

## Waste Anesthetic Gases

### Information for Management in Anesthetizing Areas and the Postanesthesia Care Unit (PACU)

AMERICAN SOCIETY  
OF ANESTHESIOLOGISTS  
520 N. Northwest Highway  
Park Ridge, IL 60068-2573  
(847) 825-5586  
Fax (847) 825-1692  
mail@ASAhq.org

American Society of Anesthesiologists  
Committee on Occupational Health of Operating Room Personnel  
Arnold Berry, M.D., M.P.H., Chair

#### Task Force on Trace Anesthetic Gases

Diana G. McGregor, M.B.B.S., FRCA, Chair  
Jeffrey M. Baden, M.B.B.S., FRCA, MRCP(UK)  
Carolyn Bannister, M.D.  
Karen B. Domino, M.D., MPH  
Jan Ehrenwerth, M.D.  
James B. Eisenkraft, M.D., MRCP(UK), FRCA  
Richard I. Mazze, M.D.  
Alastair A. Spence, M.D., FRCA, FRCP

American Society of Anesthesiologists  
520 N. Northwest Highway  
Park Ridge, IL 60068-2573  
(847) 825-5586

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## Introduction

In 1981, the American Society of Anesthesiologists (ASA) published the booklet, "Waste Anesthetics in Operating Room Air: A Suggested Program to Reduce Personnel Exposure," written by the ASA Ad Hoc Committee on Effects of Trace Anesthetic Agents on Health of Operating Room Personnel. It provided details of potential hazards that may be associated with trace concentrations of waste anesthetic gases, information on scavenging and recommendations for work practices from the National Institute for Occupational Safety and Health (NIOSH).<sup>1</sup>

As more information became available, the ASA Committee on Occupational Health of Operating Room Personnel decided that the 1981 booklet required revision. This new booklet contains an analysis of the subject with critical description of important papers to give the reader a working knowledge of all aspects of the effects of trace levels of waste anesthetic gases in locations where anesthesiologists work, including the postanesthesia care unit (PACU), nonoperating room anesthetizing locations, ambulatory surgical facilities and office-based surgical suites. A section on regulatory agencies' current recommendations is included as well as information on scavenging systems. There is an extensive bibliography. Recommendations are made for scavenging, maintenance of equipment with appropriate documentation, education of personnel working in areas where they may be exposed to trace concentrations of anesthetic gases and work practices.

These recommendations to reduce exposure to waste anesthetic gases must never be paramount to concerns regarding patient safety and should not interfere with quality of care.

## Summary

### Risks

Studies have not shown an association between trace levels of waste anesthetic gases found in scavenged anesthetizing locations and adverse health effects to personnel.

- Waste anesthetic gases should be scavenged.
- Appropriate work practices should be used to minimize exposure to waste anesthetic gases.
- Personnel working in areas where waste anesthetic gases may be present should be educated regarding current studies on health effects of exposure to waste anesthetic gases, appropriate work practices to minimize exposure, and machine checkout and maintenance procedures.
- There is insufficient evidence to recommend routine monitoring of trace levels of waste anesthetic gases in the O.R. and PACU.
- There is insufficient evidence to recommend routine medical surveillance of personnel exposed to trace concentrations of waste anesthetic gases, although each institution should have a mechanism for employees to report suspected work-related health problems.

## **FREQUENTLY ASKED QUESTIONS**

**Q I work in a location where anesthetic gases are used. Is it safe for me to get pregnant and continue working?**

**A** There is no evidence that trace concentrations of waste anesthetic gases cause adverse health effects to personnel working in locations where scavenging of waste anesthetic gases is carried out. It is safe to try to become pregnant or work when pregnant in these locations.

**Q I heard that cancer /leukemia/lymphoma can be caused by exposure to waste anesthetic gases. Is this so? Is it safe for me to return to work after treatment?**

**A.** There are no data showing that trace concentrations of waste anesthetic gases can cause cancer. Mutation studies after exposure to anesthetics in animals and humans have been negative. If you have been treated for cancer and feel able to return to work, working in an area where anesthesia is given is not contraindicated.

**Q I work with animals anesthetized in the veterinarian's office/research lab. Is scavenging necessary?**

**A** Both the ASA and OSHA believe that scavenging of waste anesthetic gases is the most acceptable practice when anesthetic gases are used in any environment or work place. Indeed, it is difficult to purchase an anesthesia machine or delivery system without an in-built scavenging system. If you work where there is no scavenging, you can insist that a system is installed. Waste anesthetic gas scavenging is endorsed by the ASA and OSHA.

**Q I am a dental hygienist giving nitrous oxide to my patients. Is it safe for me to work in that environment? What about getting pregnant and the risk of miscarriage?**

**A** It is safe to work in a dental office giving nitrous oxide to patients through the dental nasal mask if a scavenging system is used with the anesthesia delivery system. In the past problems arose in dental offices with no scavenging systems because the small rooms had no air exchanges, a situation unlike operating rooms, and levels of nitrous oxide were high. There have been two studies showing that the lack of scavenging use when dental hygienists administer nitrous oxide increases the risk of infertility and spontaneous abortion compared to these risks in hygienists who work in environments that use scavenging systems for waste anesthetic gases. The ASA, ADA and OSHA recommend that nitrous oxide delivery systems in the dental office or elsewhere should have functioning scavenging systems.