Clearing the Air on **Surgical Smoke**

Facts, Stats, and Recommendations

Surgical smoke, the by-product of many surgical procedures, may pose potential health risks for nearly one million hospital workers each year.[1]

What is surgical smoke?

Surgical smoke is formed when energy-generating devices raise the intracellular temperature of tissue, causing tissue vaporization.[2]

What's in surgical smoke?

More than 150 different chemical constituents have been identified in surgical smoke, including carbon monoxide and formaldehyde[3-5]

Bacteria and viruses have also been found in surgical smoke, including Hepatitis B, HIV, and HPV[6]

Smoke evacuation is recommended by leading regulatory bodies and industry associations[12-16]

Australian College of Perioperative Nurses (ACORN)

NSW Health Work Health and Safety

WA Country Health Services

What are the effects of surgical smoke?

Exposure to surgical smoke can cause both acute and chronic health effects ranging from eye, nose, and throat irritation to emphysema, asthma, and chronic bronchitis[7,8]

Blended current electrosurgery can contain viable bacteria.[9] Viral DNA has been discovered in surgical smoke.[10]

Surgical smoke impacts visibility of the surgical field, which may result in procedure delays[11]

The use of appropriate filters and extraction system is recommended by leading societies as a precaution during the COVID-19 pandemic[17-19]

Royal College of Surgeons (RACS)

Australasian Gynaecological Endoscopy & Surgery (AGES)

Australia Society of Plastic Surgeons

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Evacuating Smoke from the OR

Traditional methods for OR smoke protection may have limitations

Wall Suction

- Only effective in procedures that produce a small amount of smoke[12]
- Not proven to remove smoke at its source[13]
- Produces a high level of noise[11]

Surgical Masks

- Ineffective at filtering many substances from surgical smoke[12]
- Uncomfortable to wear, bulky fit, and can impede function[12]

FAST FACT

99%

One study showed a hand-held device captured 99% of surgical smoke when placed one inch from the source.[11]

Desired features of handheld smoke evacuation devices

Handheld smoke evacuation devices are smaller in size and may address issues in the OR:

Visibility

> Feature an adjustable shaft that helps position the smoke evacuation tip closer to the surgical site

> Encapsulate the electrode for efficient smoke capture

Surgeon Comfort

> Lightweight

> Designed with a non-slip grip for comfort and control

> Large activation buttons for ease of use

> Cord in tubing for procedural flexibility

Efficiency

> Adjustable shaft to minimize the need to exchange electrodes

> Reduce eschar buildup

> Designed to require less frequent cleaning and save OR time

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