

CASE REPORT

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Fatal Recreational Inhalation of Enflurane

REFERENCE:: Walker, F. B. and Morano, R. A., "Fatal Recreational Inhalation of Enflurane," *Journal of Forensic Sciences*, JFSCA, Vol. 35, No. 1, Jan. 1990, pp. 197-198.

ABSTRACT: We report here a case of fatal enflurane poisoning by recreational inhalation, apparently the first published report of such a case.

KEYWORDS: toxicology, enflurane, poisoning, substance abuse

Report of Case

A 29-year-old surgical technician had recently been given some inventory control responsibilities at a freestanding outpatient surgical facility. Enflurane was a commonly used anesthetic agent there. He was found dead in his bed with the bedclothes tucked around and over his head. Scene investigation strongly suggested a solitary death. An empty enflurane bottle was in one of the deceased's boots in the bedroom closet. The autopsy findings were those of visceral congestion. Biological samples were analyzed by headspace gas chromatography in a modification of the method of Dubowski [1], using a flame-ionization detector, a 6-ft (2-m) glass column containing 30% Carbowax 20 mesh 60-80 Chromosorb W acid-washed-dimethyldichlorosilane (AW-DMCS). Temperatures were oven 70°C, injection port 150°C, the detector 150°C. Enflurane standards were made by adding enflurane directly to blood. Headspace sampling was preceded by equilibration for 2 h at room temperature. Replicate injections produced linear responses through the range of specimen enflurane concentrations. Specificity was confirmed by mass spectrometry using the instrument manufacturer's drug spectral library.

Enflurane was absent in postmortem gastric content. Blood enflurane was 71 mg/dL. Blood analysis for alcohols, barbiturates, glutethimide, methaqualone, morphine, cocaine, benzodiazepines, tricyclic antidepressants, phencyclidine, amphetamine, and methamphetamine was negative.

Interviews of a housemate and of coworkers produced evidence against suicidal intent. The cause of death was certified as enflurane poisoning; the manner was accidental.

While the special pharmacologic advantages of enflurane [2] have secured for it a prominent place among the haloalkane anesthetics, its volatility, portability, and (to some

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persons) sweet odor make it seductive for abuse by sniffing. Of twelve recently reviewed lethal cases of haloalkane abuse [3], only one was ascribed to enflurane.

The original report [4] of that case described a student nurse who succumbed by accident while attempting to treat herpes labialis by topical enflurane application.

In contrast, the circumstances in the case we report are those of recreational abuse and help firmly to place enflurane among such dangerously abused agents as toluene, aerosol propellants, gasoline, trichlorethylene, and halothane. Those who design and manage systems for controlling the use of anesthetics should include enflurane among those controlled materials.

Those health professionals who abuse enflurane should consider the possibility of a fatal outcome such as that reported here.

References

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