Uniting Against the Hazards of Surgical Smoke
A look at third-party recommendations to protect theatre staff

Over the years, an increasing number of global organisations have scrutinised the potential hazards of surgical smoke. These include governments, workplace safety groups, clinical societies and quality organizations responsible for healthcare standards and accreditations.
The SafeAir Smoke Evacuation Pencil captures smoke directly at the source as recommended by many organisations. Its use with The Neptune® Waste Management System delivers added benefits from the Neptune’s ULPA filter, trapping particulates ≥0.12 microns with a 99.99% efficiency rate. These device solutions provide tangible evidence of how you strive to meet OR air quality guidelines.

Multiple Organisations. One Goal.
Protecting patients and staff from surgical smoke

Even without large randomised trials on surgical smoke, groups around the world have found the data compelling enough to warrant action, resulting in guidelines – and laws in some countries – to better protect theatre staff and patients. Of special concern is the reality that surgeons and theatre staff endure chronic, long-term exposure to the toxic gases and infectious particulate matter that smoke can carry, increasing their cumulative exposure and risk beyond what any one case report or study may have reported to date.

Here is a look at the many organisations united in their effort to provide a brighter tomorrow for today’s theatre practitioners. These recommendations and the engineering/device solutions within them can help optimise staff protection, satisfaction and focus by lessening the stress and distraction that come with worrying about hazardous exposure.

Published reports have identified roughly 150 chemical constituents of plume, including toxic and carcinogenic substances. Also identified were fine and ultra fine particulate matter, including viable cellular material, viruses and bacteria.¹

Examples of Chemicals in Smoke Plume¹
- Acrolein
- Benzene
- Carbon Monoxide
- Formaldehyde
- Hydrogen cyanide
- Methane
- Toluene
- Polycyclic aromatic hydrocarbons/PAH (EPA-identified priority pollutants)
Here are just some of the particles that can be smaller than lung damaging dust, thus named for its ability to reach the alveoli of those who inhale it 17. Standard surgical masks only filter out particles 5 microns or larger 18.
Clinical citations
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8. Association for Perioperative Practice UK (AIPP), Standards & Recommendations for Safe Perioperative Practice (Standard 2.6)
9. Australian College of Operating Room Nurses (ACORN), Standards/Surgical Plume, 2006
10. Operating Room Nurses Association of Canada (ORNAC); Recommended standards, guidelines and position statements for perioperative nursing practice, 2007
12. Canadian Standards Association (CSA), Surgical Plume Scavenging in Surgical, Diagnostic, Therapeutic & Aesthetic Settings (CSA Z305.13-09), January 2009
13. Nordic countries, Surgical Smoke Guidelines
14. Occupational Safety & Health Administration (OSHA), General Duty Clause (Public Law 91-596 Section 5); Blood Borne Pathogens Standard (29CFR 1910.1030); and PPE Standard (29 CFR 1910.134)
15. ECRI Institute, ECRI Health Devices: Laser Smoke Evacuators, 1990
18. K. Ball. AORN Annual Conference Presentation, “Management of Surgical Smoke in the Perioperative Setting”