

Management of Surgical Smoke Tool Kit Resources

AORN Guidelines

Guideline for medical device and product evaluation. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2018:183-190.

Guideline for surgical smoke safety. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2018:469-498.

AORN Journal Articles

Ball K. Compliance with surgical smoke evacuation guidelines: implications for practice. *AORN J*. 2010;92(2):142-149.

Ball K. Surgical smoke evacuation guidelines: compliance among perioperative nurses. *AORN J*. 2010;92(2):e1-e22.

Benson SM, Novak DA, Ogg MJ. Proper use of surgical N95 respirators and surgical masks in the OR. *AORN J*. 2013;97(4):457-467.

Chavis S, Wagner V, Becker M, Bowerman MI, Jamias MS. Clearing the air about surgical smoke: an education program. *AORN J*. 2016;103(3):289-296.

Dobbie MK, Fezza M, Kent M, Lu J, Saraceni ML, Titone S. Operation clean air: implementing a surgical smoke evacuation program. *AORN J*. 2017;106(6):502-512.

Edwards BE, Reiman RE. Comparison of current and past surgical smoke control practices. *AORN J*. 2012;95(3):337-350.

Fencel JL. Guideline implementation: surgical smoke safety. *AORN J*. 2017;105(5):488-497.

Guideline summary: surgical smoke safety. *AORN J*. 2017;105(5):498-500.

Joyce C. Surgical masks and exposure protection in the perioperative setting. *AORN J*. 2018;107(2):253-256.

Lindsey C, Hutchinson M, Mellor G. The nature and hazards of diathermy plumes: a review. *AORN J*. 2015;101(4):428-442.

Lynch J. Questions about surgical smoke plume analysis. *AORN J*. 2014;100(2):126-128.

Ogg MJ. Eye protection in the OR [Clinical Issues]. *AORN J*. 2013;98(2):193.

Spruce L. Back to basics: protection from surgical smoke. *AORN J*. 2018;108(1):24-32.

York K, Autry M. Surgical smoke: putting the pieces together to become smoke-free. *AORN J*. 2018;107(6):692-703.

Other Publications



American National Standards Institute (ANSI). Standard 7.4 of Z136.3–2011: Safe use of lasers in health care. In: *ANSI Z136 Standards*. Orlando, FL. Laser Institute of America; 2011.

Beebe DS, Swica H, Carlson N, Palahniuk RJ, Goodale RL. High levels of carbon monoxide are produced by electro-cautery of tissue during laparoscopic cholecystectomy. *Anesth Analg*. 1993;77(2):338-341.

Brace MD, Stevens E, Taylor SM, et al. "The air that we breathe": assessment of laser and electrosurgical dissection devices on operating theater air quality. *J Otolaryngol Head Neck Surg*. 2014;43(1):39-57.

Choi SH, Kwon TG, Chung SK, Kim TH. Surgical smoke may be a biohazard to surgeons performing laparoscopic surgery. *Surg Endosc*. 2014;28(8):2374-2380.

CSA Z305.13. Plume scavenging in surgical, diagnostic, therapeutic, and aesthetic settings. CSA Group. <https://standards.globalspec.com/std/1659688/csa-z305-13>. Accessed August 23, 2018.

Dobrogowski M, Wesolowski W, Kucharska M, et al. Health risk to medical personnel of surgical smoke produced during laparoscopic surgery. *Int J Occup Med Environ Health*. 2015;28(5):831-840.

Dobrogowski M, Wesolowski W, Kucharska M, Sapota A, Pomorski LS. Chemical composition of surgical smoke formed in the abdominal cavity during laparoscopic cholecystectomy—assessment of the risk to the patient. *Int J Occup Med Environ Health*. 2014;27(2):314-325.

Hallmo P, Naess O. Laryngeal papillomatosis with human papillomavirus DNA contracted by a laser surgeon. *Eur Arch Otorhinolaryngol*. 1991;248(7):425-427.

IFPN Guideline for Smoke Plume. 2018. International Federation of Perioperative Nurses. http://www.ifpn.org.uk/guidelines/IFPN__STATEMENTS.dir/. Accessed August 23, 2018.

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.

Lavoie J, Marchand G, Cloutier Y, et al. Evaluation of bio aerosol exposures during hospital bronchoscopy examinations. *Environ Sci Process Impacts*. 2015;17(2):288-299.

Marsh S. The smoke factor: things you should know. *J Perioper Pract*. 2012;22(3):91-94.

Mellor G, Hutchinson M. Is it time for a more systematic approach to the hazards of surgical smoke?: reconsidering the evidence. *Workplace Health Saf*. 2013;61(6):265-270.

Messinger Harkavy L, Novak DA. Clearing the air: surgical smoke and workplace safety practices. *OR Nurse*. 2015;8(6):1-7. http://www.nursingcenter.com/lnc/ce_articleprint?an=01271211-201411000-00012#sthash.Ngj9D35k.dpuf. Accessed August 23, 2018.

Mihashi S, Jako GJ, Incze J, Strong MS, Vaughn CW. Laser surgery in otolaryngology: interaction of CO₂ laser and soft tissue. *Ann N Y Acad Sci*. 1976;267:263-294.

Miller KA, Siscovick DS, Sheppard L, et al. Long-term exposure to air pollution and incidence of cardiovascular events in women. *N Engl J Med*. 2007;356(5):447-458.

Mowbray N, Ansell J, Warren N, Wall P, Torkington J. Is surgical smoke harmful to theater staff? A systematic review. *Surg Endosc*. 2013;27(9):3100-3107.

Näslund Andréasson S, Mahteme H, Sahlberg B, Anundi H. Polycyclic aromatic hydrocarbons in electrocautery smoke during peritonectomy procedures. *J Environ Public Health*. 2012;2012:929053.

Oganesyan G, Eimpunth S, Kim SS, Jiang SI. Surgical smoke in dermatologic surgery. *Dermatol Surg*. 2014;40(12):1373-1377.

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.

Ott DE. Carboxyhemoglobinemia due to peritoneal smoke absorption from laser tissue combustion at laparoscopy. *J Clin Laser Med Surg*. 1998;16(6):309-315.

Ott DE. Smoke and particulate hazards during laparoscopy procedures. *Surgical Services Management*. 1997;3(3):11-13.

Pierce JS, Lacey SE, Lippert JF, Lopez R, Franke JE. Laser-generated air contaminants from medical laser applications: a state-of-the-science review of exposure characterization, health effects, and control. *J Occup Environ Hyg*. 2011;8(7):447-466.

Sanderson C. Surgical smoke. *J Perioper Pract*. 2012;22(4):122-128.

Scott H, Mustard P, Cooper H, Hayde C. Development of a plume evacuation policy a health and safety issue. *Dissector*. 2014;41(4):10-14.

Steege AL, Boiano JM, Sweeney MH. NIOSH health and safety practices survey of healthcare workers: training and awareness of employer safety procedures. *Am J Ind Med*. 2014;57(6):640-652.

Takahashi H, Yamasaki M, Hirota M, et al. Automatic smoke evacuation in laparoscopic surgery: a simplified method for objective evaluation. *Surg Endosc*. 2013;27(8):2980-2987.

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.

Tregoning C. Risks of surgical smoke exposure. *Occup Health*. 2015;67(3):27-30.

Wang HK, Mo F, Ma CG, et al. Evaluation of fine particles in surgical smoke from an urologist's operating room by time and by distance. *Int Urol Nephrol*. 2015;47(10):1671-1678.

Zhao C, Kim MK, Kim HJ, Lee SK, Chung YJ, Park JK. Comparative safety analysis of surgical smoke from transurethral resection of the bladder tumors and transurethral resection of the prostate. *Urology*. 2013;82(3):744.e9-744.e14.

Websites

Centers for Disease Control and Prevention (CDC)

Control of Smoke from Laser/Electric Surgical Procedures. DHHS (NIOSH) Publication Number 96-128. <https://www.cdc.gov/niosh/docs/hazardcontrol/hc11.html>. Accessed August 23, 2018.

The National Personal Protective Technology Laboratory. NIOSH-Approved Particulate Filtering Facepiece Respirators. https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/default.html. Accessed August 23, 2018.



<https://www.ecri.org/Pages/default.aspx>. Accessed August 23, 2018.

OSHA

Laser/Electrosurgery Plume. <https://www.osha.gov/SLTC/laserelectrosurgeryplume/index.html>. Accessed August 23, 2018.

Laser Hazards. Standards. <https://www.osha.gov/SLTC/laserhazards/standards.html>. Accessed October 1, 2018.

OSHA Hospital eTool. Surgical Suite Module: Smoke Plume.

<https://www.osha.gov/SLTC/etools/hospital/surgical/surgical.html#LaserPlume>. Accessed August 23, 2018.

Personal protective equipment: 1910.134 – respiratory protection. Occupational Safety and Health Standards: 29 CFR. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=12716. Accessed August 23, 2018.

OSHA Videos

The Difference Between Respirators and Surgical Masks <https://www.youtube.com/watch?v=ovSLAuY8ib8>

Respirator Safety

<https://www.youtube.com/watch?v=Tzpz5fko-fg>

Other websites

Fundamental Use of Surgical Energy™/FUSE. <https://www.fuseprogram.org/>. Accessed August 23, 2018.

International Federation of Perioperative Nurses. <http://www.ifpn.org.uk/>. Accessed August 23, 2018.

International Section of the ISSA on Prevention of Occupational Risks in Health Services. International Social Security Association. <https://www.issa.int/en/web/prevention-health/about>. Accessed August 23, 2018.