Research activities related to optical radiation sources in aesthetics and entertainment sector

There is no national legislation or regulatory framework regarding artificial optical radiation protection of the general public, in the aesthetics and the entertainment industry. Moreover, the national legislation is not yet harmonized with the EU Regulation 2017/745 on medical devices, which also applies to certain groups of products without an intended medical purpose. Such groups include high intensity infrared, visible light and ultraviolet emitting equipment intended for use on the human body, including coherent and non-coherent sources, monochromatic and broad spectrum, such as lasers and intense pulsed light equipment, for skin resurfacing, tattoo or hair removal or other skin treatment. The existing requirement in Greece is that laser hair removal should be performed by dermatologists, plastic surgeons or aestheticians.

Furthermore, there are no data available regarding the type and the number of such facilities, the type of the procedures and the extent of their use in the country. Additionally, serious concerns have been raised regarding the general public and the professionals’ safety of exposure to optical radiation sources in the aesthetics and the entertainment industry, from the radiation protection standpoint, even if EC Directive 2006/25/EC for workers safety, applies.

The Greek Atomic Energy Commission (EEAE), the national competent regulatory authority for radiation protection, acknowledges the lack of data and the severity of the matter. Thus, EEAE initiated a research action of the general public and occupational exposure to laser and non-laser light sources in the aesthetics and the entertainment industry. This action has been included in the framework of the three year project: “Assessment of the national system for protection against ionizing and non-ionizing radiation – awareness-raising actions (code name AVRA)”, National Strategic Reference Framework, 2017-2019. The project is funded by the European Regional Development Fund under the “Strategic Development Action of Research and Technological Organizations” of the program “Entrepreneurship and Innovation Competitiveness”. The AVRA project aims: a) to investigate the public knowledge and perception on radiation risks, as well as safety culture aspects among groups of professionals, b) to establish key indicators for the assessment of the national radiation protection system and c) to provide training and information by the means of new technologies (e.g. smartphone applications).

This research action regarding the use of optical radiation sources in the aesthetics and the entertainment sector, is the first action of this kind ever performed in Greece. The purpose of the action is to assess the risk from exposure to optical radiation sources in the aesthetics and the entertainment sector. In order to perform risk assessment, the following parameters will be evaluated and used as inputs concerning the aesthetics sector: a) the optical radiation sources that are used in the most popular aesthetic procedures (hair removal and facial skin rejuvenation), namely the characteristics of the lasers, intense pulsed light sources (IPLs)
and light emitting diodes (LEDs) that are used in relevant facilities as well as the commercially available hair removal IPL for home use, b) the level of the general public and the occupational exposure to optical radiation, c) the number of the exposed persons, d) the frequency of such aesthetic procedures and e) the existing safety measures.

For the entertainment sector (laser shows), the parameters that will be evaluated and used as inputs to the risk assessment process, are: a) the characteristics of the lasers that are used, b) the level of the general public and the occupational exposure to laser radiation, c) the number of the exposed persons and d) the existing safety measures.

The level of exposure to optical radiation will be estimated by using both the data from the technical characteristics of the sources, as given by the manufacturer and the results from optical radiation measurements of lasers, IPLs, or LEDs. Measurement protocols and reasonably foreseeable exposure scenarios will be developed in order to cover any possible exposure condition. Risk evaluation will be performed using the exposure limits (ELs) to artificial optical radiation that have been established by ICNIRP and adopted by the EC Directive 2006/25/EC.

**New information activities**

A national public opinion survey about the knowledge and the perception on radiation risks is planned to be conducted until the end of 2018. This will be a quantitative mixed-mode survey and the sample of individuals to respond will be representative of the Greek population. Questions regarding optical radiation and its use in aesthetics have been included in the questionnaire.

In parallel, a qualitative survey based on interviews with key individuals, such as policy makers and professionals, will also be conducted in order to evaluate safety culture aspects related to radiation protection.

The results from the public opinion survey, the key individuals’ interviews and the risk assessment will be used in order to develop risk management strategies from laser and non-laser light sources in the aesthetics and the entertainment industry. The risk management strategies for the professionals will include education and training of the operators of the optical radiation sources, while the risk management strategies for the general public will include public awareness campaigns regarding the optical radiation risks associated with exposure to laser and non-laser radiation sources in the aesthetics and the entertainment sector. These risk management strategies will form the safety culture framework for the use of laser and non-laser optical radiation sources in these sectors.

**Policy framework concerning sunbeds**

The strategic framework for the development and enhancement of safety culture in the artificial tanning sector in Greece, is planned to be comprised of three autonomous but interconnected components, which are: a) a sunbed operators’ e-training course and certification process, b) a code of practice addressed individually to the business owners, the sunbeds operators and the sunbeds users and c) communication strategies aiming to raise awareness regarding UVR and artificial tanning to all interested parties. This artificial tanning safety culture framework is the policy option that EEAE undertook and it is embedded in the upcoming national legislation and regulations for the provision of artificial tanning services in Greece (Petri A. and Karabetsos E., A strategic framework for the development and enhancement of safety culture in the artificial tanning sector in Greece,