

LEATHER TANNING AND PROCESSING (Group 3)

Evidence for carcinogenicity to humans (*inadequate*)

Early studies of cancer risks possibly associated with leather industries provide little information specifically related to workers in tanneries. There was no evidence to suggest an association between leather tanning and nasal cancer¹. Following the observation of an increased risk of nasal cancer among boot and shoe manufacturers, possibly associated with exposure to dust from leather tanned by a particular process², a study was designed to examine the possible cancer risk carried by different methods of leather tanning. The mortality experience of two groups of men working in tanneries in 1939 was compared to that of the population of England and Wales, and for no cause of death was a statistically significant increase above expectation found. Among the 573 men employed in tanneries using a process with vegetable extracts, one death from nasal cancer was observed (0.21 expected); among 260 employees using a tanning process with chromium salts (tri- and hexavalent; see p. 165), one death from soft-tissue tumour (0.07 expected) was reported³.

In a Swedish study, a slight increase in mortality from stomach cancer and a three-fold, significantly increased risk for cancer of the pancreas were found to be associated with the occupational titles 'tanners' and 'tannery workers' as recorded in the registry of deaths and burials of a parish where a tannery had been in operation from 1873 to 1960. Tannery work involved exposure to chromium and, probably, to chlorophenols (see p. 154); smoking was an unlikely explanation for the findings, but the contribution of various dietary habits could not be ruled out⁴. Suggestions of increased risks for intestinal cancer and lung cancer and for cancer of the tonsils were imputed by a mortality study of workers employed in a tannery plant using chromium salts and synthetic tannins⁵. An association between lung cancer and tanning was also suggested by a study of incident cases in the UK⁶ and by a study of cancer deaths among shoe and leather workers in the USA, in which the estimated risk for tannery workers relative to a group of workers classified as nonexposed was 4.2, which was statistically significant. Chromium and arsenicals (see p. 100) were mentioned as possibly contributing to the excess of lung cancer⁷. Significantly increased lung cancer mortality was also found among a group of fur tanners in the USA, who had probably been exposed to chrome (hexavalent) tanning agents⁸.

In a study of bladder cancer and occupation, a relative risk of 1.5 was found for leather tanners, which is not statistically significant¹. No significant excess of bladder cancer was found in another study of tanners in the UK⁹. In two of three areas in which a collaborative study of environmental risk factors for bladder cancer was conducted, a significant association with employment in 'leather' was found; the term 'leather' comprised the leather and tanning industries, the manufacture of leather goods and shoemaking¹⁰.

In a cohort of 1629 leather tanners in Sweden, eight cases of kidney cancer were observed, while 3.4 would have been expected from regional rates¹¹. The hypothesis of this association was not supported by another study¹².

References

- ¹IARC Monographs, 25, 201-247, 1981
- ²Acheson, E.D., Pippard, E.C. & Winter, P.D. (1982) Nasal cancer in the Northamptonshire boot and shoe industry: is it declining? *Br. J. Cancer*, 46, 940-946
- ³Pippard, E.C., Acheson, E.D. & Winter, P.D. (1985) Mortality of tanners. *Br. J. ind. Med.*, 42, 285-287
- ⁴Edling, C., Kling, H., Flodin, U. & Axelson, O. (1986) Cancer mortality among leather tanners. *Br. J. ind. Med.*, 43, 494-496
- ⁵Puntoni, R., Valerio, A., Cresta, E., Filiberti, R., Bonassi, S. & Vercelli, M. (1984) Mortality study in a tannery (Ital.). *Med. Lav.*, 75, 471-477
- ⁶Coggon, D., Pannett, B., Osmond, C. & Acheson, E.D. (1986) A survey of cancer and occupation in young and middle aged men. I. Cancers of the respiratory tract. *Br. J. ind. Med.*, 43, 332-338
- ⁷Garabrant, D.H. & Wegman, D.H. (1984) Cancer mortality among shoe and leather workers in Massachusetts. *Am. J. ind. Med.*, 5, 303-314
- ⁸Sweeney, M.H., Walrath, J. & Waxweiler, R.J. (1985) Mortality among retired fur workers. Dyers, dressers (tanners) and service workers. *Scand. J. Work Environ. Health*, 11, 257-264
- ⁹Cartwright, R.A. & Boyko, R.W. (1984) Kidney cancer among leather workers. *Lancet*, i, 850-851
- ¹⁰Morrison, A.S., Ahlbom, A., Verhoek, W.G., Aoki, K., Leck, I., Ohno, Y. & Obata, K. (1985) Occupation and bladder cancer in Boston, USA, Manchester, UK, and Nagoya, Japan. *J. Epidemiol. Commun. Health*, 39, 294-300
- ¹¹Malker, H.R., Malker, B.K., McLaughlin, J.K. & Blot, W.J. (1984) Kidney cancer among leather workers. *Lancet*, i, 56
- ¹²Acheson, E.D. & Pippard, E.C. (1984) Kidney cancer among leather workers. *Lancet*, i, 563