HELLENIC REPUBLIC
Report on optical radiation activities
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Actions to manage risk from exposure to optical radiation sources for non-medical purposes

Safety issues are raised from the use of low and high-power optical radiation sources, both laser and non-laser, by non-experts for aesthetic and entertainment purposes. In Greece, legislation to regulate these sectors does not exist and systematic investigations regarding public exposure to such cases have never been performed. Greek Atomic Energy Commission (EEAE) relied on the ISO 31000:2018 framework to manage the public exposure risk to: 1) lasers, 2) IPLs and 3) LEDs in aesthetic procedures, 4) commercially available IPLs and LEDs for home-use, 5) lasers for laser shows, 6) laser projectors and 7) laser pointers. This work was performed within the AVRA Project funded by the National Strategic Reference Framework (NSRF, 2017–2019) under the 'Action for Strategic Development of Research and Technology Entities' of Operational Program 'Competitiveness Entrepreneurship and Innovation'.

Risk was evaluated as: i) Intolerable for lasers and IPLs at aesthetic procedures and in the case of laser pointers, ii) Severe for lasers at laser shows and iii) Moderate for LEDs at aesthetic procedures, home-use IPLs/LEDs and laser/LED projectors. Operators training, public awareness campaigns, intensive market surveillance actions and enhancement of the regulatory framework have been proposed as risk treatment/control measures and have been prioritized in this order, according to their effectiveness in reducing the exposure risk and their urgency of implementation.

EEAE developed a training course for the laser and non-laser light sources operators. This course aims to educate the operators regarding the safety issues related to optical radiation and the proper use of the laser and non-laser light sources.

Actions to manage risk from exposure to portable home-use, UV-C disinfection devices

EEAE conducted sampling inspections of commercially available portable, home-use UV-C disinfection devices in order to assess the public exposure risk, form the radiation protection point of view. It is found that the investigated devices were equipped with protection mechanisms to prevent human exposure to UV-C but these mechanisms could be easily bypassed. In case of deliberate exposure to the UV-C radiation emitted by the devices, the exposure limit to UV radiation, 30 J m^{-2} (Artificial Optical Radiation Directive-AORD 2006/25/EC), could be reached within few seconds or some minutes, depending on the device.

New information activities

International

EEAE recognized that managing the risk from exposure to low and high-power optical radiation sources for non-medical purposes is not a solely national issue but an international challenge as well. In order to raise awareness among relevant stakeholders at international level, EEAE participated at the 6th European Congress on Radiation Protection – IRPA 2022, 30 May – 3 June 2022, Budapest, Hungary and discussed the developed risk management strategy.

National

EEAE designed awareness campaigns in order to inform the public regarding the:

- Lasers/IPLs/LEDs at aesthetic procedures exposure risk and the laser pointers safety and proper use. The developed infographic/brochures are available at: https://eeae.gr/5-AISTHHTIKH_en.pdf
- Laser pointers safety and proper use. The developed infographic/brochures are available at: https://eeae.gr/2_LASER_POINTERS_FINAL_en.pdf
- UV emitting devices applications and risk. The campaign included the cases of UV-C disinfection devices, sunbeds and UV nail lamps. The developed infographic/brochures are available at: https://eeae.gr/6-UV_EN.pdf

EEAE discussed the risks from exposure to high power optical radiation sources for non-medical purposes at the 86th International Thessaloniki Fair, 13 September 2022.

All public awareness campaigns run though EEAE's site (www.eeae.gr) and social media accounts and at commercial and scientific exhibitions.

Statements regarding optical radiation sources for non-medical purposes

EEAE published two research/policy papers regarding risk management of exposure to optical radiation sources for non-medical purposes:

- A.Petri, E. Karabetsos, Public exposure to artificial optical radiation in the aesthetics and the entertainment sector in Greece. Risk management actions, Radiation Protection Dosimetry, Volume 199, Issue 8-9, June 2023, pages 806-817, https://doi.org/10.1093/rpd/ncad083

  The paper points out the profound misuse of low-and high-power optical radiation sources at aesthetics and entertainment sector by non-experts and analyzes the developed risk management strategy at national level.

- A.Petri, E. Karabetsos, Extreme output power emitted by commercial laser pointers in Greece. A solely local or a global issue", Journal of Laser Applications, 34, 022025 (2022), https://doi.org/10.2351/7.0000664.

  The paper points out the easy access to high-power low-cost laser pointers in the market, the severe hazard that such devices pose especially for children and teenagers, and argues that a universal laser safety language might facilitate manufacturers' compliance and user safety.