q2: 10.7-13.8 Q3: 13.9-18.6 Q4: >18.6 Personal passive sampler	24-h avg Lag 0-6 avg	<i>Symptom Frequency, N (%)</i> Dry eyes (Yes) Irritation (Yes) Heaviness (Yes) Q1: 3 (23.1) Q1: 5 (38.5) Q1: 7 (53.8) Q2: 4 (64.3) Q2: 9 (64.3) Q2: 4 (28.6) Q3: 8 (71.4) Q3: 10 (71.4) Q3: 8 (57.1) Q4: 8 (61.5) Q4: 13 (92.9) Q4: 9 (64.3) Itching (Yes) Q1: 8 (61.5) Q2: 8 (57.1) Q3: 9 (64.3) Q4: 11 (78.6)		
Kaplan et al. (2009)	Median (IQR) of daily means: 20.3 (15.3, 27) Environment Canada Air Pollution Surveillance Network (appendicitis case assigned to daily mean) Fixed-site monitoring stations	24-h avg Lag 0 Lag 1 Lag 0-2 avg Lag 0-4 avg Lag 0-6 avg Lag 0 Lag 1 Lag 0-2 avg Lag 0-4 avg Lag 0-6 avg	OR (95% CI) for appendicitis per 20 ppb NO ₂ All season <i>Spring</i> <i>Summer</i> 1.03 (0.93, 1.16) 1.05 (0.84, 1.33) 1.16 (0.79, 1.69) 0.97 (0.87, 56) 0.92 (0.73, 1.16) 1.29 (0.88, 1.89) 1.07 (0.92, 1.25) 0.95 (0.70, 1.31) 1.63 (0.93, 2.84) 1.20 (1.00, 1.44) 1.10 (0.76, 1.61) 2.63 (1.37, 5.05) 1.21 (0.98, 1.23) 1.07 (0.70, 1.67) 2.92 (1.39, 6.17) <i>Autumn</i> <i>Winter</i> 1.03 (0.84, 1.27) 1.02 (0.85, 1.23) 0.95 (0.77, 1.18) 0.93 (0.77, 1.14) 1.12 (0.85, 1.48) 1.02 (0.79, 1.33) 1.12 (0.80, 1.57) 1.14 (0.85, 1.57) 1.14 (0.80, 1.65) 1.14 (0.79, 1.63)		

Study Location Sample Size	Mean (SD) NO ₂ (ppb) Exposure Assessment	NO ₂ Averaging Time and Lag in Days	Effect Estimate (95% CI)		
			<i>Age 18-34 years</i>	<i>Age 35-64 years</i>	<i>Age >64 years</i>
		Lag 0	1.05 (0.60, 1.87)	1.07 (0.61, 1.87)	2.43 (0.70, 8.55)
		Lag 1	1.27 (0.73, 2.26)	0.95 (0.54, 1.63)	7.90 (2.07, 30)
		Lag 0-2 avg	1.12 (0.49, 2.58)	1.46 (0.65, 3.30)	14.4 (2.26, 91)
		Lag 0-4 avg	1.52 (0.57, 4.03)	3.47 (1.31, 9.06)	9.75 (1.05, 91)
		Lag 0-6 avg	2.23 (0.73, 6.77)	2.84 (0.93, 8.60)	12.44 (0.97, 160)
			<i>Female</i>	<i>Male</i>	
		Lag 0	1.23 (0.70, 2.16)	1.10 (0.67, 1.84)	
		Lag 1	1.23 (0.70, 2.12)	1.37 (0.82, 3.70)	
		Lag 0-2 avg	1.52 (0.68, 3.41)	1.73 (0.82, 3.70)	
		Lag 0-4 avg	1.95 (0.76, 5.09)	3.41 (1.39, 8.39)	
		Lag 0-6 avg	1.73 (0.58, 5.26)	4.50 (1.61, 12.4)	
Cakmak et al. (2010) Santiago Province, Chile (N= 5,400,000) Cold season: Apr-Sep Warm season: Oct-Mar	Mean (IQR): 44.74 (28.97) Monitoring stations	24-h avg Exact lag not reported, lags 0 to 5 days examined	OR for epilepsy hospital admissions per 20 ppb NO ₂ All subjects: 1.073 (1.014, 1.137) Ages ≤ 64 yr: 1.053 (1.008, 1.099) Ages > 64 yr: 1.077 (1.025, 1.133) Males: 1.053 (1.019, 1.087) Females: 1.069 (1.036, 1.102) Warm season: 1.028 (0.932, 1.133) Cold season: 1.090 (1.034, 1.149)		
Dales et al. (2009) Santiago Province, Chile (N= 5,370,000) Cold season: Apr-Sep Warm season: Oct- Mar	Mean (IQR): 44.74 (28.97) Monitoring stations	24-h avg	<i>Headache not otherwise specified</i>	<i>Migraine</i>	<i>Specified cause</i>
			OR per 20 ppb NO ₂		
			All subjects	All subjects	All subjects
		0-5 DL	1.08 (1.04, 1.13)	1.08 (1.04, 1.12)	1.09 (0.99, 1.19)
		Lag 1	1.12 (1.06, 1.19)	1.13 (1.04, 1.21)	1.13 (1.06, 1.20)
			Males	Males	Males
			1.08 (0.95, 1.11)	1.08 (0.97, 1.2)	1.03 (0.90, 1.17)
			Females	Females	Females
			1.06 (1.00, 1.11)	1.01 (0.95, 1.08)	1.07 (0.97, 1.18)
			Warm season	Warm season	Warm season
			0.97 (0.90, 1.04)	1.03 (0.94, 1.13)	1.02 (0.92, 1.13)
			Cold season	Cold season	Cold season
			1.04 (1.01, 1.08)	1.10 (1.02, 1.18)	1.04 (0.94, 1.16)
Szyszkowicz (2008) Ottawa, Canada (N=8,012 ED visits)	18.8 (8.8) Monitoring stations (8-10 km from hospital) Adjusted for atmospheric pressure	24-h avg Linear model Lag 0 Lag 1 Lag 2 Nonlinear model Lag 0 Lag 1 Lag 2	OR for Depression ED visits per 20 ppb NO ₂ All visits Males Females 1.06 (1.00, 1.12) 1.08 (1.00, 1.17) 1.03 (0.96, 1.11) 1.04 (0.99, 1.11) 1.07 (0.98, 1.16) 1.02 (0.95, 1.10) 1.04 (0.98, 1.10) 1.06 (0.98, 1.15) 1.01 (0.94, 1.09) All visits ^b Males ^b Females ^b 1.06 1.08 1.03 1.05 1.07 1.03 1.04 1.06 1.01		

Study Location Sample Size	Mean (SD) NO ₂ (ppb) Exposure Assessment	NO ₂ Averaging Time and Lag in Days	Effect Estimate (95% CI)		
		Nonlinear model	All visits ^b	Males ^b	Females ^b
	Adjusted for temperature and relative humidity	Lag 0	1.05	1.06	1.03
		Lag 1	1.04	1.05	1.02
		Lag 2	1.03	1.05	1.01
Szyszkowicz (2007) Edmonton, Canada (N=15,556 ED visits) Warm season: Apr- Sep Cold season: Dec-Mar	21.9 (9.4) Monitoring stations	24-h avg Lag 0	RR for ED visits for depression per 20 ppb NO ₂ Quantitative data reported only for statistically significant results All subjects, warm season: 1.06 (1.02, 1.11) Females, whole period: 1.09 (1.03, 1.14) Females, warm season: 1.12 (1.01, 1.24) Females, cold season: 1.08 (1.01, 1.16)		
Lim et al. (2012) Seongbuk-Gu, Seoul, Korea (N=537)	36.2 (12.1) Monitoring stations (one monitor for Seongbuk-Gu residents; nearest monitor to residential address for other residents)	24-h avg Lag 0-7 avg Lag 0-28 avg Lag 0-21 avg Lag 0-2 avg	Percent change in self-reported score per 20 ppb NO ₂ Total depression symptoms: 46 (17, 82) Emotional symptoms: 183 (54, 422) Somatic symptoms: 51 (-12, 157) Affective symptoms: 18 (-3.6, 44)		

Study Location Sample Size	Mean (SD) NO ₂ (ppb) Exposure Assessment	NO ₂ Averaging Time and Lag in Days	Effect Estimate (95% CI)
Long-term NO₂ Exposure			
Kaplan et al. (2010) Health Improvement Network (THIN) Database United Kingdom (N=958) Followed 2005-2008	Q1: 2.3-8.7 Q2: 8.7-11.1 Q3: 11.1-13.9 Q4: 13.9-17.1 Q5: 17.1-31.8 Fixed site monitors Pollutant interpolation maps	2001 annual average	OR (95% CI) for Crohn's Disease for 3 rd -5 th quintile vs. 1 st -2 nd quintile All ages: 1.02 (0.79, 1.32) ≤23 years: 2.31 (1.25, 4.28) 24-43 years: 0.68 (0.41, 1.13) 44-57 years: 0.56 (0.33, 0.95) ≥58 years: 1.28 (0.78, 2.09) Registry in THIN database of 5 years before diagnosis: 2.46 (1.29, 4.69) IBD diagnosis after 1 July 2006: 2.45 (1.18, 5.10) No immunosuppressant/biologic within 3 mo of case/control index date: 2.09 (1.05, 4.17) Living in urban center: 3.27 (1.32, 8.06) 5 th /4 th vs. 1 st /2 nd quintile NO ₂ : 2.48 (1.29, 4.75) OR (95% CI) for Ulcerative Colitis for 3 rd -5 th quintile vs. 1 st -2 nd quintile All ages: 1.00 (0.82, 1.22) ≤35 years: 0.76 (0.51, 1.12) 36-48 years: 1.14 (0.74, 1.77) 49-63 years: 1.07 (0.72, 1.59) ≥64 years: 1.08 (0.73, 1.62) Registry in THIN database of 5 years before diagnosis: 1.00 (0.58, 1.73) IBD diagnosis after 1 July 2006: 1.24 (0.61, 2.50) No immunosuppressant/biologic within 3 mo of case/control index date: 0.93 (0.52, 1.64) Living in urban center: 0.94 (0.48, 1.83) 5 th /4 th vs. 1 st /2 nd quintile NO ₂ : 1.08 (0.56, 1.96)
Alver et al. (2010) Oslo Health Study (HUBRO) Oslo, Norway (N=5,976)	16.2 (6.7) EPISODE dispersion model	10-yr avg (1992-2001)	Unadjusted OR (95% CI) per 10 ppb NO ₂ Self-reported Forearm Fracture Men 59/60 years old All: 1.0 (0.8, 1.4) Smokers: 0.8 (0.5, 1.4) Previous/never smokers: 1.0 (0.8, 1.4) Men 75/76 years old All: 1.2 (0.8, 1.6) Smokers: 2.1 (1.0, 4.4) Previous/never smokers: 1.0 (0.7, 1.4) Women 59/60 years old All: 1.2 (0.8, 1.4) Smokers: 1.2 (0.8, 1.9) Previous/never smokers: 1.0 (0.8, 1.4) Women 75/76 years old All: 1.0 (0.8, 1.2) Smokers: 0.8 (0.7, 1.2) Previous/never smokers: 1.0 (0.8, 1.2)

Study Location Sample Size	Mean (SD) NO ₂ (ppb) Exposure Assessment	NO ₂ Averaging Time and Lag in Days	Effect Estimate (95% CI)
			Mean Distal Forearm BMD Men 59/60 years old All: 1.9 (-11.3, 15.1) Smokers: -11.3 (-32.1, 7.5) Previous/never smokers: 7.5 (-7.5, 22.6) Men 75/76 years old All: -20.8 (-45.3, 3.8) Smokers: -105.7 (-177.4, -34.0) Previous/never smokers: -15.1 (-39.6, 11.3) Women 59/60 years old All: 1.9 (-7.5, 5.7) Smokers: -3.8 (-18.9, 11.3) Previous/never smokers: -1.9 (-9.4, 5.7) Women 75/76 years old All: -5.7 (-20.8, 7.5) Smokers: 5.7 (-26.4, 39.6) Previous/never smokers: -7.5 (-22.6, 7.5)

CETESB = Companhia de Tecnologia de Saneamento Ambiental de São Paulo, HPF = High power fields, IQR = Interquartile range, BMD = Bone mineral density

^aResults presented are the mean percent change in score and (minimum, maximum values).

^b95% CIs not reported.