

Table 1.2. Worker exposures to ethylene oxide during its production

Reference, location	Year of Sampling	Occupation or Operation	Type of sample	Measured or Estimated concentration
Joyner (1964), USA	1960s	Production plant operators	Area samples Long-term estimate	0–55 ppm 5–10 ppm
Lovegren & Koketsu (1977a,b,c); Oser et al. (1978a,b 1979), USA	1977–78	Production plants (5)	Personal samples Area samples	ND-148 mg/m ³ ND-1.5 ppm
Hogstedt et al. (1979a), Sweden	1941–47 1950–1960s After 1963	Production plant		<25 mg/m ³ 10–50 mg/m ³ 1–10 mg/m ³
Thiess et al. (1981), Germany	1978–79	Production plant	2-hour area sample	<5 ppm
Flores (1983), USA	1979	Production plant		0.3–4 ppm
Currier et al. (1984), USA	1977–80	Production plant	Yearly TWA Peak exposure	<1 ppm (all jobs, except loading) 1.7 ppm (loading job) <20 ppm (all jobs, except loading) Up to 235 ppm (loading job)
van Sittert et al. (1985), the Netherlands	1974, 1978, 1980	Production plant	8-hour personal samples	<0.01 ppm
Högstedt et al. (1986), Sweden	1963–76 1977–82 1963–76 1977–82 1963–76 1977–82	Production workers Processing workers Maintenance & technical service workers	8-hour TWA estimates	9–15 mg/m ³ 2–4 mg/m ³ 6 mg/m ³ 2 mg/m ³ 2–6 mg/m ³ 1–3 mg/m ³
Karellova et al. (1987), Czechoslovakia	1982–84	Production plant		0–8.25 mg/m ³

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Heiden Associates (1988a), USA	1987	<u>Production plants (11)</u>			
		Production workers		0.7 mg/m ³ (range, 0.11–3.2) [n=402]	
		Maintenance workers		1.3 (range, 0.14–5.6) [n=439]	
		Supervisors		0.2 (range, 0.04–0.18) [n=123]	
		Distribution workers		2.9 (range, 0.36–6.8) [n=218]	
		Laboratory workers		0.7 (range, 0.12–4.3) [n=189]	
		Other workers		0.2 (range, 0.05–0.72) [n=97]	
		<u>Ethoxylation units (24)</u>			
		Production workers		0.4 mg/m ³ (range, 0.12–1.26) [n=640]	
		Maintenance workers		1.1 (range, 0.02–4.7) [n=191]	
		Supervisors		0.4 (range, 0.05–0.72) [n=54]	
		Distribution workers		0.7 (range, 0.20–2.7) [n=105]	
		Laboratory workers		0.4 (range, 0.02–0.9) [n=52]	
		Other workers		0.4 (range, 0.18–0.54) [n=24]	
Gardner et al. (1989) United Kingdom	1977	Production plants (4)	Almost all jobs Many jobs	<5 ppm <1 ppm	

n: number; ppm: parts per million; TWA: time weighted average