



## Evaluation of Isoflurane Exposure While Performing Laboratory Research Procedures.

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### **Background**

The purpose of this study is to assess exposures to isoflurane to dental surgeons and a technician performing an experimental dental procedure on rodents before and after installations of ventilation controls. Isoflurane is a halogenated anesthetic gas and is linked to reproductive problems in women as well as developmental defects in children of exposed women. In this study it was used as an anesthetic for rodents during injections and placement of dental apparatus into the mouth.

### **Methods**

In the initial assessment, eight full-shift samples were collected using passive badges over a 3-week time period. The dental procedure was performed once a week for approximately 45 minutes each day. Reassessment of isoflurane was conducted after installation of ventilation controls. During the reassessment twelve full-shift samples were collected over a 3-week time period.

### **Results**

Results show that employees are being exposed to isoflurane above the National Institute for Occupational Safety and Health (NIOSH) recommended exposure level of two parts per million. Isoflurane exposures ranged from 3.1 to 29.3 ppm with an average exposure of 15.3 ppm over approximately 45 minutes before installation of ventilation controls. After changes to the ventilation system to initial reassessment has shown a dramatic decrease in isoflurane exposure. The average exposure has decreased to 2.13 ppm over approximately 2 hour, an approximate 86% decrease.

### **Conclusion**

A significant over exposure of isoflurane was detected to dental surgeons and technician utilizing isoflurane in experimental animal procedures. The exposure was substantially decreased using ventilation controls including a scavenging system.

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