UNIVERSITY OF BATH HEALTH AND SAFETY STANDARD

Artificial Optical Radiation (AOR)

Version Number	Version 4	Date of Approval	June 2026	Review Date	Three years from acceptance by UHSC
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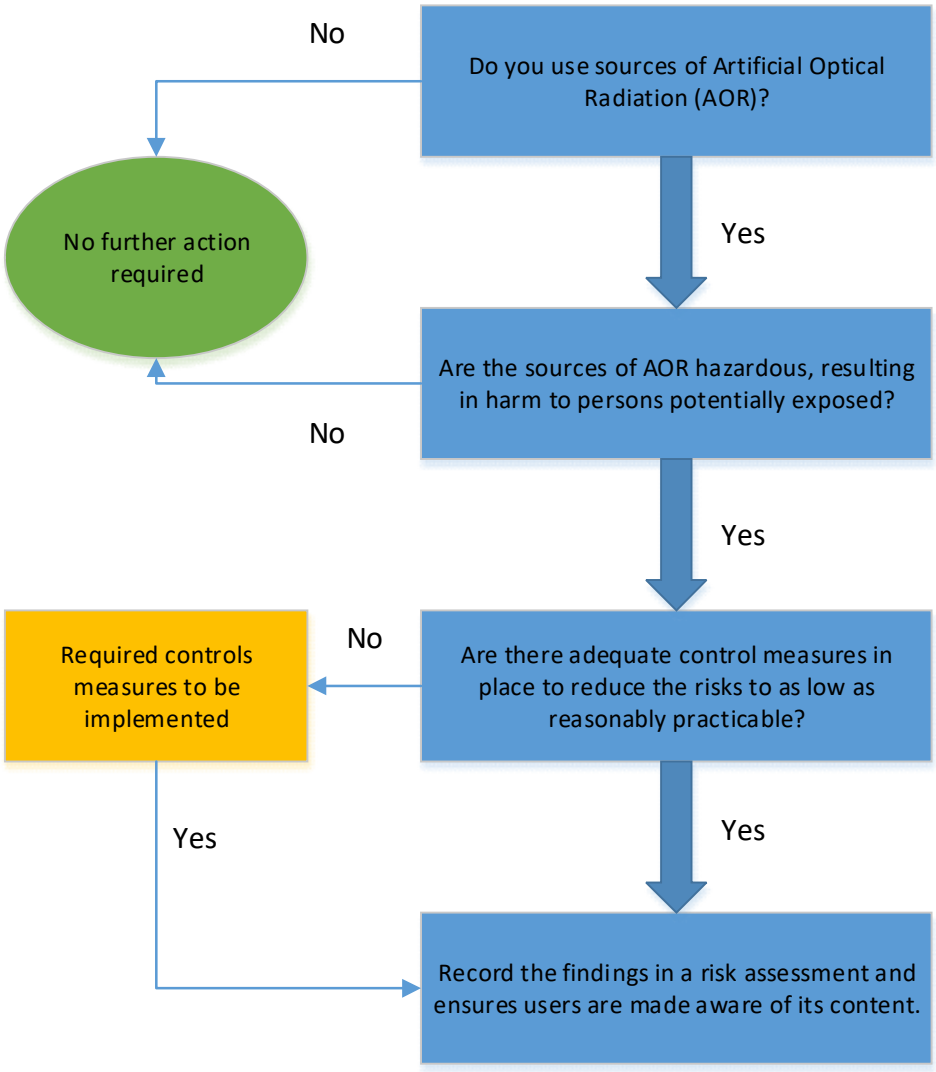
Aims	The University is committed to ensuring the health, safety and welfare of all staff, students and visitors. The University aims to protect the eyes and skin of all persons that could potentially be exposed to hazardous sources of artificial optical radiation. It will achieve this by applying appropriate protective measures to reduce the risk to as low as reasonably practicable.				
Scope	This standard applies to university activities that use or produce artificial optical radiation (as defined below). It excludes exposure to natural sunlight.				
Relevant Legislation	• Health & Safety at Work etc. Act 1974 (HASWA) • The Management of Health & Safety at Work Regulations 1999 (MHSWR) • The Control of Artificial Optical Radiation (AOR) Regulations 2010 HSE Guidance Artificial Optical Radiation Guidance on the Control of Artificial Optical Radiation at work Regulations 2010 British Standard (BS EN) 60825 series (available at BS Online BSOL) Association of University Radiation Protection Officers Guidance on the safe use of lasers in education and research				
Definitions	Artificial Optical Radiation (AOR) Optical radiation is another term for light, covering ultraviolet (UV) radiation, visible light, and infrared radiation including lasers. Artificial refers to man-made and therefore excludes natural sunlight. Optical radiation is a form of non-ionising radiation.				
	Non-Ionising radiation Any type of electromagnetic radiation that does not carry enough energy to ionise atoms or molecules (convert them to ions).				
	Laser Safety Officer Appointed person/s who is knowledgeable in the evaluation and control of laser hazards and has responsibility for oversight of the control of laser hazards.				
Responsibility for implementation	Heads of Departments Technical Managers Supervisors/Managers Laser Safety Officers				
Training availability:	Task specific training by Supervisors Videos on laser safety provided by the National Physical Laboratory (NPL) are incorporated into a moodle Laser Safety Training Module here.				

Standard to meet:		Accountability	Reference documents and more information
1.	Identify sources of AOR within areas of responsibility. Where hazardous lasers are identified (Class 3B and 4); a Laser Safety Officer (LSO) must be appointed in writing.	Heads of Department	BS EN 60825-1: 2014 Safety of laser products. Equipment classification and requirements.
2.	Determine whether the sources of AOR are hazardous and could result in harm to persons affected. Consult: - HSE Tables in guidance document - Manufacturers data - Relevant British Standards, e.g. BS EN 62471: 2008 (lamps) or BS EN 60825-1: 2007 (lasers)	Technical Managers/ Supervisors/ Managers	Guidance on the Control of Artificial Optical Radiation at work Regulations 2010
3.	Ensure adequate control measures are in place to manage the risk to non-ionising radiation to as low as reasonably practicable. Record these findings in a risk assessment. Typical control measures include: - Use an alternative, safer light source that can achieve the same result. - Use enclosures, filters, screens, remote viewing, curtains, safety interlocks, clamping of work pieces, dedicated rooms, remote controls and time delays. - Train workers in best-practice and give them appropriate information. - Organise the work to reduce exposure to workers and restrict access to hazardous areas. - Issue personal protective equipment, e.g., clothing, goggles or face shields. - Use relevant safety signs.	Technical Managers/ Supervisors/ Managers	
4.	Ensure the following specific conditions are considered in the risk assessment: - persons whose health is at particular risk, (e.g., those with pre-existing medical conditions made worse by light). - persons using any chemicals, (e.g., skin creams) which could react with light to make any health effects worse. - persons who are exposed to multiple sources of light at the same time. - If exposure to bright light could present unrelated risks, (e.g., temporary blindness could lead to mistakes being made in hazardous tasks).	Technical Managers/ Supervisors/ Managers	
5.	Put in place procedures to deal with potential over exposures, e.g., referral to a medical professional.	Technical Managers/ Supervisors/ Managers	
6.	Use any protective equipment provided to prevent/minimise exposure to artificial optical radiation in the workplace when required and in accordance with instruction.	Employees	


Do you use sources of Artificial Optical Radiation (AOR)?
No
No further action required
Yes
Are the sources of AOR hazardous, resulting in harm to persons potentially exposed?
No
Yes
Are there adequate control measures in place to reduce the risks to as low as reasonably practicable?
No
Required controls measures to be implemented
Yes
Yes
Record the findings in a risk assessment and ensures users are made aware of its content.

Generic Risk Assessment:

Risk Assessment Title: Artificial Optical Radiation (AOR)	Date Produced: June 2026	Review Date: June 2029
Overview/Description of Activity: Assessment of the potential exposure of persons to Artificial Optical Radiation during work activities at the University of Bath. This includes ultraviolet (UV) radiation, visible light, and infrared radiation including lasers. This assessment only covers hazards associated with AOR exposure; other incidental hazards associated with these operations covered should be included in the specific assessment for the task.	**Duration/Frequency of Activity**: Activities can vary in duration and length depending on the type of work being carried out. This assessment applies to short term and long-term work of any frequency.	
Location of Activity: University of Bath premises	**Generic or Specific Assessment: Generic Assessment**	

#	Hazard(s) identified	Who might be affected and how	Existing controls & measures	Severity (a)	Likelihood (b)	Risk Rating (a x b)	Additional control/action required
1	Persons working with hazardous UV sources, e.g. certain categories of lamp/light/LEDs, high intensity torches, spotlights, UV spectroscopy, fluorescence and sterilisation equipment, welding operations, plasma cutting.	Persons operating the equipment or in the immediate vicinity. Exposure results in skin/eye damage.	• Equipment manufactured in accordance with requirements of PUWER and Machinery Directive 2006/42/EC (CE marked) • Equipment operated by trained, competent persons in accordance with manufacturer's instructions • Equipment maintained in accordance with manufacturer's instructions where applicable • Local operating instructions: warning signs, restricted access, shielding, UV filters, minimise duration of exposure, avoid looking directly into light or shining light in eyes • Appropriate PPE provided and worn, e.g. gloves to protect skin of hands and safety glasses that restrict the optical radiation to acceptable levels.	3	2	6	

#	Hazard(s) identified	Who might be affected and how	Existing controls & measures	Severity (a)	Likelihood (b)	Risk Rating (a x b)	Additional control/action required
2	Exposure to Class 3B and 4 Lasers equipment.	Persons carrying out the work activity and those in the vicinity of the laser beam. Damage to eyes including blindness, burns to skin.	• Equipment manufactured in accordance with requirements of PUWER and Machinery Directive 2006/42/EC (CE marked) • Equipment operated by trained, competent persons in accordance with manufacturer's instructions • Equipment maintained in accordance with manufacturer's instructions • Local operating instructions and risk assessments in place • Robust justification for open beam work • Engineered control measures such as enclosures, interlocks, shielding • Appropriate PPE provided and worn, e.g. gloves to protect skin of hands and safety glasses that restrict the optical radiation to acceptable levels and allow the wearer to see the work area • Warning signs, restricted access • Appointed department Laser Safety Officer (LSO) who will review risk assessments and carry out routine inspections	4	2	8	

#	Hazard(s) identified	Who might be affected and how	Existing controls & measures	Severity (a)	Likelihood (b)	Risk Rating (a x b)	Additional control/action required
3	Exposure to Infra-Red (IR) light, e.g. IR Spectroscopy, Thermography.	Persons carrying out the work activity and those in the vicinity of the IR light beam. Damage to eyes including blindness, burns to skin (depending on intensity).	• Equipment manufactured in accordance with requirements of PUWER and Machinery Directive 2006/42/EC (CE marked) • Equipment operated by trained, competent persons in accordance with manufacturer's instructions • Equipment maintained in accordance with manufacturer's instructions • Local operating instructions and risk assessments in place • Engineered control measures such as enclosures, interlocks, shielding where identified by risk assessment • Appropriate PPE provided and worn, e.g. gloves to protect skin of hands and safety glasses that restrict the optical radiation to acceptable levels and allow the wearer to see the work area • Warning signs, restricted access where appropriate	4	2	8	

#	Hazard(s) identified	Who might be affected and how	Existing controls & measures	Severity (a)	Likelihood (b)	Risk Rating (a x b)	Additional control/action required
4	Use of safe light sources (see HSE guidance doc) includes task lighting, heaters, computers, projectors, UV insect traps, Class 1M, 2 and 2M lasers	As long as used under normal operating conditions there should be negligible risk of harm to persons operating equipment or in area of operation.	• All equipment should be used and maintained in accordance with manufacturer's instructions • Users receive appropriate information, instruction, training and supervision	1	2	2	
5	Exposure of persons with health conditions that may make them more sensitive to light.	Increased risk of damage to skin/eyes	• A specific risk assessment must be carried out for workers who have declared such a condition.	3	2	6	