

Smoke plumes

Minimising harmful effects

A smoke plume may contain hair particles, viable cells, bacteria, viruses, prions and other deleterious matter. Numerous toxic and carcinogenic gases will be given off. Inhalation of the smoke plume may adversely affect staff and patients.

Smoke plume reduction

Take precautionary action to reduce, if not remove, the plume. The amount of smoke plume and other deleterious matter generated varies with the:

- procedure being undertaken
- target tissue
- technique employed
- duration of energy applied to tissue
- instrument used to vaporise the tissue

Face masks

Users, patients and clients should wear well-fitting, high filtration-efficiency face masks (e.g. particulate respirators that filter particles of 0.1 µm in size) during all electrosurgical, laser and IPL procedures.

Standard surgical face masks are **not** sufficient to act as the primary method of particle filtration.

Smoke evacuator systems

The most effective way of protecting personnel, patients and clients from inhaling the constituents of the smoke plume is to use either a stand-alone smoke evacuator, or an evacuation system that is incorporated into the electrosurgery or laser system.

All smoke evacuators should have a high-efficiency filter that collects all smoke generated during the procedure.

Medical vacuum systems

Medical vacuum systems (operating theatre wall suction systems) are **not** suitable for smoke plume removal. The accumulation of particles over time eventually decreases suction capability in theatre evacuation systems. All evacuated airborne particles are deposited into a central vacuum system, which can become blocked and bacteria can then multiply.

Staff training

Staff involved in procedures resulting in smoke plumes should be educated on how they are produced and how to reduce or eliminate exposure. Training by suitably qualified in-house personnel or smoke evacuator manufacturers should be considered.

Regulations

Employers should carry out an assessment of the risks of plume exposure and ensure that steps are implemented to reduce risks. The Control of Substances Hazardous to Health Regulation (COSHH) provides information on risk assessments (see www.hse.gov.uk/coshh/).

Further guidance

There is more detailed guidance in DB 2008(03) Guidance on the safe use of lasers, IPL systems and LEDs. This document can be obtained from our website (www.mhra.gov.uk).

Report adverse incidents

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