

**PS 403-9 A Review of the Occupational Hazards Related to Medical Lasers.** *J. Pierce, ChemRisk, Chicago, IL; S. Lacey, R. Lopez, J. Lippert, M. Colvard, University of Illinois at Chicago, Chicago, IL.*

**Objective:** The clinical use of lasers in surgery began in the early 1970s with applications of the carbon dioxide laser in otolaryngology, and since then the use of lasers has become commonplace in many medical and surgical specialties. However, the use of medical lasers may present unforeseen occupational hazards to operators and ancillary personnel. The purpose of this analysis is to summarize and present all of the seminal published literature pertaining to medical laser hazards and their control in order to understand the types and extent to which these hazards exist, to inform the medical community about these hazards, and to prioritize future areas of occupational health and safety research.

**Methods:** A literature search was performed using PubMed, and all papers relevant to beam and non-beam medical laser hazards were reviewed. The Rockwell Laser Industries Laser Accident Database was also searched for medical laser injuries and related incident reports were abstracted.

**Results:** Eye injuries, skin burns, and injuries related to the onset of fires, and electric shock have been reported in relation to medical laser use. In addition, it is probable that both acute and chronic health effects have been experienced by medical personnel as the result of exposure to laser generated air contaminants, which to date is largely not quantified, not regulated by OSHA, and oftentimes lacking of adequate control mechanisms.

**Conclusions:** Despite their known occurrence, there is a paucity of literature describing these hazards and others, such as the resulting noise exposure, and their associated health outcomes. Due to the clinical benefits that laser technologies provide, it is expected that the number of applications in which lasers are used will continue to grow, which is anticipated to result in an increase in the number and type of personnel with future exposure to laser hazards.