

prophylaxis for visitors is not justifiable.

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Formaldehyde and nasal cancer mortality

It has long been known that formaldehyde is an irritant, causing running noses and itching eyes, as well as chronic respiratory problems.¹ Results of studies in animals have raised concerns recently about the possible carcinogenic effects on humans of this ubiquitous chemical.

Long-term exposure to formaldehyde at a dose of approximately 15 parts per million is associated with the development of nasal cancers in Sprague-Dawley and Fischer rats.^{2,3} It is possible that some of the resultant tumours are due to a combination of exposures to formaldehyde and hydrogen chloride,⁴ both of

which are often present in laboratories² and may spontaneously combine to form bis-chloromethyl ether, a known carcinogen.^{5,6} However, there is strong evidence for an association between the inhalation of formaldehyde vapour and carcinogenesis in rats.⁷

Unfortunately, studies of formaldehyde exposure and cancer occurrence in humans are rare. One such study found no association between occupational exposure to formaldehyde and the development of nasal cancer.⁸

Since 1950 the Ontario Cancer Registry has recorded cancer mortality in the province, and since the late '60s it has recorded occupation in a machine-readable form. From 1972 to 1979 the 1971 "Occupational Classification Manual" was used to code occupation. During this time the registry recorded no deaths due to cancer of the nasal cavity among any of the following groups potentially exposed to formaldehyde in the course of their usual occupation: physicians, dentists, morticians,

and non-MD anatomists and pathologists. It seems that if there is a risk of nasal cancer associated with inhalation of formaldehyde vapour it is small.

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References

1. YODAIKEN RE: The uncertain consequences of formaldehyde toxicity. *JAMA* 1981; 246: 1677-1678
2. SELLAKUMAR AR, ALBERT RE, RUSCH GM, KATZ GV, NELSON N, KUSCHNER M: Inhalation carcinogenicity of formaldehyde and hydrogen chloride in rats (abstr). *Proc Am Assoc Cancer Res* 1980; 21: 106
3. SWENBERG JA, KERNS WD, MITCHELL RI, GRALLA EJ, PAVKOV KL: Induction of squamous cell carcinomas of the rat nasal cavity by inhalation exposure to formaldehyde vapor. *Cancer Res* 1980; 40: 3398-3402
4. FRANKEL LS, MCCALLUM KS, COLLIER L: Formation of bis(chloromethyl) ether from formaldehyde and hydrogen chloride. *Environ Sci Technol* 1974; 8: 356-359
5. KUSCHNER M, LASKIN S, DREW RT, CAPIELLO V, NELSON N: Inhalation carcinogenicity of alpha halo ethers. III. Lifetime and limited period inhalation studies with bis(chloromethyl) ether at 0.1 ppm. *Arch Environ Health* 1975; 30: 73-77
6. FIGUEROA WG, RASZKOWSKI R, WEISS W: Lung cancer in chloromethyl methyl ether workers. *N Engl J Med* 1973; 288: 1096-1097
7. BLACKWELL M, KANG H, THOMAS A, INFANTE P: Formaldehyde: evidence of carcinogenicity. *Am Ind Hyg Assoc J* 1981; 42: A34, A36, A38

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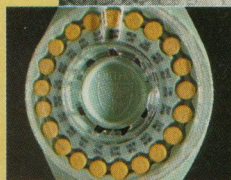
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8. JENSEN OM: Cancer risk from formaldehyde (C). *Lancet* 1980; 2: 481-482

9. *Occupational Classification Manual*, Dominion Bureau of Statistics, Ottawa, 1971

Rickets

CMAJ readers may be interested in a case of rickets recently referred to a public health nurse and community nutritionist in our health department.

During a routine physical examination a 14-month-old girl was found to have rickets. She had been breast-fed for 8 months without vitamin supplementation and had then been switched to 2% milk. According to her mother the girl's intake of milk was very low. The mother was lactose intolerant and did not drink milk.

According to Dr. S.W. Kooh of the Hospital for Sick Children in Toronto this is becoming an increasingly common story. The resurgence of vitamin-D-deficiency rickets seems to be a North-America-wide phenomenon, as evidenced by several documented outbreaks of rick-

ets in children fed strict vegetarian diets.

This case emphasizes the importance of giving all breast-fed infants a vitamin D supplement and of ensuring an adequate calcium intake when the child is weaned. If milk intake cannot be influenced a calcium supplement as well as vitamin D should be prescribed.

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[An article by Dr. Kooh and associates entitled "Nutritional rickets in vegetarian children" appeared in the Jan. 15, 1983 issue of *CMAJ*.—Ed.]

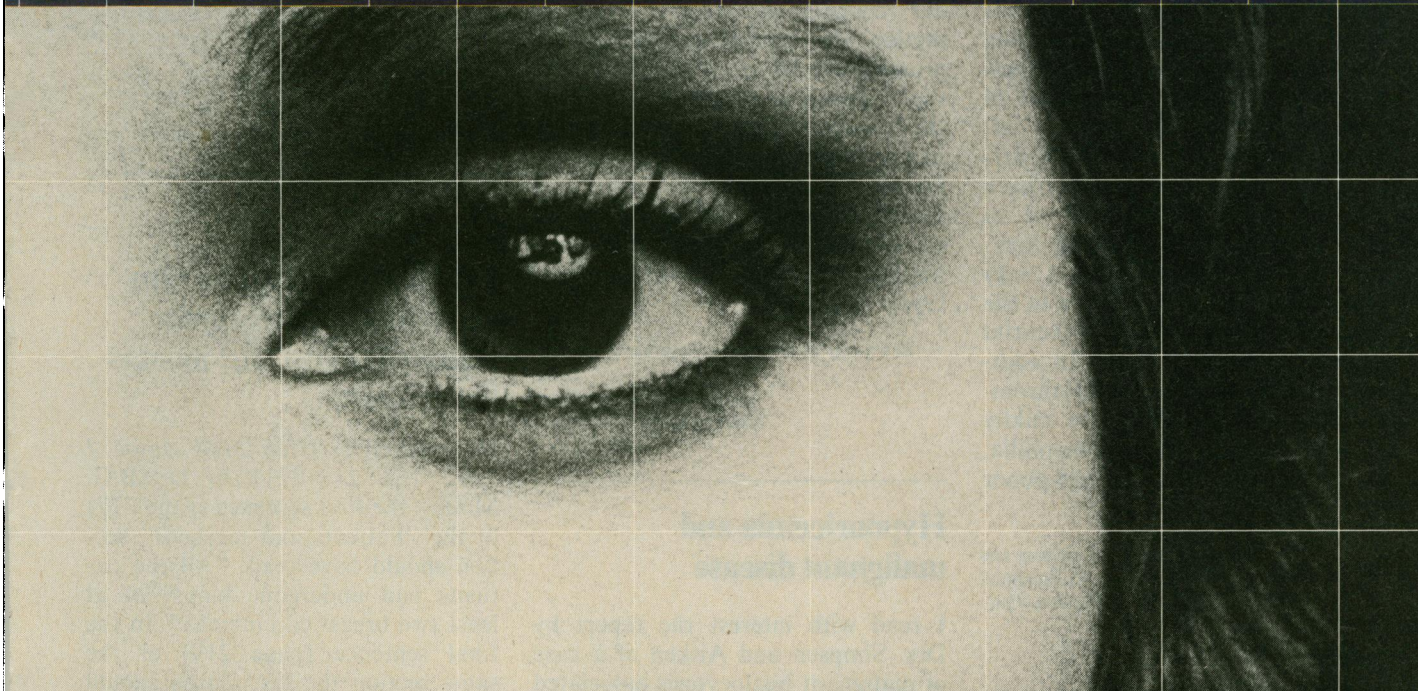
Acute fatty liver of pregnancy

I have no wish to detract from the important observations by Drs. Korula, Malatjalian and Badley on acute fatty liver of pregnancy (AFLP) (*Can Med Assoc J* 1982;

127: 575-578). Nevertheless, I must comment on their use of prothrombin complex concentrate (factor IX concentrate). I recognize that they wished to correct the vitamin-K-resistant coagulopathy prior to surgery. However, I would have recommended continuing the use of the single-donor products fresh frozen plasma and cryoprecipitate for the following reasons.

First, prothrombin complex concentrates have been shown to contain increased amounts of activated coagulation factors and consequently have been associated with thrombotic complications.^{1,2} In fulminant hepatic failure the clearance of activated clotting factors is reduced; consequently, as the authors emphasized, consumption coagulopathy can occur. Therefore, the use of prothrombin complex concentrates should be avoided in AFLP.

Second, in Korula and colleagues' patient the results of testing for hepatitis B surface antigen and antibody were negative, and the patient denied having previously received



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