



# SURGICAL SMOKE:

A Clear Way to End a Lingering Problem



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Where would you find the foulest air in your city? Inside a heavy industry plant or a tavern crowded with smokers? Most people outside the medical profession would be stunned to know that the hospital operating room and clinic procedure room could rank at or near the top of the list, especially because healthcare facilities must adhere to strict regulations for cleanliness and safety for patients and staff. Rigorous protocols cover the handling of infectious agents, powerful drugs, and radiation-emitting equipment, but not always the smoke plumes created by surgical generators utilized to precisely cut and coagulate tissue.

## AWARENESS DRIVEN BY DATA AND NOW BY HEALTHCARE STAFF

Operating room and clinic staff have typically accepted the unpleasant “cautery” smell as part of the job, but studies show that inhalation of surgical smoke is not a minor concern.

Researchers in Great Britain found that the smoke and toxins inhaled by OR staff is equivalent to smoking 27-30 cigarettes per day.

Surgical smoke is about 95% water vapor. Studies over several decades have documented three major components carried by the vapor: (1) ultrafine particulates, (2) more than 150 chemicals, many hazardous and mutagenic or carcinogenic, and (3) biological agents such as bacteria and viruses.

### **Surgical face masks do not filter out all the fine particulate matter or chemical and biological substances in the vapor.**

Not surprisingly, surveys of OR staff have reported a high incidence of symptoms such as coughing, breathing difficulties, irritation, and conditions such as allergies and asthma. Several surgeons have written about their own serious lung diseases, which they attribute to decades of daily exposure to surgical smoke plumes. Cases have been reported of surgeons contracting viruses, presumably from inhaling surgical smoke. Now, educational efforts and advocacy by healthcare staff and safety officers and national professional associations are urging all surgical facilities to finally address this dangerous problem.



## RECOMMENDATIONS ABOUND

The Joint Commission, which sets standards and accredits more than 21,000 health care

facilities, requires managing risks related to hazardous materials, including vapors, and urges but does not mandate that facilities have a written policy for smoke evacuation. Although no federal regulations have addressed mitigation, the Occupational Safety and Health Administration (OSHA) has called attention to the dangers of OR smoke and, while not proposing specific standards, urges facilities to “Evacuate all smoke, no matter how much is generated.”

This problem has been a subject of discussion for some time. In fact, the Association of Perioperative Registered Nurses (AORN) in 2008 issued a statement urging hospitals and surgical centers to reduce exposure to surgical smoke. Increasingly, surgical staff are not sitting back or waiting for regulation. They are speaking out in professional publications, and helping organize staff teams in their own institutions to advocate for smoke evacuation equipment in all surgical and

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procedure rooms. In addition, several healthcare societies have made recommendations regarding the use of smoke evacuation when performing electrosurgical procedures (those include SAGES and ACS).

Colorado and Rhode Island have led the attempt to develop mandatory smoke evaluation regulations by passing legislation. Other states, including Oregon, California, and Georgia, are considering similar legislation. Many hospitals have installed smoke evacuations systems, which has significantly improved working conditions and staff satisfaction. Still, more than 25% of surgical facility leaders don’t use smoke evacuation in every applicable case, according to a survey reported in a 2017 article in Outpatient Surgery.

## THE SOLUTION — INNOVATIVE SMOKE EVACUATION SYSTEMS

Some healthcare personnel have been reluctant to use smoke evacuation equipment, even if available, because the systems were noisy, and/or difficult to move from one room to another. Advances in smoke evacuation equipment have addressed many of these issues. In addition, the Bovie® portfolio now includes the Smoke Shark® III, providing efficient smoke evacuation in a compact size and uniquely designed for the physician office

environment.

Today's smoke evacuation systems capture close to 100% of airborne particles in the smoke plume, are easy to control, and quieter than the previous designs. Plus, they are cost effective because they eliminate a workplace safety hazard, safeguard staff and patient health, and promote staff satisfaction and retention (see sidebar).

As a pioneer developer and manufacturer of electrosurgery tools, Bovie® is firmly dedicated to promoting the safe and effective use of these important devices, and to raising awareness of the need to mitigate OR smoke hazards. Along with its line of electrosurgery generators, Bovie® offers advanced smoke evacuation equipment compatible with almost all energy devices, for use in surgery centers, hospitals or offices.



The Bovie® Smoke Shark® II smoke evacuator is lightweight, sized to fit on most ESU carts, quiet and designed for easy operation.



Bovie® smoke evacuation accessories also include the SharkSkin and SEPAT pencil adapters, the Smart Shark remote activator, a selection of tubes for varied surgical needs, and filter systems with an alert indicating when the filter needs to be replaced.

Link to the following brochures:  
**Bovie® Smoke Shark® II Brochure**  
**Bovie® Smoke Shark® III Brochure**

## SIDEBAR

### Smoke Evacuation Generates Big Benefits

- Protects surgical staff's health (500,000 professionals nationwide)
- Reduces clinical staff's risk of exposure to physical (ultrafine particulate), chemical (up to 40 carcinogens), and biological (bacterial and viral pathogens) hazards and ensures compliance with current and/or future legislation
- Improves surgeon's visibility
- Enhances patients' comfort when awake during procedures
- Provides a work environment that is more pleasant and more comfortable, a significant plus for staff recruitment and retention
- Beneficial return on investment – a preventive measure that can reduce healthcare treatment expenses (and sick days) for a facility's surgical staff

Advocacy for smoke evacuation systems can be promoted at a facility through surgical staff education. Support can be gained from the facility safety officer and from administration. An important consideration to ensure consistent use in all applicable procedures is to install a smoke evacuation system in each surgical or procedure room.

### Take Control of Surgical Smoke for Better Protection.

To learn more  
or to schedule a demonstration  
with one of our Surgical Specialists, contact us  
via email at [info@symmetrysurgical.com](mailto:info@symmetrysurgical.com)  
or by phone at 1-800-251-3000.

## RECOMMENDED READING / DATA SOURCES:

### OR Today

“The Real Risks of Surgical Smoke,” Don Sadler, January 17, 2017

<http://ortoday.com/the-real-risks-surgical-smoke/>

### Outpatient Surgery Magazine

<http://www.outpatientsurgery.net>

“Are Your ORs Smoke Free?” Kay Ball, December 2009.

“The Case for Surgical Smoke Evacuation,” Irene Tsikitas, October 2011 supplement.

“Burning Question,” Mary Ogg, January 2017.

“Thinking of Buying Smoke Evacuators,” Kay Ball, January 2016.

“Editor’s Page: Make Surgical Smoke Evacuation Mandatory,” Dan O’Connor, May 2017.

“Surgical Smoke Almost Killed Me,” Anthony Hedley, February 2018.

“Taking Their Last Breath,” Dan O’Connor, April 2018.

### RELIAS

([www.relias.com](http://www.relias.com) / formerly AHC Media)

“Joint Commission Makes It Perfectly Clear: Get the Surgical Smoke Out of the OR,” May 1, 2009.

<http://www.ahcmedia.com/articles/112900-joint-commission-makes-it-perfectly-clear-get-the-surgical-smoke-out-of-or>

### OSHA / U.S. Department of Labor

<http://www.osha.gov/SLTC/etools/hospital/surgical/surgical.html#LaserPlume>

### SAGES

<https://www.sages.org/resources-smoke-gas-evacuation-during-open-laparoscopic-endoscopic-procedures/>

### ACS

<https://www.facs.org/covid-19/clinical-guidance/surgeon-protection>

### AORN

[https://www.aorn.org/guidelines/aorn-support/covid19-faqs\\_ga=2.90395354.1791317984.1587487959-890799583.1586544000](https://www.aorn.org/guidelines/aorn-support/covid19-faqs_ga=2.90395354.1791317984.1587487959-890799583.1586544000)