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Sniffing Syndrome

SIR,—Your leading article on the "Sniffing Syndrome" (24 April, p. 183) referred to deaths among American teenagers who had deliberately inhaled fluorinated hydrocarbon aerosol propellants and quoted a paper¹ in which it was claimed that these propellants caused bradycardia, atrioventricular block, and T-wave abnormalities in asphyxiated mice. There is no reason to doubt that deliberate inhalation of large volumes of fluorinated hydrocarbons is hazardous, but the mouse experiments you quoted were poorly designed and later work² has shown that the results were due to hypoxia alone and not to any other toxic property of the propellant gas.

The problem that has caused concern is the ability of fluorinated hydrocarbons to sensitize the heart to the arrhythmia provoking action of adrenaline.³ Conscious dogs inhaling a 1% mixture of fluorocarbon-11 in air for five minutes developed ventricular tachycardia or fibrillation when challenged with intravenous bolus doses of 5 to 8 µg/kg of adrenaline. Unpublished work by Swan at I.C.I. has shown that the plasma concentrations of fluorocarbon-11 that sensitize the dog heart must exceed 10 µg/ml. These are about 12 times higher than those which I and my colleagues⁴ observed in man following the use of placebo isoprenoline inhalers. Another safety factor is that little of the inhaled isoprenoline is absorbed to exert an effect upon the heart,⁵ and that isoprenoline is much less potent in provoking arrhythmias in sensitized dog hearts than adrenaline. The position with regard to patients with asthma using normal doses of inhalers appears very reassuring though further work is in progress.

In the case of domestic aerosol packs there appears to be less cause for concern, apart from deliberate and flagrant abuse such as

took place in the U.S.A. when teenagers inhaled large volumes in a single breath from a plastic bag which had been filled from the cannister. Even if the whole contents of a cannister such as a hair spray were emptied into a small, poorly ventilated bathroom the dilution factor would be so great that the concentration would not approach the levels found in patients who use inhalers to relieve asthma. There is a mouth deodorant aerosol spray sold by a door-to-door cosmetic firm, but it has a metering valve like those on the asthma inhalers and would be most unlikely to give rise to any problem in normal use.—I am, etc.,

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¹ Taylor, G. J., and Harris, W. S., *Journal of the American Medical Association*, 1970, 214, 81.

² Azar, A., Zapp, J. A., Reinhardt, C. F., and Stopps, G. J., *Journal of the American Medical Association*, 1971, 215, 1501.

³ Reinhardt, C. F., Azar, A., Maxfield, M. E., Smith, P. E., jun., and Mullin, L. S., *Archives of Environmental Health*, 1971, 22, 265.

⁴ Dollery, C. T., Davies, D. S., Draffan, G. H., Williams, F. M., and Conolly, M. E., *Lancet*, 1970, 2, 1164.

⁵ Blackwell, E. W., Conolly, M. E., Davies, D. S., and Dollery, C. T., *British Journal of Pharmacology*, 1970, 39, 194F.

SIR,—Your leading article on the "Sniffing Syndrome" (24 April, p. 183) is timely. Trichloroethylene sniffing not only results in damage to health but can also cause death.¹

A 19-year-old youth died after swimming two lengths of a local pool. Before entering the water he had sniffed industrial trichloroethylene for half an hour; he was a regular sniffer of the solvent. At necropsy very little was found apart from a small right coronary artery and moderate aortic hypo-

plasia. Death was sudden and thought to be due to a cardiac arrhythmia, particularly ventricular fibrillation. The toxic effect of the trichloroethylene might well have been potentiated by the effort required to swim; this boy held his breath while swimming.

This experience agrees closely with the American finding of sudden death in teenagers following physical effort and sniffing.²

The dangers of sniffing and its consequences should be stressed to young people and industrial workers.—I am, etc.,

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¹ Cragg, J., and Castledine, S.A., *Medicine, Science and the Law*, 1970, 10, 112.

² Bass, M., *Journal of the American Medical Association*, 1970, 212, 2075.

Decline of the Necropsy

SIR,—In your leading article (24 April, p. 181) "Decline of the Necropsy" you say that the coroner system has condemned hospital pathologists to neglect more important hospital duties by carrying out large numbers of necropsies on perfectly natural deaths occurring without any suspicion of foul play.

May I make two comments on this mischievous assertion? In the first place those cases were examined by general practitioners prior to the inception of the National Health Service and the pressure exerted upon coroners, through the Home Office, to employ trained pathologists for this work originated among the pathologists themselves. They are not therefore "condemned" to do this work; they are very well paid for these "hack operations," as you call them, and the majority are only too pleased to have this additional remuneration.

Secondly, they are only known to be