“Popcorn worker’s lung” in Britain in a man making potato crisp flavouring

D J Hendrick

ABSTRACT
The case history is presented of a patient who developed “popcorn worker’s lung” following exposure to 2,3-butanedione (diacetyl). Other similar cases are reviewed, and it is concluded that “food flavourer’s lung” may be a more suitable diagnostic label.

Evidence that bronchiolitis obliterans could result from inhaled popcorn flavouring ingredients was first published in 2002. Its recognition in eight former workers from a single American factory packaging popcorn for microwave use led to the appellation “popcorn worker’s lung”. It was sufficiently severe in four cases that lung transplantation was considered. Investigations by the National Institute for Occupational Safety and Health showed that the prevalence of fixed airway obstruction among continuing employees was 3.5-fold that expected; that bronchiolitis obliterans could be detected in workers from four of five subsequently studied microwave popcorn plants; and that a prominent ingredient providing a butter taste (the oily organic chemical 2,3-butanedione (diacetyl)) could cause airway necrosis when inhaled by laboratory animals.

Diacetyl has also been used in a factory in Britain as a flavouring ingredient for potato crisps, and a member of the workforce developed, subacutely, fixed airway obstruction consistent with bronchiolitis obliterans. His case illustrates the likelihood that popcorn worker’s lung is occurring in other countries than the USA and in other settings than plantation.

The development, over a few months, of fixed airway obstruction of moderate severity is most readily attributed to bronchiolitis obliterans, and exposure to diacetyl provides the most likely explanation. Although no other examples had been published from outside the USA by the time this case came to light, a paper has very recently described four Dutch cases from a chemical plant.
making diacetyl. “Popcorn worker’s lung” is consequently more widespread than is generally supposed, and is occurring in settings unrelated to popcorn. “Food flavourer’s lung” might be a more appropriate diagnostic label.

It is tempting with the present case to speculate whether the unusual work shift of April 2005, with high diacetyl exposure, played a critical role. Diacetyl is known to pose a risk of ocular toxicity, and American experience has shown that bronchiolitis obliterans may progress for some months after exposure ceases. However, spirometry in June 2005 remained normal, and symptoms were not recognised for a further 1–2 months.

No evidence at present suggests that diacetyl is hazardous when ingested, but the possibility is not lightly dismissed. A number of orally administered drugs are known to cause inflammatory/fibrotic reactions at the bronchiolar level, similar to parquat and a notorious batch of adulterated cooking oil. More relevant is the ingestion, as an appetite suppressant, of leaf extracts from the Asian shrub *Sauropus androgynus* which also induces life-threatening bronchiolitis obliterans. The inhalation of acramin (a garment dye) and fragmented synthetic polymer fibres completes a recently observed causal spectrum for the development of subacute bronchiolar disease. With causes of such a disparate nature—both inhaled and ingested—it may be prudent to look out for others.

**Competing interests:** None.

**REFERENCES**

"Popcorn worker's lung" in Britain in a man making potato crisp flavouring

D J Hendrick

*Thorax* 2008 63: 267-268
doi: 10.1136/thx.2007.089607

Updated information and services can be found at: [http://thorax.bmj.com/content/63/3/267](http://thorax.bmj.com/content/63/3/267)

These include:

**References**
This article cites 7 articles, 1 of which you can access for free at: [http://thorax.bmj.com/content/63/3/267#BIBL](http://thorax.bmj.com/content/63/3/267#BIBL)

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Notes**

To request permissions go to: [http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to: [http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to: [http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)