

Letters to the Journal

TOXICITY OF DECOMPOSITION PRODUCTS OF "TEFLON"

To the Editor:

In the October 21 issue of the *Canad. M. A. J.* (85: 955, 1961) there was a letter describing the toxicity of thermal decomposition products of "Teflon". This was described as being a rare hazard, but I wonder if this could become a more common danger owing to the recent widespread distribution of a household product, "T-FAL" Teflon-lined frying pans. To my knowledge nothing has been mentioned about any hazard from overheating these pans. If such a hazard as producing the toxic gas, perfluoroisobutene, by scorching one of these pans does exist, then adequate warning should be given to the public, and possibly the product should be withdrawn from the market.

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[The following letters may answer Dr. Houston's query, at least in part.—EDITOR]

To the Editor:

I think that you should check further the "case" described in Dr. G. J. Mack's letter headed "Toxicity of Decomposition Products of Teflon".

I doubt that the B.C. Fire Chiefs' Association *Notes and News* was providing "pukka gen" in this instance.

There is on reliable record very little if any evidence that Teflon is as potentially toxic as your editorial and Dr. Mack's letter state.

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To the Editor:

I am interested in the letter of Dr. G. J. Mack concerning this question (*Canad. M. A. J.*, 85: 955, 1961). In recent months there has been a great deal of speculation and discussion about the toxicity of the decomposition products of fluorocarbon resins. I believe the following points should be noted:

1. Evidence of lung damage from such decomposition products presently exists only in animals under experimental conditions.

2. In humans, cases of the so-called "polymer fume fever" following inhalation of decomposition products of these resins are well established. This condition is a self-limiting one similar in appearance to metal fume fever. There is no evidence that lung damage is produced in this condition.

3. To my knowledge there has been no fatality or case report with lung damage recorded in the medical literature from the inhalation of these thermal decomposition products. There have been, however, repeated references in recent months to an alleged death in a worker in the manner described by Dr. Mack. I have not been able to establish this as anything more than a rumour.

I would greatly appreciate it if Dr. Mack could provide clinical details of the case to which he refers.

I would suspect, however, that he has quoted the word-of-mouth story which I have mentioned above.

I do not wish to minimize the potential hazard which may exist from inhalation of fluorocarbon decomposition products. The available evidence, however, indicates that the use of these resins has not resulted in serious trouble. In addition, these resins provide unique uses of great value because of their special properties.

In this case, also, it seems to me that it would have been advisable to check into this question more fully prior to publication of this information, particularly in view of the unfounded rumours being circulated. May I also draw attention to one minor error in the editorial—Dacron is a polyester resin fibre and not polyethylene.

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To the Editor:

I would greatly appreciate the opportunity to inform readers of the *Canadian Medical Association Journal* concerning a practical approach to the evaluation of the hazard incurred by the use of Teflon.

In my position as Technical Services Engineer of the Industrial Accident Prevention Associations, I have been aware of the hazards attributed to Teflon for over three years. Because of the serious results purported, an investigation was necessary.

In assessing a hazard, two considerations are paramount. First, how serious will the accident be, if it occurs? Secondly, what is the degree of likelihood of the accident occurring?

My study indicates two forms of toxicity from Teflon. The more common form, "polymer fume fever", which resembles metal fume fever, is covered by Fairhall on page 254 of his book "Industrial Toxicology". The second form of toxicity is that covered by Dr. Mack's letter and reported by Dr. Zapp of du Pont's Haskell Laboratories in 1955.

With respect to seriousness, the fume fever, although unpleasant, is not serious. The decomposition products would cause a serious situation. With respect to past experience, Fairhall reports cases of fume fever, but no authoritative report exists of the occurrence of the second form of illness.

This is reasonable, as the fume problem has been recognized and fabricators using this material use normal exhaust ventilation to remove the fumes as formed. All authorities are agreed on the need for protection when the material is deliberately heated to the elevated temperatures necessary for extrusion, etc.

However, the mechanism for the hazard from decomposition does not conform to normal plant situations. Considering incineration, Teflon does not burn. Therefore, to be heated to 700° F. or beyond, where decomposition should become a problem, it must be present with considerable amounts of combustible material. These will themselves, in their burning, generate considerable quantities of toxic combustion