

FILE NAME: Asbestos Textile Product Use (ATPU)

DATE: мфuu ! dzЭ нл

DOC#: АТРУллн

DOCUMENT DESCRIPTION: . I·N·Njè / I·áúfŜY·yLyŔŜÈ 2Ŧ ! NjÚlŔfŜă Ŧ2Nj ! äŔŜăú2ă
çŜÈúŦfŜ 9ÈLJ2ădzNjŜă

+ Cross, 1972 ILO Helsinki conf.

Asbestos Textile (Cloth and Safety Clothing) Exposures

1. Asbestos Protective Clothing -- literature review and plea to MD legislature for a ban on sale of asbestos "safety clothing" (written by Dr. Grace Ziem in 1984).

2. Williams, Med. Bull. Vet. Admin. 18: 250 (1942).
Asbestosis in an "aluminum melter" who wore large asbestos aprons and gloves, and worked around others who did the same work.

3. Bamber and Butterworth, Ann. Occ. Hyg. 13: 77 (1970).
Asbestos apron and "gauntlets" (gloves) wearers sustained exposures at head level averaging 3.55 f/cc, and the 2 f/cc limit could be exceeded "by a factor of 6 or more" where "vigorous work is undertaken" (78). So the use of asbestos garments commonly used in industry could cause levels requiring use of a respirator (79).

4. Lumley, Ann. Occ. Hyg. 14: 285 (1971).
Asbestos dust levels inside firefighting helmets with chrysotile covers gave exposures as high as 2.3 f/cc (new helmet with unlined asbestos cloth cover). Concluded that exposures would average below 2 f/cc because helmets not worn continuously.

5. Harries, Ann. Occ. Hyg. 14: 241 (1971).
Shipyard asbestos exposure study. "Ripping untreated cloth is a vigorous procedure and produced general dust concentrations of 33 f/cc and breathing zone levels of 7 f/cc." (245) These were mean values, with ranges of 2-43 f/cc and 0.3-16.5 f/cc, respectively (table on p. 246). "The use of asbestos cloth for maintaining heat in metal to be welded produced mean dust concentrations of 8.7 f/cc. Brushing welding slag off asbestos cloth which had been used to protect equipment during welding and burning was accompanied by mean concentration of 76.6 f/cc" (246-47). The full ranges for these activities are in Table 7, as 0-30 f/cc and 0-660 f/cc respectively (247). The above operations are unlikely to reflect significant contaminant exposures from pipecovering and block that was used with cloth in insulating work. Dust-suppressed asbestos cloth had shown much lower exposures and was in general use by this time for fire protection (248); it had been repaced by asbestos free materials in pipe covering (249).

Closing note says this part of Harries' M.D. thesis. Wagoner has thesis and says it refers to cloth tearing as causing up to 73 f/cc. There may be other operations named, such as removing cloth from shipping cartons.

Harries now works for Rank, McDougall & Hovis, a flour company, according to Nancy Tait.

6. Cross, Safety and Health in Shipbuilding and Ship Repairing (ILO), pp. 93-101, 1972.

Asbestos cloth handling described as causing exposures of 5-10 f/cc for conventional cloth, 1-3 f/cc for dust-suppressed cloth, and 0.2-1.5 f/cc for new process cloth (96). Source of data is

Cross' own outfit, Asbestosis Research Council. Cross may still be living and might provide more info on these otherwise unpublished tests.

7. Schneider, Ann. Occ. Hyg. 15: 425 (1972).

Says liquid-dispersed chrysotile cloth is less dusty, has been made "for some time" by T & N and a German firm (Rex Asbestwerke). Describes exposures in Sweden where wetted cloth was handled and used in pipecovering (0.4-1.9 f/cc). Danish study here involved manufacture of insulation mattresses using dry liquid-dispersed cloth. Of 10 samples where exposure occurred the highest value was 0.9 f/cc of which one-third of the fibers were non-asbestos.

8. Gibbs, Ann. Occ. Hyg. 18: 143 (1975).

Exposures from wearing asbestos safety garments showed increasing exposures with age of garments worn (146), with overall mean exposures of 2 f/cc (plant 1). Another series gave higher values (plant 2) also for men wearing coats, gloves, and hoods. When these men were dressed in safety clothing their exposures virtually all exceeded 10 f/cc (range 9.9-26.2 f/cc); 2 3/4 hrs so dressed yielded daily average exposures of 4.7 f/cc (147). Exposures exceeded the US excursion level of 10 f/cc set by OSHA in 1972 (148). Scanning electron microscopy showed that most asbestos fibers were too short and/or thin to be counted by optical microscopy (147).

9. Fenker, Die Berufsgenossenschaft pp 171-176 (May, 1975).

More data on asbestos protective clothing. My copy is poor, and the exposure conditions should be derived from a competent translation of the German. Table gives mean asbestos fiber concentrations under 5 f/cc (175); my copy missing last page of conclusions and refs.

10. Sors et al., Arch. Malad. Prof. 40: 987-995 (1979). From CIS Abstracts (ILO); partial translation by B. Castleman.

Blast furnace operator exposure from wearing safety garments 0.7-3.7 f/cc; slag over operators had exposures 10.6 to 26.1 f/cc. The authors discussed cases of pleural mesothelioma and pulmonary asbestosis with calcified pleural plaques (abstract) associated with wearing asbestos gloves. (French article)

11. Riediger, Cahiers de Notes Docum. 96: 425 (1979). French. Title is, "Asbestos protective clothing: release of dust during fabrication and use". Cited in Loi 1982 below.

12. Samimi and Williams, AIHA Journal 42: 870 (1981).

For asbestos glove use, time averaged concentrations ranged from 0.95-11.74 f/cc in an exposure chamber. Lower values were recorded at breathing zones for use of the gloves in a biology lab (0.07-0.99 f/cc). Intermittent glove use by laboratory workers gave exposures up to 2.93 f/cc. Contamination on the order of 10,000 f/square cm. was reported from just laying the gloves down, and from measuring hand surface loading (874).

Authors "strongly urge" use of asbestos substitutes, which they say are available (874).

13. Anderson et al. (GCA Corp.) Analysis of Fiber Release from Certain Asbestos Products (Draft Final Rept), pp. 48-68 (Dec. 1982).

The only source not listed above is Raybestos-Manhattan study allegedly showing exposures below 0.05 f/cc for cutting untreated lagging cloth (59). Ref. (22) cited is not from R-M, it's an EPA report (68).

14. Konetzke et al., Asbestos-Induced Mesotheliomas... Prevention of Occupational Cancer - International Symposium, ILO, 1982, pp 204-211.

Of 915 mesothelioma cases in E. Germany, "wearing of protective clothing made from asbestos textiles (accounted for) 6.9%" (204); this was 23 cases (207).

15. Loi et al. G. Ital. Med. Lav. 4/3: 117-120 (1982). In Excerpta Medica abstracts Sec. 35, Vol. 13.7 pp. 405-406
7/49 metallurgic plant workers observed 10-23 years from onset of exposure had radiological evidence of asbestosis. Asbestos "curtains" used to prevent too rapid cooling of large welded objects; asbestos overalls were also used. Mean concentration in the pant given as 15 f/cc (fibers longer than 5 microns). Entire paper is in English.

16. US Steel letter to Dr. G. Ziem, Dec. 1, 1983, on substitution of asbestos protective clothing with other materials.

17. Castleman, Asbestos: Medical and Legal Aspects (1st Ed.), 1984, p. 541.

Reports that the state of MD banned sale of asbestos-containing protective clothing in 1984.

18. US Environmental Protection Agency, "Asbestos: Proposed Mining and Import Restrictions..." Fed. Reg. (Jan. 29, 1986). EPA proposes to ban a number of categories of asbestos products including asbestos clothing (3739, last col.).

19. Castleman, Asbestos: Medical and Legal Aspects (2d Ed.), pp 470-471, (1986).

Refers to documentation of asbestos cloth research conducted for Raybestos-Manhattan in the early 1970s.