



**PHYSICIANS FOR A SMOKE-FREE CANADA  
MÉDECINS POUR UN CANADA SANS FUMÉE**

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*Background*

## Research on Cigarette Toxicity at ITL's Montreal Laboratory

Even though Imperial Tobacco denied that cigarettes caused cancer, they conducted many tests on the carcinogenicity and mutagenicity of their cigarettes. They used these tests to compare types of tobacco, and to measure "improvements" to cigarette smoke.

### 1960s: Mouse-Skin Painting

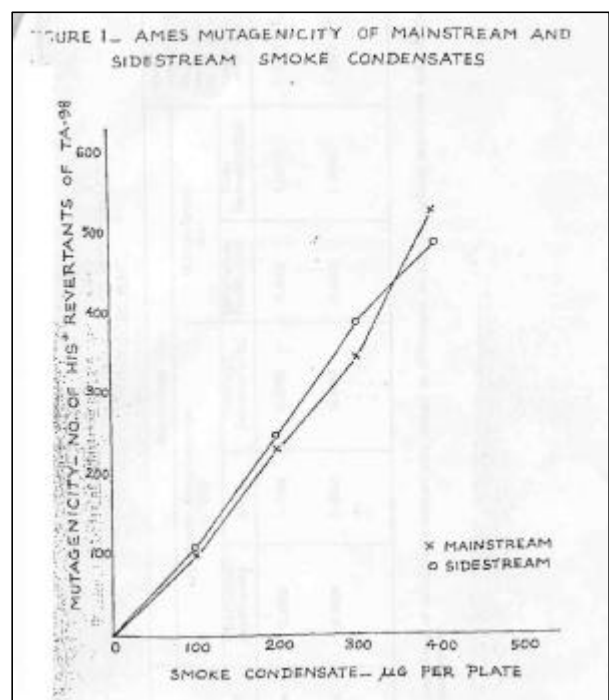
In the 1960s, mouse-skin painting was the preferred test, and the research on these was centred in BAT's Southampton laboratories. Mouse painting tests were expensive and time consuming. [In 1998, Non-Smokers' Rights Association revealed that Imperial Tobacco lawyers destroyed mouse-painting research documents which were available to the BAT family.]

### 1970s: Nitromethane Fraction Index

In the 1970s, Imperial Tobacco and other BAT companies developed their own test, the Nitromethane Fraction Index (NMFI). ITL's Montreal researchers liked the NMFI test because it was "rapid and inexpensive" but decided not to divulge the test method or its results, even when they used it to assess new breeds of tobacco developed by Agriculture Canada. [ITL Research laboratory Report No. 151. B&W site 657007102 and B&W page 650007358]

### 1980s. Ames Tests

In the 1980s, ITL turned to "Ames tests" to assess the cancer-causing potential of cigarette smoke. Although the Ames test looks at mutagenicity, not carcinogenicity, ITL chose it for its relative cost and ease of use.



With the Ames tests, ITL found that:

- French-style cigarettes (like Gauloises) were more "mutagenic" than regular Canadian cigarettes.
- Tobacco from the bottom of the Canadian tobacco plant was more "mutagenic" than tobacco from the top leaves.
- Smoke from cigarettes with higher nicotine content was more "mutagenic."
- Sidestream smoke (i.e. second-hand smoke) was as "mutagenic" as regular smoke

*[ B&W, pages 682012184-682012191, page 682633408-682633414]*

- When smokers changed how they puffed on a cigarette (i.e. inhaling more frequently or pulling in more smoke), the "Mutagenicity " of the cigarette smoke also increased. ITL's tests showed that the very low-tar Matinee Extra Mild was potentially more dangerous than the higher tar du Maurier Light. *[B&W doc ID 588065]*.
- ITL participated in a BAT-wide study which found that smoke from ventilated cigarettes (those with holes in the paper and filters) were found to be more "mutagenic." *[B&W, page 570200063]*

By the end of the 1980s, the Ames test was roundly criticized by BAT's senior scientists, and appears to have become de-emphasized.

### **1990s: Tobacco Treatment**

In the 1990s, ITL continued with research to reduce mutagens and carcinogens from tobacco smoke.

The most recent research report available (1993) reports the use of "solvent extraction" and "enzyme/microbial treatment" to research a cigarette " with low specific mutagenicity and low concentrations of PAH, phenols," and other carcinogens. These were part of "Project Day," a continuing work on developing a "safer" Canadian cigarette. *[PSC08]*.