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Report Title: MEASUREMENTS OF AIRBORNE SUBSTANCES IN SINGLE

DECKER BUSES WITH AND WITHOUT SMOKING PROHIBITION

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**MEASUREMENTS OF AIRBORNE SUBSTANCES  
IN SINGLE-DECKER BUSES  
WITH AND WITHOUT SMOKING PROHIBITION**

**REPORT NO: RD.2167**

**20 March 1990**

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## **MEASUREMENTS OF AIRBORNE SUBSTANCES IN SINGLE-DECKER BUSES WITH AND WITHOUT SMOKING PROHIBITION**

**REPORT NO. RD.2167**

### **SUMMARY:**

Traditionally, public transport buses in the UK have been double-deckers, with smoking allowed on the upper deck and prohibited on the lower deck. More recently, single-decker buses have been introduced. Some bus companies have prohibited smoking, whilst others allow smoking in the rear of the bus. This study assesses whether a smoking ban has a significant impact on the chemical burden of the air inside buses by comparing smoking and non-smoking situations.

Measurements of nicotine, respirable suspended particulates (RSP), carbon monoxide and volatile organic compounds were made in both the front and back of smoking-allowed and smoking-prohibited buses. A new method, fluorescence-RSP was used to apportion the ETS contribution to total RSP, and a validation of this method is given in this report.

The study shows extremely low levels of ETS present in smoking-allowed buses. On average a male passenger (or bus driver) would have to travel for 415 continuous hours before being exposed to the nicotine equivalent of a single cigarette. Furthermore, ETS only contributed 4% to the total RSP levels, and there were no significant differences in levels of RSP, carbon monoxide and benzene between smoking and non-smoking situations. Hence a ban on smoking does little to improve the chemical content of the air in single-decker buses.

ETS  
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