

Title : CRYOPROBE LEAKAGE OF NITROUS OXIDE INTO OPERATING ROOM AIR

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Introduction. Sources of nitrous oxide leaking into the atmosphere, other than from anesthetic machines, have been a neglected area of study. It was noticed that N₂O used in a Frigitonc cryosurgical probe for eye surgery was being vented into the operating room, and this study was undertaken to determine the concentration of N₂O generated by leakage from this equipment.

Methods. N₂O levels were measured in 25 cases of cataract extractions in which the cryosurgical probe was used. A Cavitron infrared monitor was used for the measurements. Sampling was done within 50 cm of the ophthalmologist's and anesthetist's breathing areas during the use of the cryoprobe.

Results. When the cryoprobe was in use, N₂O levels were in the range of 500 ppm in the ophthalmologist's breathing area, and in the range of 90 ppm in the anesthetist's breathing area. After probe use, levels of N₂O returned to below 25 ppm within 20 minutes. The data are summarized in the table.

Discussion. The National Institute of Occupational Safety and Health (NIOSH) has recommended an occupational exposure of less than 25 ppm N₂O during anesthesia administration. A non-anesthetic source of nitrous oxide contamination of the operating room has been demonstrated in this study. The concentration measured in the breathing areas of both the ophthalmologist and the anesthetist were well above the recommended standards.

N₂O, PPM (Mean ± S.E.) In Breathing Zone Of
Ophthalmologist and Anesthetist

Condition	Ophthalmologist	Anesthetist
Background, valve closed	0.5 ± 0.2	0.5 ± 0.2
Valve open, after:		
1 minute	207 ± 47.2	33 ± 6.9
20 minutes	163 ± 47.4	32 ± 8.0
Clearing probe	433 ± 35.0	72 ± 18.0
During use	504 ± 14.0	91 ± 11.0
Discontinuing probe use	435 ± 35.0	96 ± 10.0
After 5 minutes	204 ± 43.0	37 ± 3.0
10 minutes	49 ± 10.0	14 ± 2.0
15 minutes	14 ± 3.0	5 ± 1.0
20 minutes	6 ± 1.4	3 ± 1.0
Close valve and bleeding to zero gauge pressure after:		
1 minute	427 ± 100.0	56 ± 8.0
20 minutes	16 ± 10.0	5 ± 2.0
End of case	1.8 ± 0.8	1.5 ± 0.8