APPENDIX 10B

SELECTED MODEL PARAMETERS

TABLE 10B-1(a). BODY WEIGHT AND RESPIRATORY TRACT REGION SURFACE AREAS

		Respiratory Tract Surface Areas		
Body Weight (kg)	Lung Weight (g)	ET (cm^2)	TB (cm^2)	A (m^2)
73.0	1,100	470	2,690	54.0

TABLE 10B-1(b). HUMAN ACTIVITY PATTERNS AND ASSOCIATED RESPIRATORY MINUTE VENTILATION

Activity Pattern	Sleeping (.45 m^3/h)		Sitting (.54 m^3/h)		Activity Light (1.5 m^3/h)		Activity Heavy (3.0 m^3/h)		Total/Day	
	Hours	Total m^3	Hours	Total m^3	Hours	Total m^3	Hours	Total m^3	Hours	Total m^3
Adult male, general population	8	3.6	8	4.32	8	12	0	0	24	19.9
Adult male, light work	8	3.6	6.5	3.5	8.5	12.75	1	3	24	22.85
Adult male, heavy work	8	3.6	4	2.16	10	15	2	6	24	26.76

[a]International Commission on Radiological Protection (ICRP66, 1994).

TABLE 10B-2. BODY WEIGHTS, LUNG WEIGHTS, RESPIRATORY MINUTE VENTILATION, AND RESPIRATORY TRACT REGION SURFACE AREA FOR SELECTED LABORATORY ANIMAL SPECIES

Species	Body Weight (kg)	Lung Weight[b] (g)	Minute Ventilation[b] (L/min)	Minute Ventilation per g lung (l/min · g lung)	Respiratory Region Surface Area		
					ET (cm^2)	TB (cm^2)	A (m^2)
Mouse (B6C3F1)	0.037	0.43[b]	0.044[a]	0.063	3	3.5[a]	0.05[a]
Syrian hamster	0.134	1.54[b]	0.057[a]	0.049	14	20.0[a]	0.30[a]
Rat (F344)	0.380	4.34[b]	0.253[a]	0.040	15	22.5[a]	0.34[a]
Guinea pig	0.890	10.1[b]	0.286[a]	0.034	30	200[a]	0.90[a]
Monkey	2.5[c]	28.0[b]	0.789[b]	0.028	NA	NA[e]	4.3[f]
Dog	10.0[d]	110.0[d]	2.39[b]	0.022	NA	NA[e]	42.5[f]

[a]U.S. Environmental Protection Agency (1994, 1988a). Default values for male laboratory animals in chronic bioassays.
[b]Stahl, 1967: lung weight in g = 11.3 · $(kg\ BW)^{0.99}$; minute ventilation = 379 · $(kg\ BW)^{0.8}$.
[c]Phalen (1984).
[d]Cuddihy et al. (1972).
[e]Not available.
[f]Scaled from results of dogs and baboons in Crapo et al. (1983).

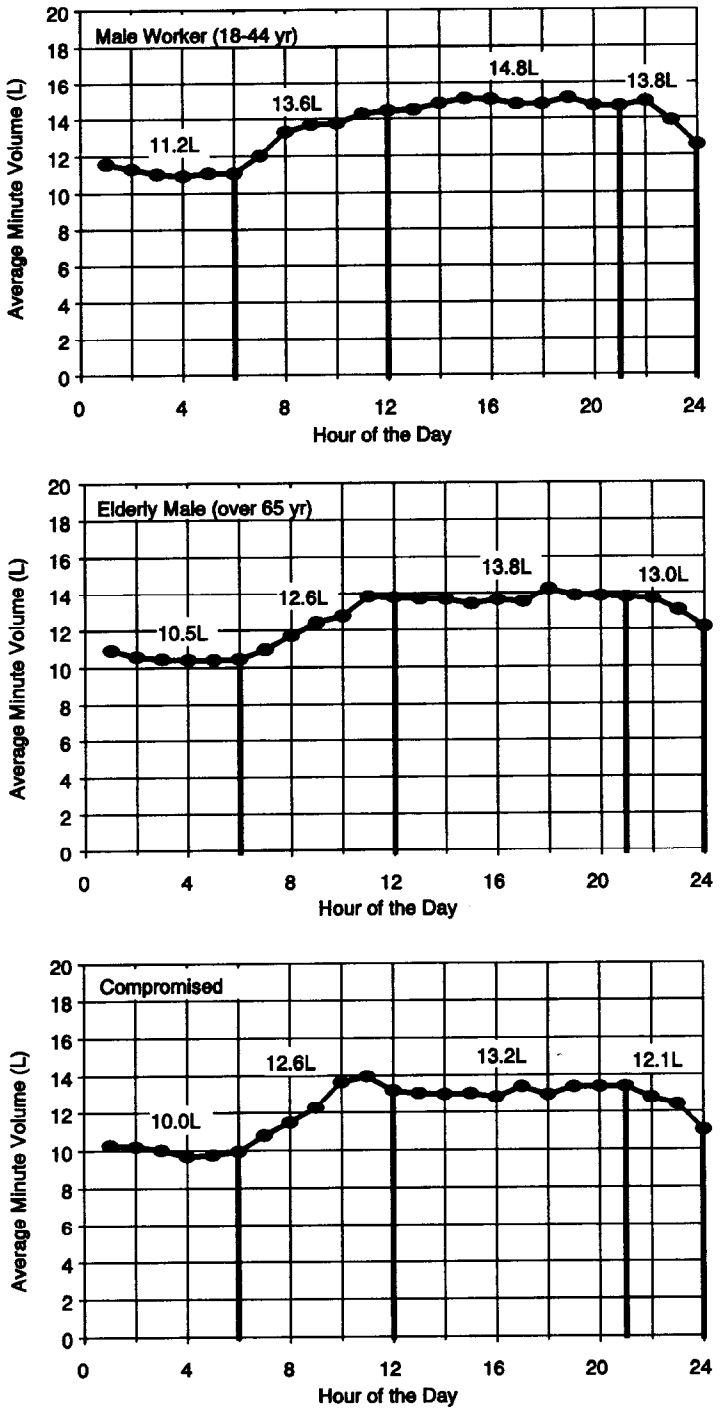
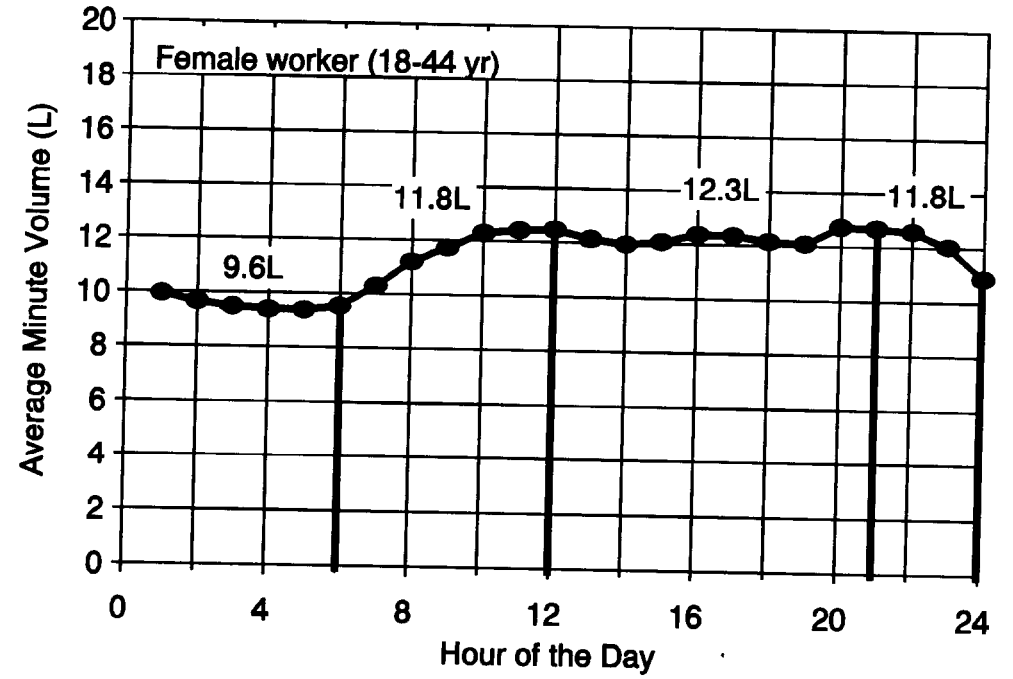


Figure 10B-1. Daily minute volume pattern for male demographic groups. The average rates for each of four time intervals are shown. Total volume (m^3) breathed in 24 hours for male worker (18-44 yr) is 19.4; for elderly male (over 65 yr) is 18.1; and for compromised subjects is 17.4.



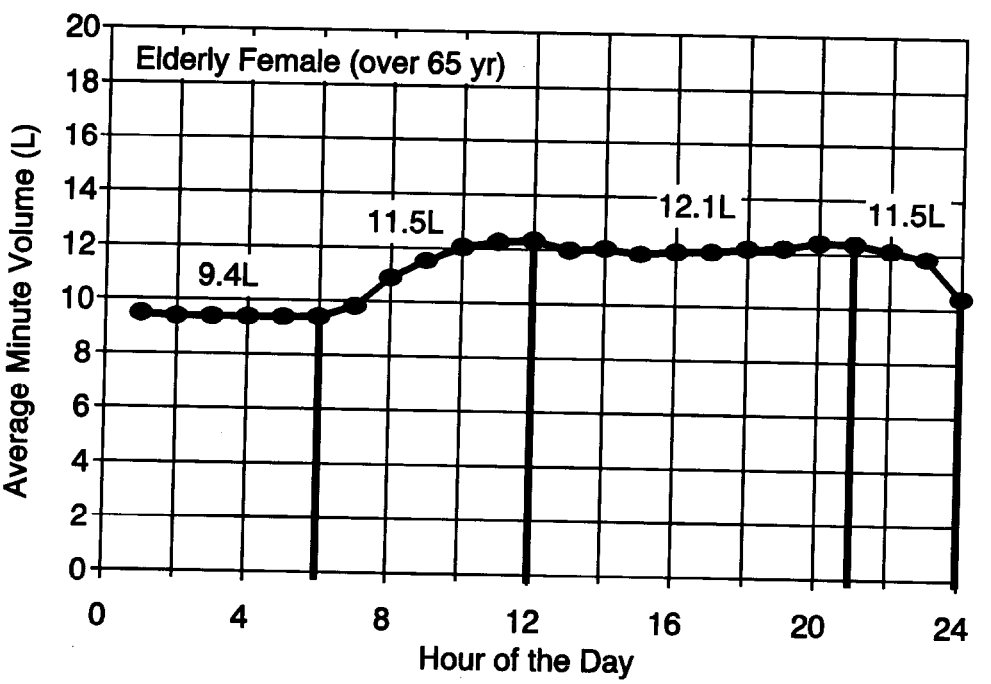


Figure 10B-2. Daily minute volume pattern for female demographic groups. The average rates for each of four time intervals are shown. Total volume (m^3) breathed in 24 hours for female worker (18-44 yr) is 16.5 and for elderly female (over 65 yr) is 16.1.

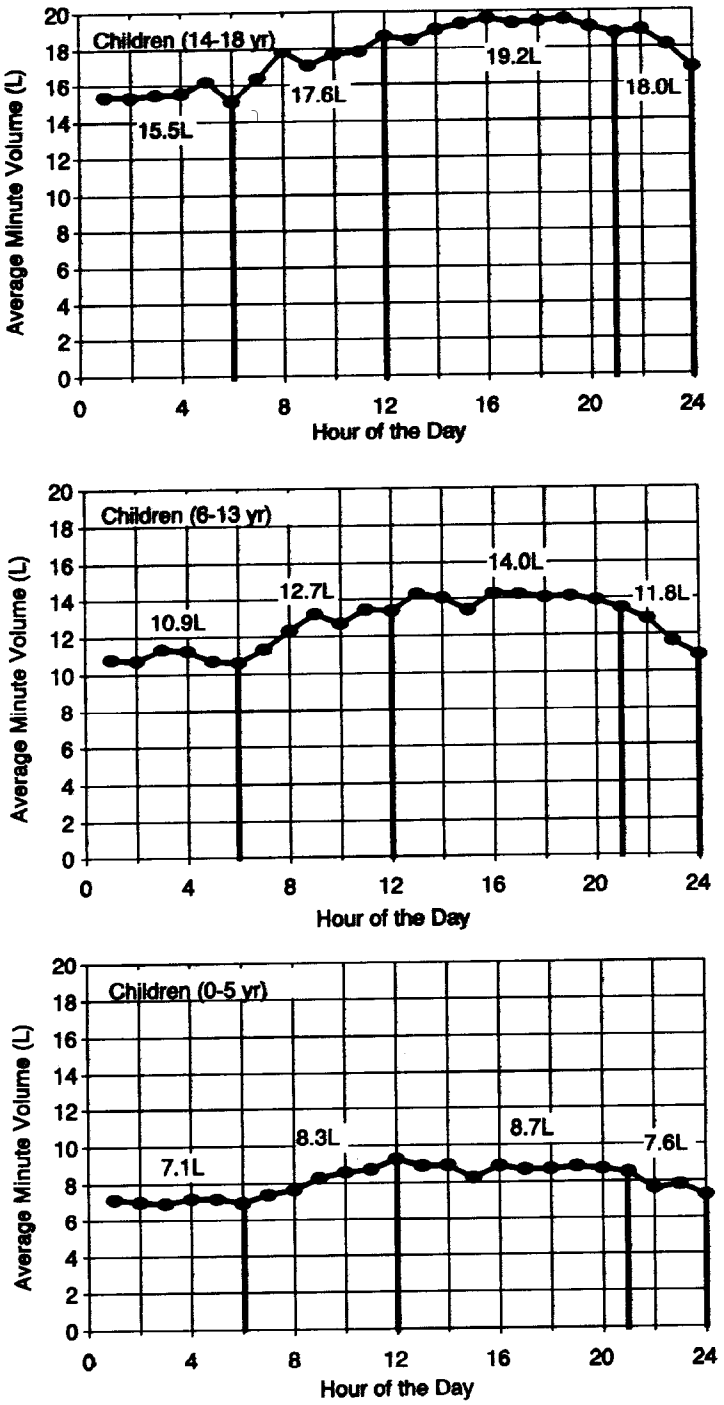


Figure 10B-3. Daily minute volume pattern for demographic groups for children. The average rates for each of four time intervals are shown. Total volume (m^3) breathed in 24 hours for children (0-5 yr) is 11.6; children (6-13 yr) is 18.2; and for children (14-18 yr) is 25.5.