

Table 1.3 Worker exposures to ethylene oxide during its use for industrial sterilization

Reference, location	Year of Sampling	Occupation or Operation	Type of sample	Measured or estimated concentration
Stayner <i>et al.</i> (1993), USA	1976-85	Sterilization of medical supplies and spices	Personal 8-h TWA, regression model estimates	mean, 5.5 ppm (range, 0.05-77.2 ppm)
Wong & Trent (1993), USA	Before 1978	Sterilizer operators	Estimates	16 ppm
	After 1978			4-5 ppm
	Before 1978	Production workers		5 ppm
	After 1978			2 ppm
Högstedt <i>et al.</i> (1979b), Sweden	1977	Factory for sterilizing hospital equipment	Area	2-70 ppm
			Breathing zone, (8-h TWA)	20 ppm
Högstedt <i>et al.</i> (1983), Sweden	1978	Sterilization room operators	Personal samples	2.4 ppm
			Area samples	1.3 ppm
			Personal samples	0.1 ppm
			Area samples	0.8 ppm
Pero <i>et al.</i> (1981), Sweden	----	Sterilization workers/lab technician	Short-term, 1 hour/day	5-10 ppm
		Packers	1 week average	0.5-1 ppm
Pero <i>et al.</i> (1982), Sweden	----	Sterilization workers, packer, truck drivers	8-h TWA	0.5-1 ppm
Hagmar <i>et al.</i> (1991), Sweden	1970	Sterilizers and packers		35-40 ppm
	1985			<0.2-0.75 ppm
	1970	Store workers and development engineers		5-20 ppm
	1985			<0.2 ppm
	1970	Repairmen, laboratory technicians, controllers and foremen		1-4 ppm
	1985			<0.2 ppm
Stolley <i>et al.</i> (1984), USA	Before 1980 1980-82	Sterilizer operators	8-h TWA	0.5-20 ppm <1 ppm

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Wolfs <i>et al.</i> (1983), Belgium	----	Industrial sterilization plant	8-h TWA	0.1–9.3 ppm
Tates <i>et al.</i> (1991), former German Democratic Republic	1985 1989	Medical equipment sterilization		average, 60 mg/m ³ average, 30 mg/m ³
Heiden Associates (1988b), USA	1987	Medical devices & diagnostic products sterilization	8-h TWA	>1 ppm (12.6% of workers) 0.5-1 ppm (13.9%) 0.3-0.5 ppm (26.7%) <0.3 ppm (46.8%)
			Routine short-term exposure	>10 ppm (10.7% of workers) 5-10 ppm (17.1%) <5 ppm (72.2%)
			Non-routine short-term exposure (1 day/week)	>10 ppm (5.1% of workers) 5-10 ppm (2.6%) <5 ppm (92.3%)
Daniel <i>et al.</i> (2004), USA	1993-2001 2002	Commercial sterilization plant	8-h TWA	1-10 ppm 1.3-2.4 ppm
Chien <i>et al.</i> (2007), PR China	2005	Medical supply sterilizers	8-h TWA Short-term exposure	7.4 ppm average, 27.6 ppm

ppm: parts per million; TWA: time weighted average