Annex 6A

Controlled studies of the effects of exposure to nitrogen dioxide in normal subjects

Author(s)	Pollutant concentration		Duration of exposure and activity	Number of subjects	Change in lung function with NO_2	Change in reactivity	Change in symptoms
	$\mu g/m^3$	ppb					
Beil & Ulmer 1976[8]	0, 1880, 4700, 9400 14100 9400	0, 1000, 2500, 5000 7500 5000	2 hours 14 hours	16 8	Increase of Rt after 2500 ppb and above. More sustained increase with 14h exposure.	Reactivity to acetyl-choline increased at 7500 ppb for 2h and 5000 ppb for 14h	Not described
Folinsbee et al 1978[12]	1170	620	2 hours (Ex)	15	None	Not done	None
Hackney et al 1978[21]	0, 1880	0, 1000	2 hours (Ex) on 2 successive days	16	Small (1.5%) fall in FVC on second day	Not done	Minor, not significant
Drechsler-Parks et al 1987[22]	0, 1130	0, 600	2 hours (Ex)	8M, 8F aged 50-76	None	Not done	None
Mohsenin 1988[9]	0, 3760	0, 2000	1 hour	18 non-smokers	None	Very small increase in response to methacholine	None
Frampton et al 1991[10]	0, 1130, 94 + peaks of 3760, 2820	0, 600, 50 + peaks of 2000, 1500	3 hours (Ex)	up to 15	None	Small increase in carbachol reactivity after 1500 ppb only	None
Kim et al[19] 1991	0, 338-564	0, 180-300	30 mins (Ex)	9 athletes	None (exercise capacity not measured)	Not done	None

Reactivity measurements were made immediately after exposure in the study by Mohsenin (1988) and 20 mins after exposure in the study by Frampton et al (1991).

COPD = chronic obstructive pulmonary disease, Ex = exercise, FEV_1 = forced expiratory volume in 1 second, FVC = forced vital capacity, Raw = airway resistance, Rt = total resistance, sRaw = specific airway resistance, TLCO = transfer factor for carbon monoxide, VC = vital capacity

1 ppb NO_2 = 1.88 $\mu g/m^3$