

AMERICAN MEDICAL ASSOCIATION HOUSE OF DELEGATES

Resolution: 404
(A-24)

Introduced by: Medical Student Section

Subject: Protections Against Surgical Smoke Exposure

Referred to: Reference Committee D

1 Whereas, surgical smoke refers to smoke produced by electrical surgical devices in the
2 operating room, which can pose an occupational hazard to healthcare workers^{1, 2, 3}; and
3
4 Whereas, the carcinogenic effects of surgical smoke exposure from one operation have been
5 estimated to be equal to the effects of smoking one pack of cigarettes (or six unfiltered
6 cigarettes per gram of tissue ablated)^{2,4}; and
7
8 Whereas, surgical smoke can cause acute effects such as headache, cough, sore throat, eye
9 irritation, nausea, and dizziness^{5,6}; and
10
11 Whereas, surgical smoke is associated with an increased risk of cancer, inflammatory interstitial
12 pneumonia, and emphysema among surgeons compared to the general population^{7,8,9}; and
13
14 Whereas, the harms of surgical smoke cannot be sufficiently prevented by use of surgical
15 masks or by general operating room ventilation^{5,10}; and
16
17 Whereas, the CDC recommends the use of local exhaust ventilation (such as portable smoke
18 evacuators and room suction systems) alongside general ventilation to adequately reduce
19 exposure to harmful particulates, but local exhaust ventilation is often not used¹¹⁻¹⁴; and
20
21 Whereas, NIOSH's Health and Safety Practices Survey of Healthcare Workers indicates that
22 staff who receive increased training and who work at employers with standard procedures for
23 surgical smoke hazards are more likely to use local exhaust ventilation¹³; and
24
25 Whereas, the Occupational Safety and Health Association (OSHA) has no standardized
26 protocol for surgical smoke exposure, but the National Fire Protection Association (NFPA)
27 recently included a requirement to capture smoke in their 2024 edition of the Health Care
28 Facilities Code, which is used by the Centers for Medicare and Medicaid Services¹⁵⁻¹⁶; and
29
30 Whereas, fifteen states have laws to reduce surgical smoke exposure¹⁶; therefore be it
31
32 RESOLVED, that our American Medical Association support efforts to limit surgical smoke
33 exposure in operating rooms. (New HOD Policy)

Fiscal Note: Minimal - less than \$1,000

Received: 4/5/2024

REFERENCES

1. 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
2. Tomita Y, Mihashi S, Nagata K, et al. Mutagenicity of smoke condensates induced by CO₂-laser irradiation and electrocauterization. *Mutat Res.* 1981;89(2):145-149.
3. Merajikhah A, Imani B, Khazaei S, Bouraghi H. Impact of Surgical Smoke on the Surgical Team and Operating Room Nurses and Its Reduction Strategies: A Systematic Review. *Iran J Public Health.* 2022;51(1):27-36. doi:10.18502/ijph.v51i1.8289
4. Hill DS, O'Neill JK, Powell RJ, Oliver DW. Surgical smoke - a health hazard in the operating theatre: a study to quantify exposure and a survey of the use of smoke extractor systems in UK plastic surgery units. *J Plast Reconstr Aesthet Surg.* 2012;65(7):911-916. doi:10.1016/j.bjps.2012.02.012
5. 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
6. Okoshi K, Kobayashi K, Kinoshita K, et al. Health risks associated with exposure to surgical smoke for surgeons and operation room personnel. *Surg Today.* 2015;45:957-965.
7. Tseng HS, Liu SP, Uang SN, et al. Cancer risk of incremental exposure to polycyclic aromatic hydrocarbons in electrocautery smoke for mastectomy personnel. *World J Surg Oncol.* 2014;12:31. Published 2014 Feb 4. doi:10.1186/1477-7819-12-31
8. Liu Y, Song Y, Hu X, Yan L, Zhu X. Awareness of surgical smoke hazards and enhancement of surgical smoke prevention among the gynecologists. *J Cancer.* 2019;10(12):2788-2799. Published 2019 Jun 2. doi:10.7150/jca.31464
9. Gates MA, Feskanich D, Speizer FE, Hankinson SE. Operating room nursing and lung cancer risk in a cohort of female registered nurses. *Scand J Work Environ Health.* 2007;33(2):140-147. doi:10.5271/sjweh.1117
10. Gao S, Koehler RH, Yermakov M, et al. Performance of facepiece respirators and surgical masks against surgical smoke: Simulated workplace protection factor study. *Ann Occup Hyg.* 2016;60:608-618.
11. Control of smoke from laser/electric surgical procedures. Centers for Disease Control and Prevention. June 6, 2014. Accessed August 25, 2023.
12. Tokuda, Y., Okamura, T., Maruta, M. et al. Prospective randomized study evaluating the usefulness of a surgical smoke evacuation system in operating rooms for breast surgery. *J Occup Med Toxicol* 15, 13 (2020). <https://doi.org/10.1186/s12995-020-00259-y>
13. Steege AL, Boiano JM, Sweeney MH. Secondhand smoke in the operating room? Precautionary practices lacking for surgical smoke. *Am J Ind Med.* 2016;59(11):1020-1031. doi:10.1002/ajim.22614.
14. Bracale U, Silvestri V, Pontecorvi E, et al. Smoke evacuation during laparoscopic surgery: a problem beyond the COVID-19 period. A quantitative analysis of CO₂ environmental dispersion using different devices. *Surg Innov.* 2022;29:154-159.
15. OSHA. Electrosurgery Plume. Accessed Sept 4, 2023. <https://www.osha.gov/etools/hospitals/surgical-suite/smoke-plume>
16. Association of Perioperative Registered Nurses (AORN). Surgical Smoke-Free OR. AORN [<https://www.aorn.org/get-involved/government-affairs/policy-agenda/surgical-smoke-free-or>]. Accessed Aug 22 2023.

RELEVANT AMA POLICY

H-365.996 Regulation of Occupational Carcinogens

The AMA supports using the best available scientific data, including data derived from animal models, as a basis for regulation of occupational carcinogens.

[Sub. Res. 81, I-82; Reaffirmed: CLRPD Rep. A, I-92; Reaffirmed: CSA Rep. 8, A-03; Reaffirmed: CSAPH Rep. 1, A-13; Modified: CSAPH Rep. 8, A-23]

H-365.980 OSHA Regulations Pertaining to Physicians' Offices and Hospitals

The AMA continues to review the data and rationale used to substantiate OSHA regulations pertaining to medical practice in physician offices and health care facilities. Where OSHA rules and regulations are found to be unnecessary or inappropriate, the AMA will work for their modification or repeal. [Sub. Res. 218, A-94; Reaffirmed: BOT Rep. 29, A-04; Reaffirmed: BOT Rep. 19, A-14]

H-295.939 Protecting Medical Trainees from Hazardous Exposure

1. Our AMA will encourage all health care-related educational institutions to apply the Occupational Safety and Health Administration (OSHA) Blood Borne Pathogen standard and OSHA hazardous exposure regulations, including communication requirements, equally to employees, students, and residents/fellows.
2. Our AMA recommends: (a) that the Accreditation Council for Graduate Medical Education revise the common program requirements to require education and subsequent demonstration of competence regarding potential exposure to hazardous agents relevant to specific specialties, including but not limited to: appropriate handling of hazardous agents, potential risks of exposure to hazardous agents, situational avoidance of hazardous agents, and appropriate responses when exposure to hazardous material may have occurred in the workplace/training site; (b) (i) that medical school policies on hazardous exposure include options to limit hazardous agent exposure in a manner that does not impact students' ability to successfully complete their training, and (ii) that medical school policies on continuity of educational requirements toward degree completion address leaves of absence or temporary reassignments when a

pregnant trainee wishes to minimize the risks of hazardous exposures that may affect the trainee's and/or fetus' personal health status; (c) that medical schools and health care settings with medical learners be vigilant in updating educational material and protective measures regarding hazardous agent exposure of its learners and make this information readily available to students, faculty, and staff; and (d) medical schools and other sponsors of health professions education programs ensure that their students and trainees meet the same requirements for education regarding hazardous materials and potential exposures as faculty and staff. [Sub. Res. 229, I-92; Reaffirmed: CME Rep. 2, A-03; Reaffirmed: CME Rep. 2, A-13; Modified: CME/CSAPH Joint Rep. 01, A-19]

DRAFT