



SURGICAL SMOKE

FREQUENTLY ASKED QUESTIONS

The Problem: Surgical Smoke

1. What is surgical smoke?

Like cigarette smoke, surgical smoke can be seen and smelled. It is the result of human tissue contact with lasers and electrocautery pencils commonly used for dissection and hemostasis during surgery. The smoke has unpleasant odors and has been shown to have mutagenic potential.

2. Which procedures generate surgical smoke?

Many surgical procedures generate surgical smoke, including common surgeries such as mastectomies, knee replacements and C-section births. Electrocautery pencils stop the bleeding at the site and offer many benefits to surgeons over a traditional scalpel, yet they cause surgical smoke because of their high temperatures.

3. What is the harm in surgical smoke?

Surgical smoke contains over 150 hazardous chemicals and carcinogenic and mutagenic cells. It contains toxic gases and vapors such as benzene, hydrogen cyanide, formaldehyde, bioaerosols, dead and live cellular material, blood fragments, and viruses.

According to the Environmental Protection Agency, exposure to fine particulate matter in surgical smoke is associated with cardiovascular and respiratory health problems. In addition to causing respiratory illness, asthma, and allergy-like symptoms, surgical smoke may contain viruses, such as HPV. There are documented cases of HPV transmission from patients to providers via surgical smoke inhalation. Surgical smoke can cause cancer cells to metastasize in the incision site of patients having cancer removal surgery. Babies born by C-section breathe in their mother's surgical smoke at birth.

4. Is there a safe level of exposure for surgical teams?

No. The average daily impact of surgical smoke to the surgical team is the equivalent of inhaling the smoke of 27-30 unfiltered cigarettes. Perioperative nurses are in the operating room every day for long hours and have the highest exposure levels. These nurses report twice as many respiratory issues as the general population.

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5. Why don't all surgeons use evacuation equipment?

Until recently, surgical team members assumed surgical smoke was harmless, similar to the early beliefs about cigarette smoking. In addition, smoke evacuation equipment used to be loud and bulky. Today, with new technology that is rapidly evolving, the devices are smaller and more effective though too many surgeons and facilities have yet to trial these improved devices.