

**Missouri State Medical Association
House of Delegates**

Resolution # 13
(A-24)

Introduced by: Bethany Baumgartner, Maaya Dev, Hania Pawlowski,
Jasleen Sekhon, Kansas City University

Subject: Surgical Smoke

Referred to:

-
- 1 **WHEREAS**, surgical smoke, also known as plume, is released in operating rooms when medical personnel
2 utilize electrosurgery and laser devices, which is then inhaled by all medical staff and patients within the
3 operating room⁸; and,
4
- 5 **WHEREAS**, surgical smoke contains small particulate matter that can be easily inhaled and deposited in
6 the lungs causing severe respiratory distress and adverse health effects including pneumonia and
7 cancers^{6, 8, 9, 10}; and,
8
- 9 **WHEREAS**, types of tissues and cautery alter the composition of plume to include harmful chemicals⁸
10 including hydrogen cyanide, acetylene, butadiene, benzene, toluene, formaldehyde, volatile organic
11 compounds, which circumvents the standard masking precautions utilized in operating rooms^{2, 4, 6, 12};
12 and,
13
- 14 **WHEREAS**, a recent study found 10 out of 11 HepB positive patients undergoing surgical interventions
15 produced aerosol HepB in surgical smoke samples collected through the vaporization of tissue and blood
16 particles^{6, 11}; and,
17
- 18 **WHEREAS**, various viruses, bacteria, and infectious agents also spread through surgical smoke including
19 from genital wart removal and neoplastic melanoma and tumor cells,^{3, 5} and furthermore, Sars2-COVID
20 cannot be excluded from risk of exposure due to laparoscopic procedures on infected patients^{6, 9, 10, 11, 12};
21 and,
22
- 23 **WHEREAS**, multiple studies have stated that surgical smoke can increase risk for acute and chronic
24 pulmonary conditions, nausea, and irritation to the eyes, nose and throat^{9, 10}; and,
25
- 26 **WHEREAS**, studies show surgical smoke is just as mutagenic as cigarette smoke,^{9, 10} and
27 Whereas, in addition to the carcinogenic effects and serious adverse health risks of surgical smoke, the
28 malodorous smell may be considered bothersome to staff as it clings to hair and can cause tearing of the
29 eyes, dizziness, headache, bad breath, and drowsiness^{9, 10}; and,
30
- 31 **WHEREAS**, surgeons and hospital personnel responsible for the care of patients must practice at their
32 peak ability in order to provide quality care to all patients, without risk of feeling dizzy, drowsy, and
33 distracted from the tasks at hand^{9, 10}; and,
34
- 35 **WHEREAS**, one study indicated 3 out of 98 surgeons reported using evacuation systems and 72% of
36 surgeons believe precautions are inadequate to protect from the plumes². Furthermore, evacuation
37 systems have shown to be effective in facilities implementing them, but are used inconsistently¹; and,

38
39
40
41
42
43
44
45
46
47
48

WHEREAS, Missouri did implement policy in 2023 requiring facilities to implement action plans to reduce surgical smoke exposure by 2026 through HB-402, S-1000, S-212, HB-1711 the MSMA does not have a stance on the issue, and to ensure future legislation efforts do not reverse or amend said policies; therefore, be it,

RESOLVED, That the MSMA recognizes surgical smoke exposure has adverse effects on the health and well-being of all medical staff; and, be it further,

RESOLVED, That the MSMA supports current and future legislation to increase ventilation and decrease surgical smoke exposure routinely and regularly across medical facilities in Missouri.

Fiscal Note: None

Current Policy:

References:

1. Bigony L. Risks associated with exposure to surgical smoke plume: a review of the literature. *AORN J* . 2007;86(6):1013-1024. doi:10.1016/j.aorn.2007.07.005
2. Bree K, Barnhill S, Rundell W. The Dangers of Electrosurgical Smoke to Operating Room Personnel: A Review. *Workplace Health Saf* . 2017;65(11):517-526. doi:10.1177/2165079917691063
3. Fletcher JN, Mew D, DesCôteaux JG. Dissemination of melanoma cells within electrocautery plume. *Am J Surg* . 1999;178(1):57-59. doi:10.1016/s0002-9610(99)00109-9
4. Ilce A, Yuzden GE, Yavuz van Giersbergen M. The examination of problems experienced by nurses and doctors associated with exposure to surgical smoke and the necessary precautions. *J Clin Nurs* . 2017;26(11-12):1555-1561. doi:10.1111/jocn.13455
5. In SM, Park DY, Sohn IK, et al. Experimental study of the potential hazards of surgical smoke from powered instruments. *Br J Surg* . 2015;102(12):1581-1586. doi:10.1002/bjs.9910
6. Kwak HD, Kim SH, Seo YS, Song KJ. Detecting hepatitis B virus in surgical smoke emitted during laparoscopic surgery. *Occup Environ Med* . 2016;73(12):857-863. doi:10.1136/oemed-2016-103724
7. LeDuc R, Eikani C, Dickens B, Schiff A, Brown N. Surgical smoke and the orthopedic surgeon: a non-systematic review of the hazards and strategies for mitigating risk. *Arch Orthop Trauma Surg* . 2023;143(12):6975-6981. doi:10.1007/s00402-023-04967-y
8. Limchantra IV, Fong Y, Melstrom KA. Surgical Smoke Exposure in Operating Room Personnel: A Review. *JAMA Surg* . 2019;154(10):960-967. doi:10.1001/jamasurg.2019.2515
9. [Merajikhah A](#), [Imani B](#), [Khazaei S](#), [Bouraghi H](#). Impact of Surgical Smoke on the
a. Surgical Team and Operating Room Nurses and Its Reduction Strategies: A Systematic Review. *National Library of Medicine*. 2022. doi: [10.18502/ijph.v51i1.8289](https://doi.org/10.18502/ijph.v51i1.8289)
10. Okoshi K, Kobayashi K, Kinoshita K, Tomizawa Y, Hasegawa S, Sakai Y. Health risks associated with exposure to surgical smoke for surgeons and operation room personnel. *Surg Today* . 2015;45(8):957-965. doi:10.1007/s00595-014-1085-z

11. Pavan N, Crestani A, Abrate A, De Nunzio C, Esperto F, Giannarini G, Galfano A, Gregori A, Liguori G, Bartoletti R, Porpiglia F, Simonato A, Trombetta C, Tubaro A, Ficarra V, Novara G. Risk of Virus Contamination Through Surgical Smoke During Minimally Invasive Surgery: A Systematic Review of the Literature on a Neglected Issue
 - a. Revived in the COVID-19 Pandemic Era. *National Library of Medicine*. 2020. doi:
[10.1016/j.euf.2020.05.021](https://doi.org/10.1016/j.euf.2020.05.021)
12. Spruce L. Back to Basics: Protection From Surgical Smoke: 1.2
www.aornjournal.org/content/cme. *AORN J* . 2018;108(1):24-32. doi:10.1002/aorn.12273