



# A Literature Review on Sustainable Practices in Nasoendoscopy: Evaluating Equipment, Supplementary Items, and Decontamination Methods

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## Abstract

**Background:** Flexible nasoendoscopy is an essential diagnostic tool in ENT practice, with each consultant performing up to 1000 procedures annually. This generates significant clinical waste, contributing to environmental pollution and carbon emissions. Three areas of potential waste reduction are explored: single-use equipment, supplementary items, and decontamination methods.

**Methodology:** An extensive literature review was conducted, assessing the environmental impact of nasoendoscopy practices.

**Results:** Single-use nasoendoscopes (approximately 0.160 kg each) generate 1.37 kg of CO<sub>2</sub> during manufacture and 0.176 kg from incineration. Reusable nasoendoscopes, by comparison, produce 6.55 kg of CO<sub>2</sub> during manufacturing but are more environmentally efficient when reused across multiple procedures, with single-use scopes becoming less sustainable after just five uses. Supplementary items such as gloves, plastic aprons, masks, local anesthetic sprays, lubricant gels, and alcohol wipes, while widely used, lack evidence of necessity in standard practice. Eliminating these can significantly reduce waste and plastic usage. Decontamination methods were also reviewed. The gold standard Endoscope Washer Disinfector (EWD) uses 100–136 liters of water, 320 mL of chemicals, and 0.62–6.13 kWh per cycle. UV-C light decontamination, in contrast, requires no chemicals, minimal water, and only 0.01 kWh per cycle, making it the least wasteful option.

**Conclusion:** Single-use nasoendoscopes should be avoided for environmental sustainability. Supplementary items can be eliminated from routine practice, and UV-C light represents the most efficient and eco-friendly decontamination method.

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