

# Laser safety – do you think you are safe?

BY MIKE MURPHY

The author explains the importance of proper qualifications and training to ensure both patients and practitioners are protected.

## Safety concerns

For those working with lasers, safety must be everyone's concern. We should all be checking equipment and safety glasses routinely, to ensure compliance with the law and good practice. Especially Class 4 lasers! (Are your lasers 'Class 4'? How can you tell?) Safety not only includes the actual laser or intense pulsed light (IPL), but also the personal protective equipment, the delivery system, the treatment room, the applied protocols and the users' training records.

However, there are other concerns which are not so easily checked.

In the last couple of years there have been growing concerns over the contents of the plume which occurs during laser hair removal. Studies in America have found a list of toxic substances within these plumes, including some carcinogens. There is no evidence, as yet, that these substances have infected any users or patients. But using clinical masks and air extractions systems are a good start to minimise potential problems.

Likewise, the plume from CO<sub>2</sub> laser procedures involving warts and verrucae has been shown to contain viable particles of virus DNA. Unfortunately, there have been cases where laser operators have developed lesions, believed to have come from inhaling those airborne particles. Again, air extractors and masks will help minimise this issue.

A few years ago I discovered that high speed ink fragments fly out of the skin during laser tattoo removal [1]. These micron-sized particles are too small to detect with the human eye, but they can occasionally be felt as they strike the skin of the operator. My report on my findings is about to be published in the journal *Lasers in Surgery and Medicine* ('High speed ink aggregates are ejected from tattoos during Q-switched Nd:YAG laser treatments' – DOI 10.1002/lsm.22817). There's no evidence that



these high-speed fragments carry anything contagious, but it is a possibility. Further research is required. It appears that the best way to minimise any such risk is to use the glass slide technique, which physically stops any flying debris in its tracks [2].

Then there are other concerns – ocular safety. Class 3B lasers output between 5 and 500 milliwatts, while Class 4 lasers output more than 500mW of power and both are deemed to be potentially 'hazardous' to the eye. Proper eye protection must be utilised under the guidelines within BS EN 207:2017. New work is currently underway on the 207 standard to make it truly 'international'. More recent regulations have come into effect for eye protection when using IPL systems – the BS ISO 12609 standard. Are you sure your safety glasses comply with these standards? If not, then please consult a laser protection adviser (LPA).

Many imported lasers from China do not come with the proper protective safety glasses. Using these lasers without the correct glasses risks both your own and your patients' eyesight. It's not worth the risk

as your insurance company will not cover any claim due to the use of improper safety glasses. Your LPA should be able to advise you. (Visit either [LaserProtectionAdviser.com](http://LaserProtectionAdviser.com) or [Rpa2000.org.uk](http://Rpa2000.org.uk) for lists of UK-based LPAs).

As I said at the start, safety is everyone's business. We all need to keep on top of it. With that in mind, we should consider the appropriate training, for all staff.

## Insurance companies

Last year, at the Aesthetic Medicine meeting in Manchester, I talked to representatives from various insurance companies about trends in their industry. They were all concerned about the lack of appropriate training in the aesthetics field, in general. In particular, they were all very concerned with treatments utilising Class 4 lasers.

Laser tattoo removal is very high in their list of concerns. One company told me that they no longer offered insurance cover for this treatment because "there are too many claims". This sets a very bad precedent. When I started the first commercial laser tattoo removal clinic in the UK in 1989, using a Q-switched ruby laser, we could only obtain insurance from Lloyd's of London. Nobody else would touch us, because there was no commercial experience of this treatment in those days. Now, I fear that such a situation might return, based on a

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huge amount of 'bad' commercial experience.

This is not good for anyone. It might start with laser tattoo removal – who knows where it might end up if insurance companies become more 'picky'. The underlying problems are lack of regulation and appropriate training.

Unfortunately, government regulations in this area are thin on the ground. Anyone, whether 'qualified' or not, can open a laser clinic in the UK. In some areas there is no need to be registered with any authority. In other areas only those offering 'medical' treatments need to be registered. (Hair removal by laser or IPL is considered to be 'non-medical', as is tattoo removal, while removal of blood vessels, using the same equipment, is 'medical'! Why?)

At present, it appears that the insurance companies are trying to drive up standards by demanding proper training and qualifications. While this is a good thing, it does not deter those cowboys who are not insured!

### The benefits of 'refresher' courses

During my discussions with the insurance agents they all agreed that refresher courses are a good idea. In fact, one company said they insisted that all their laser / IPL users sat the 'Core of Knowledge' course every three years, to ensure that they were up to date. It is well known that people 'forget' much of what they learn in training courses over time, and especially if they do not apply it routinely.

We also discussed enhanced safety training for laser protection supervisors (LPS). These are usually on-site staff members who have undergone specialist laser safety courses. Two of these companies expressed an interest in offering preferential premiums to those clinics who employed qualified LPSs. They felt that having such people around would reduce the risk of laser / IPL accidents happening, and hence reduce claims.

### Training, training, training!

Following the publication of a number of reports by Health Education England (HEE), commissioned by the Department of Health (including the Keogh report), HEE have set out a minimum set of requirements for trainers in the non-surgical aesthetic field. This is designed to provide a high level of training amongst practitioners to ensure good practice and patient safety.

A new voluntary organisation has been established to assist the public and practitioners to find properly qualified trainers and operators – the Joint Council for Cosmetic Practitioners (JCCP). They have set up a register of trainers who have satisfied their entry criteria and offer a range of aesthetic courses which have been accredited by authorised awarding bodies.

Another new organisation which works alongside the JCCP and aims to improve standards and assist in the choice of properly trained cosmetic practitioners is the Cosmetic Practice Standards Authority (CPSA – cosmeticstandards.org.uk). Unlike CQC requirements, which are mandatory, the JCCP and CPSA are purely voluntary organisations set up to guide cosmetic practitioners with 'best practice' guidelines.

Albert Einstein is credited with saying "Once you stop learning, you start dying." Continual training is not only good for the brain, it is essential for business success. Apart from the obvious safety and efficacy benefits, it keeps you up to speed and your mind sharp.

Nobody wants to receive a lawyer's letter claiming 'negligence' or 'incompetence' (I've been there! It is very unpleasant and rather intimidating). Training and safety are essential in any business, but particularly so when dealing with Class 4 lasers. If you don't know what a Class 4 laser is, you need training! If you don't know how to protect yourself, your staff and your patients from a Class 4 laser, you need training. If you're not sure...you need training!

### References

1. Murphy MJ. A novel, simple and efficacious technique for tattoo removal resulting in less pain using the Q-switched Nd:YAG laser. *Lasers Med Sci* 2014;**29**(4):1445-7.
2. Murphy MJ. High speed ink aggregates are ejected from tattoos during Q-switched Nd:YAG laser treatments. *Lasers Surg Med* 2018;**50**:711-7.

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### AUTHOR



### Mike Murphy,

General Secretary, Association of Laser Safety Professionals.

**E: [mike.murphy@dermalase.co.uk](mailto:mike.murphy@dermalase.co.uk)  
MikeMurphyBlog.com**

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