

CORRESPONDENCE

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Reflections. . .

If sulfate, why not morphine?
If pneumonia, why not pneumoborn?
As orthopaedics, so why not anaesthesia?
Or even anaemia.
But then psychiatry. . .
I'd best be psylent.

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Volatile Agent Scavenging and Vaporizer Filling

To the Editor:—Vaporizer filling commonly is performed with the vaporizer attached to the anesthesia machine. This procedure is accompanied by a brief but high peak in the atmospheric concentration of volatile agent in the vicinity of the anesthesia machine even when keyed fill systems are used.^{1,2} We describe a convenient method for scavenging volatile agent during vaporizer filling.

Before filling, we suspend a face tent (Hospitak, Lindenhurst, NY), using its adjustable elasticated strap, under the vaporizer fill port (fig. 1). The face tent is attached to the anesthesia machine suction apparatus, which is itself connected to the hospital vacuum supply. The suction apparatus is turned on, generating a vacuum of 250 mmHg and an air flow of 40 l/min. Vaporizer filling then is conducted in the usual way. We have measured halothane vapor concentrations at a distance of 30 cm from the filling port of a nonkeyed Ohmeda Tec 3 vaporizer using a Miran 1A single beam infrared spectrometer (Foxboro, East Bridgewater, MA). The spectrometer sample tube was positioned directly in front of the vaporizer, level with the top of the vaporizer concentration dial. Without using the face tent scavenger, careful filling in accordance with the manufacturer's instructions* on five occasions, conducted over 30 s, ensuring no spillage of liquid agent onto the anesthesia machine work surface, resulted in peak halothane concentrations between 77 and 87 ppm. We then employed an identical filling technique, using the same agent volume (75 ml) and time interval in the presence of a face tent connected to the anesthesia machine suction tubing (fig. 2). Peak halothane concentrations of 3 ppm or less were observed in four cases. On a



Fig. 1. Hospitak face tent suspended under fill port of a Tec 3 vaporizer during the filling procedure.

*Tec 3 Vaporizer: Operators manual. CY 523. Stecton, Ohmeda, BOC Health Care, 1986

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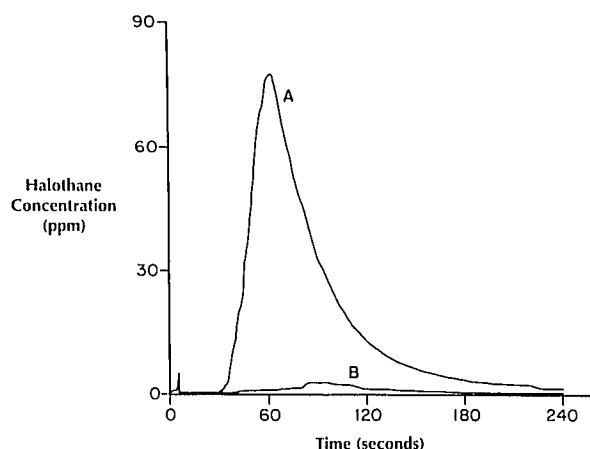


Fig. 2. Atmospheric concentration of halothane during and after the fill procedure. (A) Vaporizer filling without face tent scavenging. (B) Vaporizer filling with face tent scavenging.

fifth occasion, unintentional spillage occurred; nevertheless, the peak halothane concentration recorded was only 1.4 ppm.

This system has proved easy to use on Vapor 19.1 and Ohmeda Tec 3 and Ohmeda Tec 4 vaporizers. It does not interfere with the

†National Institute for Occupational Safety and Health: Criteria for a recommended standard: Occupational exposure to waste anesthetic gases and vapors. DHEW (NIOSH) Publication No. 77-140, 1977

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Exaggerated Anesthetic Requirements

To the Editor:—Recently, Antognini and Schwartz reported that the minimum alveolar concentration (MAC) of isoflurane was increased in goats in which the brain is preferentially anesthetized and suggested the importance of subcortical structures, such as the spinal cord, in generating “the purposeful movement in response to a painful stimulus” during general anesthesia.¹ This is an interesting study, and we agree with the authors in the importance of subcortical structures in the purposeful movement under general anesthesia. Nevertheless, we argue against their postulate of anesthesia of the supraspinal structures in producing the so called MAC state, *i.e.*, suppression of the purposeful movements. Citing our paper,² the authors suggested a possibility that isoflurane activated the supraspinal pain inhibition system and suppressed the spinal cord nociceptive neural mechanisms. This postulate is not acceptable because, contrary to nitrous oxide, which activates the spontaneous cell firing in brainstem reticular core, isoflurane does not activate but rather suppresses

operation of either the vaporizer or the fill mechanism and does not restrict orientation of the bottle during the filling procedure. It can be used with both keyed and nonkeyed fill systems. The transparent nature of the face tent does not hinder visualization of the fluid level within the vaporizer reservoir sight glass. We believe this to be a simple solution to eliminate the usual peaks in atmospheric concentration associated with vaporizer filling and to usefully contribute to the maintenance of time-weighted levels close to those suggested in the NIOSH guidelines.[†] The face tent is of particular benefit when liquid agent is spilled during the fill procedure, because this normally would fall onto the anesthesia machine work surface and subsequently vaporize. Instead, both liquid and vapor are effectively scavenged.

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the brain stem reticular cell firing in a dose-related manner.³ Their alternative postulate was that the preferential anesthesia of the supraspinal structures by a large dose of isoflurane induced a functional decerebration and subsequently “spinal shock,” inducing a total suppression of the spinal reflexes. This postulate is also not acceptable. Their animals maintained a normal level of mean arterial blood pressure during the phase of preferential brain anesthesia, which contradicts the severe hypotension usually observed after brain death or transection at a high spinal cord level. Because considerable concentration of anesthetic is required to suppress spinal reflexes in spinal animals,^{4,5} if they anesthetized brain “preferentially” leaving the spinal cord unanesthetized, spinal reflexes cannot be suppressed. Thus, the third and the most plausible mechanism we propose is that the high concentration of isoflurane, administered “preferentially” to the brain through bypass, distributed to the spinal cord through collateral circulation and directly suppressed the spinal cord.