

# CANADIAN ANESTHESIOLOGISTS' SOCIETY

# POSITION STATEMENT



## **Greening the OR: CAS Position Statement on Reducing Harmful Emissions, Waste and Costs**

**December 2024**

### **Background**

According to the World Health Organization, climate change due to human greenhouse gas emissions is one of the biggest threats to global health of the 21st century. Healthcare is a major contributor to this planetary crisis. The Canadian Anesthesiologists' Society (CAS) firmly believes that all efforts should be made to reduce the impact of the healthcare sector on the environment while improving the quality of care. CAS has identified key areas in which changes could provide direct improvements on harmful emissions and waste reduction.

### **Use of desflurane**

Medical volatile gases used to anesthetize patients are released directly into the atmosphere (released by anesthesia delivery machines and exhaled by patients). These gases contribute to the greenhouse gas effect. There is ample evidence to show that desflurane has a far greater negative impact on the environment than sevoflurane (another more commonly used anesthetic gas). It remains in the atmosphere for 14 years, compared to 1.4 years for Sevoflurane, with little to no justifiable clinical advantage. Desflurane is also associated with increased costs to the healthcare system, without providing value for money spent.

### **Use of Nitrous oxide**

Nitrous oxide is a medical gas used for a variety of purposes, including anesthesia, sedation and pain relief (e.g. for women in labour). With the development of shorter acting volatile gases, its usefulness in the delivery of general anesthesia has become more limited. However, it is still in use in some other settings where few alternatives exist. Nitrous oxide not only contributes to the greenhouse gas effect, it also directly contributes to the destruction of the ozone layer and remains in the atmosphere for an estimated 114 years. Furthermore, several independent studies have shown that there is significant leakage of nitrous oxide from hospital pipelines (in many cases > 80% of purchased gas) directly into the environment without clinical use. This profound leakage results in a substantial negative impact on the environment and unjustifiable cost to hospitals.

## **Use of disposable medical products**

A wide range of medical supplies are used every day in the delivery of anesthesia. Some of these supplies have been available for decades in reusable form. In recent years, despite their demonstrated safety, more and more companies are opting to only produce single-use, disposable products. These decisions have led to a substantial and unnecessary increase in plastic waste, limited options for environmentally sustainable purchasing decisions and an increase in healthcare costs.

## **Disposal of operating room waste**

The operating room is a source of considerable waste production. Currently, inappropriate methods of pharmaceutical disposal (regular garbage or sink rather than incineration) result in environmental contamination and negative effects on living organisms. Conversely, non-pharmaceutical waste that is discarded in pharmaceutical waste containers is unnecessarily incinerated, resulting in the release of toxic chemicals into the environment. Currently, there is a lack of regulation/legislation to curb these harmful practices.

## **CAS Recommendations**

CAS believes that initiatives must be taken at all levels, from individual to national, to reduce the impact of anesthesia care on the environment. We strongly recommend the following measures to be taken to address our climate crisis:

### **For Individual Anesthesia Providers and Departments**

CAS urges anesthesia departments to take an active role within their facilities to promote the highest level of environmentally sustainable patient care practices. Some specific anesthesia-related recommendations include, but need not be restricted to, the following:

- When using volatile gases, individuals should avoid the use of desflurane (due to its environmental impact and increased cost, in the absence of patient benefit)
- Volatile agent consumption should always be minimized by using lowest possible fresh gas flow rates, preferably employing automated end-tidal gas control (to reduce both gas emissions and cost)
- Eliminate or minimize the use of nitrous oxide to the extent possible given local resources, location and clinical context. If there is no viable alternative and the use of nitrous oxide is still needed in some areas, central nitrous oxide pipelines should be replaced by portable e-sized cylinders
- When available, prioritize the use of reusable equipment over single-use items (while ensuring adequate infection control practices)
- Adopt practices to minimize pharmaceutical wastage

- Become actively involved in hospital waste management initiatives to ensure more sustainable practices are adopted and adhered to
- Every effort should be made to minimize the waste of consumable resources and energy, and to recycle appropriate materials whenever possible

### **For Healthcare Facilities**

In collaboration with anesthesia department advocacy efforts, healthcare facilities should:

- Establish and empower multidisciplinary sustainability committees to drive green initiatives
- Remove desflurane from the hospital formulary
- Decommission nitrous oxide pipelines (after consulting with all stakeholders)
- Eliminate nitrous oxide pipelines from new hospital building plans
- Establish a clear policy on sustainable waste management (pharmaceutical/non-pharmaceutical), ensure that the correct waste containers are readily available to staff and that waste practices are regularly audited
- Support procurement decisions that prioritize environmentally sustainable options (e.g. reusable rather than single-use products)
- Implement effective recycling programs

### **For Procurement Departments/Agencies**

Agencies at all levels (e.g. hospital, regional, provincial) are urged to consider the impact on the environment in all procurement decisions. Specific recommendations:

- Updating healthcare product evaluation tools, factoring in sustainability as a major consideration
- Developing procurement policies that prioritize reusable products, whenever feasible
- Leveraging purchasing power to influence manufacturers to create greener product lines (e.g. to offer reusable products)

### **For Provincial/Federal Governments and Standards Organizations**

CAS encourages the consideration of the following:

- Adoption of new federal regulations to prohibit the use of desflurane in Canada, to decommission nitrous oxide piped systems (limiting use to portable cylinders), and to eliminate nitrous oxide piping in new hospital builds

- Provision of support for research/initiatives whose aim are to study/implement more environmentally sustainable healthcare practices
- Creation of incentives (financial or other benefits) for healthcare industries to develop more environmentally sustainable products
- Development of specific legislation/regulations regarding sustainable waste management within healthcare facilities

Supplementary, referenced information is provided in the accompanying document below:

**CAS Background Paper for the CAS Position Statement on reducing harmful emissions, waste and costs.**

Endorsed by the Canadian Pediatric Anesthesia Society

