

## 2. Studies of Cancer in Humans

In a case-control study at eight haematology departments in France, Hours *et al.* (1996) identified all locally resident patients aged 25–75 years who had acute myeloid leukaemia or myelodysplasia with an excess of blastoids that was newly diagnosed during January 1991–April 1993. The controls were patients from the same hospitals, matched for age ( $\pm 3$  years), department of residence and nationality (French or other), who had never been hospitalized for cancer or an occupational disease. All subjects were interviewed in hospital by a trained investigator and were asked about their occupational history, including details of tasks and products handled. An occupational hygienist who was blinded to the case/control status reviewed the information and classified the subject for exposure to each of four categories of glycol ethers, as well as to various potentially confounding substances. Analysis was by conditional logistic regression, and was based on 198 case-control pairs. After adjustment for level of education, exposure to the group of glycol ethers that included 2-butoxyethanol was associated with an odds ratio of 0.64 (95% confidence interval [CI], 0.31–1.29), based on 20 exposed cases and 27 exposed controls. [The Working Group noted that the exposure category analysed included propyl and butyl glycol ethers. Furthermore, the high prevalence of exposure among controls (27/191) suggests that the index of exposure used was relatively non-specific.]

**Table 15. Occupational exposure limits and guidelines for 2-butoxyethanol**

Country or region	Concentration (ppm) [mg/m <sup>3</sup> ]	Interpretation	Carcinogen classification
Australia	25	TWA	Sk <sup>a</sup>
Austria	20 [100] 40 [200]	TWA STEL	
Belgium	20 50	TWA STEL	Sk
Canada			
(Alberta)	20 75	TWA STEL	Sk Sk
(British Columbia)	25	TWA	Sk
(Ontario)	20	TWA	Sk
(Quebec)	25	TWA	Sk
Brazil	39	TWA	
Czech Republic	[100] [200]	TWA STEL	Sk
Denmark	20	TWA	Sk
European Commission	20 50	TWA STEL	Sk
Finland	20 [98] 50 [250]	TWA STEL	Sk
France	2 [9.8] 30 [147.6]	TWA STEL	Sk
Germany (MAK)	20 [98] 80	TWA Ceiling	Sk
Hong Kong	25	TWA	Sk
Ireland	20 50	TWA STEL	Sk
Italy	20 [97]	TWA	
Malaysia	20	TWA	Sk
Mexico	26 75	TWA STEL	Sk
Netherlands	20 40	TWA STEL	Sk
New Zealand	25	TWA	Sk
Norway	10	TWA	Sk
Poland	[98] [200]	TWA STEL	Sk
South Africa	25	TWA	Sk
Spain	20 50	TWA STEL	Sk
Sweden	10 20	TWA STEL	Sk
Switzerland	20 [100] 80 [400]	TWA STEL	Sk

**Table 15 (contd)**

Country or region	Concentration (ppm) [mg/m <sup>3</sup> ]	Interpretation	Carcinogen classification
United Kingdom (OES)	25	TWA	Sk
	50	STEL	Sk
USA			
ACGIH (TLV)	20	TWA	A3 <sup>b</sup>
NIOSH (REL)	5	TWA	Sk
OSHA (PEL)	50	TWA	Sk

From Arbejdstilsynet (2002); Health & Safety Executive (2002); Työsuojelusäädöksiä (2002); Deutsche Forschungsgemeinschaft (2003); Suva (2003); ACGIH Worldwide (2004); European Union (2004); INRS (2005)

MAC/MAK, maximum allowable concentration; OES, occupational exposure standard; PEL, permissible exposure limit; REL, recommended exposure limit; STEL, short-term exposure limit; TLV, threshold limit value; TWA, full-shift time-weighted average

<sup>a</sup> Sk, skin notation

<sup>b</sup> A3, confirmed animal carcinogen with unknown relevance to humans