Laser Generated Air Contaminants (LGACs)

When the beam irradiance exceeds 1,000 W/cm², an evaluation shall be performed by an Industrial Hygienist to identify engineering controls for laser generated air contaminants. Places where irradiances exceed 10,000 W/cm² shall be enclosed to the maximum extent practical, and be properly ventilated. Exposure to LGACs shall not normally be managed with the use of PPE.

Organic materials, including polymers and tissue, will produce plumes containing potentially carcinogenic materials when struck by laser radiation. Polymers will pyrolyze to form toxic gases. Metals and inorganic materials will form fume clouds. These can be treated as common hot-gas air contaminant sources in accordance with ACGIH and ASHRAE criteria. The interiors of the enclosures should be easy to clean/decontaminate. The usefulness of HEPA filtration of the effluent shall also be evaluated when beam irradiances exceed 10,000 W/cm².

ANSI Z136.1 7.3