

## Cigarette emissions testing

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Aim- Research the scope for reduction in toxic gases in cigarette smoke, for those who continue to smoke



### Research published in 2006

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Research of emissions of a state-of-the-art filter cigarette compared with the Holiday NZ cigarette.

Laugesen M and Fowles J. Marlboro UltraSmooth - a potentially reduced exposure cigarette? Tobacco Control December 2006.



### Conclusion

**MUS emitted more toxic gases in its smoke than Holiday, under realistic smoke machine settings.**

MUS was thus not a potentially reduced-exposure product (PREP) under smoker-realistic test conditions, and thus would not be expected to reduce overall harm. It is unrealistic to expect that even major design changes, as seen in MUS, or a regulatory framework to enforce such changes, could reduce cigarette smoking mortality risks to acceptable levels. This was first independent report assessing the toxicity of the Marlboro UltraSmooth brand, which Philip Morris was test marketing in the USA during 2005. See [www.healthnz.co.nz/MUS.htm](http://www.healthnz.co.nz/MUS.htm) or [www.tobaccocontrol.com](http://www.tobaccocontrol.com) searchword Laugesen

## Research published in 2005

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### (1) Emissions research on Mild Seven charcoal filter cigarettes

Laugesen M, Fowles, J. Scope for regulation of cigarette smoke toxicity: the case for including charcoal filters. NZMJ 2005

Read the research summaries [toxicitypubs.htm](http://toxicitypubs.htm)

Full texts at [www.nzma.org.nz/journal/118-1213/](http://www.nzma.org.nz/journal/118-1213/)

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### (2) Research of Cigarette company documents 1965- present

#### Evidence from cigarette company chemists

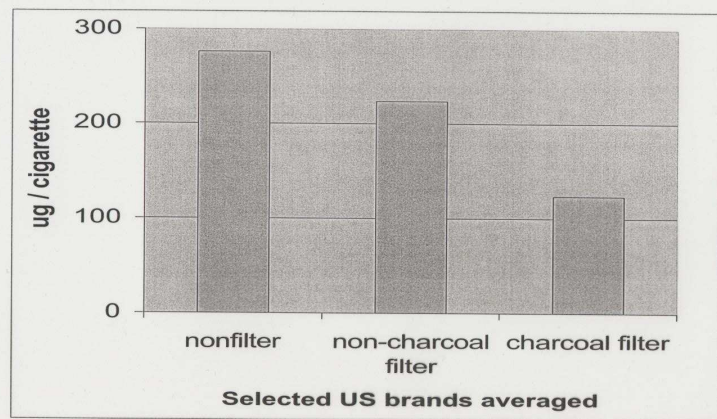
##### As recorded in previously secret tobacco industry documents obtained by legal discovery

The documents clearly show that the chemists' findings were reported to their managers within the company at the time.

##### Figure 2. Effect of filter on Hydrogen cyanide in mainstream smoke.

RJ Reynolds Tobacco Co. 1964

Effect of filter on Hydrogen Cyanide in mainstream smoke  
RJ Reynolds Tobacco Co. 1964



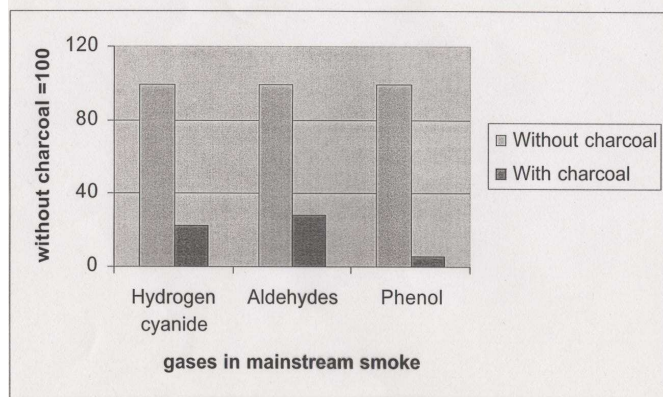
- Cundiff RH. The spectroscopic determination of hydrogen cyanide in cigarette smoke. 8 June 1964. RJ Reynolds Collection.

[www.tobaccodocuments.org/rjr/500945947-5961.html](http://www.tobaccodocuments.org/rjr/500945947-5961.html)

##### Figure 3. Effect of charcoal filter on mainstream smoke emissions.

Brown and Williamson/BAT 1965

Effect of charcoal filter on mainstream smoke emissions  
Brown & Williamson/ BAT 1965 Bates no. 4023690



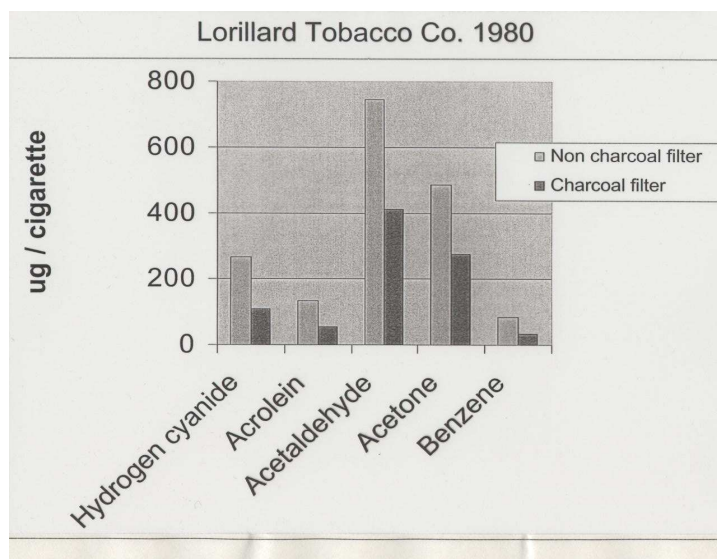
British American Tobacco Company. 54 page document, circa 1965. Guildford miscellaneous collection. URL: [http://tobaccodocuments.org/guildford\\_misc/402368992-9045.html](http://tobaccodocuments.org/guildford_misc/402368992-9045.html).

**RJ Reynolds Tobacco Company** scientists in 1964 found that plain (non filter) cigarettes contained the most hydrogen cyanide (HCN) in the smoke. Half of the HCN is in the tar, and as a standard non-charcoal (cellulose acetate) filter partly removes tar, some HCN is removed. Much of the rest was removed by charcoal. Note however, that the smoker is exposed to considerable HCN even with a charcoal filter. (HCN in smoke partly blocks all cells from using oxygen, and is toxic to heart and brain. Even one cigarette is considered toxic.) (Figure 2).

**British American Tobacco** company chemists in the 1960s found that charcoal filters reduced HCN and the aldehydes in smoke. Aldehydes include the gas acrolein, which is responsible for over 95% of the known identifiable poisons in cigarette smoke that damage the lung. Other gases in this group are acetaldehyde and formaldehyde, which cause cancer, and cause lung damage. Generally, three-quarters of these gases could be filtered out by charcoal. (Figure 3)

**Lorillard**, another of the big five cigarette makers, researched charcoal filters in 1980, and found them highly effective. (Figure 4).

**Figure 4. Charcoal filter reduces emissions of hydrogen cyanide, aldehydes, acetone, and benzene.**



- Ihrig AM. The selective removal of aldehydes from cigarette smoke. Lorillard Research Center, Greensboro NC. February 20, 1980. Bates no. 80007395 to 80007421.

<http://tobaccodocuments/lor/80007395-7421.html> accessed 18 May 2005

Caution: Smokers should not assume that because charcoal can filter out the most poisonous gases, that all will be well. At this point in time, only about half of the cancer caused by cigarettes can be accounted for by chemicals that can be measured in the smoke. Carbon monoxide for example, generally cannot be filtered out. Free radicals (trillions per puff) are not easily measured, have important damaging effects, and are not easily removed. Nevertheless, because many smokers are highly addicted, government has a duty of care to filter out those major poisonous gases which can be removed.

For the Health New Zealand research papers on toxicity reduction, click on [www.healthnz.co.nz/toxicitypubs.htm](http://www.healthnz.co.nz/toxicitypubs.htm)

