

Health and Safety Executive Senior Management Team Paper SMT/09/79			
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Exemptions:	FOI Section 42: Legal professional privilege		

HEALTH AND SAFETY EXECUTIVE
Senior Management Team

**Consultation on the Proposed Control of Artificial Optical Radiation at Work
Regulations 2010**

A Paper by Matt Penrose & Norman Smith

Advisors: Louise Johnson, Navroza Ladha, Colin Connor, & Steve Walker

Cleared by Jane Willis on 5 October 2009

Issue

1. SMT clearance of the consultation package for the proposed Control of Artificial Optical Radiation at Work Regulations.

Timing

2. The consultation package will be discussed by the Board on 21 October. Formal stakeholder consultation will be launched early November 2009.

Recommendation

3. The SMT are invited to clear the Board paper and associated documents.

Background

4. Hazardous sources of artificial optical radiation (AOR) in the workplace can cause harm and need to be managed; evidence indicates this is already being done in the UK with few reports of harm.
5. A European Directive was adopted on AOR in 2006. At their June meeting, the Board directed that new Regulations were required to implement the Directive but in such a way as to keep additional burdens to a minimum.
6. The Directive has been subject to lobbying of Ministers by EEF Ltd who also undertook a press campaign highlighting their concerns. We have reiterated that minimal additional burdens will be placed on those already managing this hazard.

Argument

7. The Regulations in **Annex A** of the consultation document implement specifically aspects of the Directive not already enshrined in existing law.
8. We have developed the filter at Regulation 3 to remove from further obligations those businesses that only have safe sources and those with hazardous sources that are already protecting workers. The substantive obligations of the Regulations will only apply where the risks are not already being managed.
9. This approach is different to previous regulations, for example for noise and vibration, taking explicitly into account measures already in place under the Management Regulations.
10. The risks in this approach are developed further in the Board paper.
11. The guidance in **Annex B** of the consultation document will be complemented by a communications campaign.

Consultation

12. The key internal partners are LAO, CSD4, Communications Directorate and EAU.

Presentation

13. The Chair will update the Minister following the Board meeting. The communications campaign will launch at the same time as the consultation.

Costs and Benefits

14. The impact assessment in **Annex C** of the consultation document gives first year costs ranging from £1.07m to £5.14m with ten-year present value costs of £4.01m to £18.89m.
15. There are a number of uncertainties, such as the number of businesses likely to revise their risk assessments and control measures. The assessment takes account of feedback from stakeholders that some businesses will employ consultants.

Financial/Resource Implications for HSE

16. No change to our enforcement strategy for this topic is planned: as such, there will be no additional costs envisaged once the Regulations come into force in April 2010. There remain policy development costs between now and April 2010. In June 2009 these were estimated as £99 500 and will have decreased pro-rata.

Environmental implications

17. None.

Action

18. The SMT is invited to clear the attached paper.

Health and Safety Executive Board		Paper No: HSE/09/93	
Meeting Date:	21 October 2009	FOI Status:	Partially closed (Appendix 1; Appendix 3 – Annex A)
Type of paper:	Above the line	Exemptions:	Section 42 of the Freedom of Information Act
Trim reference:	2009/397681		
CONSULTATION ON THE PROPOSED CONTROL OF ARTIFICIAL OPTICAL RADIATION AT WORK REGULATIONS			

Purpose of the paper

1. To clear the consultation package for the proposed Control of Artificial Optical Radiation at Work Regulations.

Background

2. Hazardous sources of artificial optical radiation (AOR) in the workplace can cause harm and need to be managed. At its meeting on 23 June 2009 (Paper: HSE/09/56) the Board directed that new Regulations are required to implement the Physical Agents (Artificial Optical Radiation) Directive¹ to ensure that workers are protected but these Regulations must place minimal additional burdens on business.
3. HSE is now ready to formally consult stakeholders. The Board is requested to approve the documents in the consultation document reproduced at **Appendix 3**.

Argument

4. The three key objectives for this project are to (a) ensure the eyes and skin of workers are protected in those businesses using hazardous sources (b) meet the government's responsibilities under the Treaty of Rome to implement properly the Directive (c) meeting these requirements in a proportionate way which places minimal additional burdens on business.
5. The draft Regulations (reproduced in **Annex A** of the consultation document) will ensure that businesses review their approach to take proper account of the risks posed by intense light in their workplace. The Regulations have been drafted to implement specifically those aspects of the Directive that are not already enshrined in existing regulatory provisions. They cross-reference existing regulatory provisions when these can be relied upon and refer back to the Directive where appropriate.

¹ Directive 2006/25/EC of the European Parliament and of the Council of 5 April 2005 on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation)(19th individual Directive within the meaning of Article 16(1) of the Directive 89/391/EEC)

6. The Directive requires an assessment be undertaken on all sources of AOR to determine whether they pose a risk. To ensure that businesses with known safe sources do not undertake unnecessary AOR-specific risk assessments, we have created a filter in Regulation 3 to ensure that the substantive obligations in Regulation 4 onwards only apply where there is a reasonable foreseeable risk of adverse health effects to the eyes and skin.
7. Regulation 3 also removes those businesses already managing the hazardous sources from the substantive obligations because again there is no reasonably foreseeable risk of adverse health effects. Our evidence suggests that the hazards posed by AOR are well understood and, in the majority of cases, workers' health is already protected (under the Management of Health and Safety at Work Regulations 1999). One of our key objectives is to ensure that the Regulations do not place unnecessary burdens on those businesses already managing the risks. We believe the filter enables businesses already managing the risks to adopt a proportionate response to some of the technically complex regulatory provisions (based on the Directive). An example includes the requirement to assess/measure/calculate Exposure Limit Values (ELVs) which will be difficult to demonstrate by an SME (eg welder) and not proportionate for those already using appropriate measures (eg PPE) where the skin and eyes of workers should not be exposed to levels above the ELV.
8. Those businesses not already managing hazardous sources will need to do more under the new Regulations.
9. This is made clear in the guidance (reproduced in **Annex B** of the consultation document) which has been developed as a practical guide to help businesses satisfy themselves they are protecting workers. It focuses on the key control measures from Regulations 4-7 and cross-references the '*5 steps to risk assessment*' approach and existing example risk assessments. It recognises that many businesses are already taking these measures and is clear that those already doing this need do no more. This will be reinforced as part of the communications campaign.
10. Traditionally HSE has developed regulation-by-regulation guidance detailing what is required from each regulatory provision. The AOR guidance takes a different approach and is deliberately silent on those technically complex provisions which we feel add little value for those businesses already properly managing the risks (eg measuring and calculating ELVs). We believe this is fit-for-purpose and supports those businesses already doing the right thing.
11. Those that are not already managing the risks will need to read this guidance in combination with more detailed guidance produced by the European Commission.
12. The Table in Appendix 1 develops the risks to this project.
13. The Table in Appendix 2 summarises the remaining timetable.

Action

14. The Board is invited to approve the consultation document in Appendix 3 and its associated Annexes.

Paper clearance

15. This paper was cleared by the HSE Senior Management Team on 7 October.

Contact

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Appendix 2 – Timetable of remaining key activities required to implement the Control of Artificial Optical Radiation at Work Regulations

Action	Timing
Stakeholder consultation	November – February 2010
Analysis of stakeholder feedback; revisions to Regulations	February 2010
Regulations made and laid; guidance published	March 2010
Regulations come into force	6 April 2010



STATUTORY INSTRUMENTS



Intense Light at Work

Guidance for employers on the proposed Control of Artificial Optical Radiation at Work Regulations 2010

What is this leaflet about?

A small number of intense sources of light at work can damage the eyes and skin of workers and need to be managed properly.

Many employers already manage these risks under the Management of Health and Safety at Work Regulations 1999. These will be supplemented by the Control of Artificial Optical Radiation at Work Regulations in April 2010.

HSE has produced this guidance to help businesses satisfy themselves that they are protecting their workers from harm associated with very intense light. This is what the law requires.

This leaflet:

- gives example of the sources of light that can cause harm and the activities where these are used
- outlines what businesses with these sources should be doing to manage the risks

Hazardous light sources

Examples of hazardous sources of very intense light that pose a 'reasonably foreseeable' risk of harming the eyes and skin of workers and where control measures are needed include:

- Metal working – welding (both arc and oxy-fuel) and plasma cutting – mainly eye damage
- Pharmaceutical and research - UV fluorescence and sterilisation systems – mainly skin burn
- Hot industries – furnaces – eye and skin damage
- Printing – UV curing of inks – mainly skin burn
- Motor vehicle repairs – UV curing of paints - mainly skin burn
- Medical and cosmetic treatments – laser surgery, blue light and UV therapies – eye and skin damage
- Research and education - all use of Class 3B and Class 4 lasers – potentially permanent eye and skin damage

Less common hazardous sources can be associated with specialist activities – for example companies manufacturing or repairing equipment containing lasers which would otherwise be hidden.

Consultation Document: Appendix 3: Annex B

Safe light sources

This includes the vast majority used in the workplace such as:

- All forms of ceiling-mounted lighting used in offices etc with diffusers over the bulb. This includes compact fluorescent floodlighting; ceiling-mounted tungsten halogen spotlights; and ceiling-mounted tungsten lamps.
- All forms of task lighting. This includes desk lamps, including tungsten task lighting.
- Photocopiers.
- Computer or similar display equipment, including personal digital assistants.
- Photographic flashlamps.
- Gas-fired overhead heaters.
- Vehicle indicator, brake reversing and fog lamps.

More intense sources could be a problem if they are stared at for long periods or if they are in very close proximity to workers. It is our natural instinct to look away from these before harm can occur and in addition, they are often used at a safe distance from workers. These measures continue to be acceptable and no special conditions are required. Examples include:

- Ceiling-mounted fluorescent lighting without diffusers over the bulb.
- High-pressure mercury floodlighting.
- Desktop projectors.
- Interactive whiteboard presentation equipment.
- Vehicle headlights.
- Non-laser medical applications such as: theatre and task lighting; diagnostic lighting such as foetal transilluminators and X-ray viewing boxes
- UV insect traps.
- Art and entertainment applications such as illuminating by spotlights, effect lights and flashlamps.
- Any Class 1, 1M, 2, 2M & 3R laser devices where not used in combination with magnifying aids. Examples include laser printers; CD/DVD recorders; materials processing lasers; disconnected fibre-optic systems; bar code scanners; level and alignment devices in civil engineering and surveying; and laser pointers.

This list is not exhaustive. If you have sources not on this list but which you know have not caused harm in the past and you have no reason to suspect that they pose a risk in the way that you use them, it would be reasonable for you to assume that no special control measures are required.

How will you be affected?

The key requirement is to ensure that the eyes and skin of workers are protected.

Many employers with hazardous sources already take the sensible control measures outlined below to protect their workers. Where these measures are already taken and the risk is properly managed, we consider this sufficient to protect workers and nothing different needs to be done.

Consultation Document: Appendix 3: Annex B

It is only those businesses that use hazardous sources that are not doing enough to manage the risks that will need to do more.

What should you already be doing?

You should have in place sensible control measures following the principles below:

- Use an alternative, safer light source which can achieve the same result
- Prevent access of the light source to the skin and eyes of workers by engineering controls eg screening, interlocks, clamping (rather than holding) work pieces
- Organise work to reduce exposure of workers and others– restrict access to hazardous areas by non-essential staff (eg use dedicated room; screening/barriers; display warning signs), increase distance between staff and source (eg remote control, time delays)
- Issue appropriate personal protective equipment – eg goggles and face shields

The information in Table 2 summarises the work activities using common hazardous sources of AOR and the industries where these are used. It also lists the sensible control measures businesses need to have considered to ensure that the eyes and skin of their workers are properly protected. The information in Annex 1 covers the key safety signs to be considered and Annex 2 covers less common issues that may be relevant.

Your staff will have been involved so that you can be sure that what you propose to do will work in practice and won't introduce new hazards. You will have provided them with information and training on what they need to do to protect themselves and others and you will have assured yourself that your local rules are being complied with.

You will also have in place a system so that if an employee is exposed to potentially harmful levels of AOR, for example as the result of an accident, they receive a medical examination and you follow any further advice as directed by a doctor or occupational health professional.

You will have documented your decisions in a risk assessment alongside other important hazards in your workplace and may well have followed HSE's simplified risk assessment procedure and used the blank risk assessment template:

www.hse.gov.uk/risk/fivesteps.htm.

If these simple measures have been taken, you should be able to demonstrate to both staff and inspectors that you are protecting the eyes and skin of your workers from harm associated with very intense light.

If you are not doing this, you will need to do more and will need to read this guidance in combination with that produced by the European Commission:-

<http://www.hse.gov.uk/radiation/nonionising/optical.htm>

This is summarised in Table 1 below.

Table 1: Additional action required by businesses affected by the proposed Control of Artificial Optical Radiation at Work Regulations

Light sources used at work	Action already taken under the Management Regulations	What additional action is required by the proposed AOR Regulations
Safe	None	None
Hazardous – can cause harm to eyes and skin of workers	Appropriate control measures in place – exposure to AOR will not cause harm to workers. Measures recorded and staff informed.	None – should already be doing enough.
	Some control measures in place – uncertain whether exposure to AOR could cause harm to workers.	Some - assure yourself that workers are protected. Ensure that measures recorded and staff informed.
	Key control measures not in place – exposure to AOR likely to cause harm to workers.	Full – need to comply fully to ensure workers are protected. Ensure that measures recorded and staff informed.

Consultation Document: Appendix 3: Annex B

Table 2: Work activities which generate hazardous levels of intense light and which may be covered by the proposed Control of AOR regulations

What industries use hazardous sources of intense light?	What are the hazardous activities?	How might workers be harmed by the intense light?	What key measures do you need to consider?
Metal working	<ul style="list-style-type: none"> • Welding (arc and oxyfuel) • Plasma cutting 	<ul style="list-style-type: none"> • Damage to eyes – photokeratitis & photoconjunctivitis ('arc eye'; 'snow blindness'), cataracts, photorectal damage (blue light hazard), retinal burn, cataracts, corneal burn • Damage to skin – UV burning 	<ul style="list-style-type: none"> • Provide face shield, coveralls and gloves • Protect others using screens/ curtains/restricted access • Provide information and training • Display appropriate warning signs • Monitor & enforce use of control measures • If any staff over-exposed, provide medical examination and consider whether health surveillance is appropriate
Pharmaceuticals and research	<ul style="list-style-type: none"> • Ultraviolet sterilisation and induced fluorescence 	<ul style="list-style-type: none"> • Damage to skin 	<ul style="list-style-type: none"> • Provide face shield and ensure other areas of skin not exposed (eg lab coats and gloves) • Protect others using screens/ curtains/restricted access • Provide information and training • Display appropriate warning signs • Monitor & enforce use of control measures • If any staff over-exposed, provide medical examination and consider whether health surveillance is appropriate
'Hot industries'	<ul style="list-style-type: none"> • proximity to furnaces, burners and hot metals/glass 	<ul style="list-style-type: none"> • Damage to eyes and skin • Thermal discomfort 	<ul style="list-style-type: none"> • Engineering measures – remote controls; screening, interlocks, clamps to hold material • Provide face shield, coveralls and gloves - full body PPE may be required • Enforced max working periods - routine change of activity • Protect others using screens/ curtains/restricted access • Provide information and training • Display appropriate warning signs • Monitor & enforce use of control measures • If any staff over-exposed, provide medical examination and consider whether health surveillance is appropriate
Printing and Paint (motor vehicle repairs)	<ul style="list-style-type: none"> • Ultraviolet curing of inks and paints 	<ul style="list-style-type: none"> • Damage to skin 	<ul style="list-style-type: none"> • Engineering measures – screening, automation • Provide face shield and ensure other areas of skin not exposed by providing coveralls and gloves • Protect others using screens/ curtains/restricted access • Provide information and training • Display appropriate warning signs

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			<ul style="list-style-type: none"> • Monitor & enforce use of control measures • If any staff over-exposed, provide medical examination and consider whether health surveillance is appropriate
Medical and cosmetic treatments	<ul style="list-style-type: none"> • laser surgery (Class 3B and 4 lasers) • UV and blue light therapy 	<ul style="list-style-type: none"> • Potentially permanent damage to eyes from lasers, including blindness • Laser burns to skin • Other damage to eyes and skin 	<ul style="list-style-type: none"> • specialist input likely to be required for laser work • Provide face shield/goggles and coveralls • Provide gloves where appropriate (it is recognised that thin nitrile gloves are likely to be needed for dexterity and that these will offer limited protection against laser burns) • Designated treatment rooms with restricted access • Curtains around equipment • Staff distant whilst patient exposed. • Provide information and training • Display appropriate warning signs • Monitor & enforce use of control measures • If any staff over-exposed, provide medical examination and consider whether health surveillance is appropriate
Research and Education	<ul style="list-style-type: none"> • Class 3B and 4 lasers 	<ul style="list-style-type: none"> • Potentially permanent damage to eyes, including blindness • Laser burns to skin • Potential ignition source 	<ul style="list-style-type: none"> • specialist input likely to be required • Engineering measures – enclosed, controlled area, interlocks, remote controls, screening, clamps to hold material • Designated laboratories with restricted access • Provide face shield/goggles and coveralls • Provide gloves where appropriate (it is recognised that thin nitrile gloves are likely to be needed for dexterity and that these will offer limited protection against laser burns) • Include laser sources as part of fire assessment • Provide information and training • Display appropriate warning signs • Monitor & enforce use of control measures • If any staff over-exposed, provide medical examination and consider whether health surveillance is appropriate

Consultation Document: Appendix 3: Annex B

Annex 1: Key safety signs to consider for all activities with hazardous sources of AOR (as listed in the Health and Safety (Safety Signs and Signals) Regulations 1996)

Prohibitory sign: restricts access of untrained staff to areas where hazardous sources of AOR are used



Warning signs: tells staff of the AOR hazards they may find



Non-ionising radiation



Mandatory signs: tells staff what they need to do to protect themselves from AOR



Consultation Document: Appendix 3: Annex B

Annex 2: Less common issues that may be relevant to your business

- Whether you have employees whose health is at particular risk (eg those with pre-existing medical conditions made worse by light)
- Whether you use any chemicals (eg skin creams) which could react with light to make the symptoms worse
- Whether you have employees who are exposed to multiple sources of bright light at the same time
- Whether exposure to bright light could pose unrelated risks (eg temporary blindness leads to mistakes in a hazardous task)

Summary: Intervention & Options		
Department /Agency: Health and Safety Executive	Title: Impact Assessment of the proposed Control of Artificial Optical Radiation at Work Regulations	
Stage: Initial	Version: 9	Date: 2 October 2009
Related Publications:		

Available to view or download at:

<http://www.hse.gov.uk/consult/index.htm>

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What is the problem under consideration? Why is government intervention necessary?

The Physical Agents (Artificial Optical Radiation) Directive (2006/25/EC) was adopted by European Member States in April 2006. It sets minimum health and safety requirements regarding the exposure of workers to risks arising from artificial optical radiation in the workplace. The government is required to implement the Directive by 27 April 2010

What are the policy objectives and the intended effects?

There are three policy objectives: (a) ensuring the eyes and skin of workers are protected from hazardous light sources in the workplace (b) minimising unnecessary burdens on business (c) meeting the government's responsibilities to properly implement the Directive.

What policy options have been considered? Please justify any preferred option.

Three options were considered: (1) do nothing and continue to rely on existing regulatory provisions; (2) new regulations limited to the minimum required to meet the additional requirements of the Directive; (3) a full set of new regulatory provisions.

Option 1 would have zero costs and benefits but would not meet the Government's legal test for proper transposition. Option 3 duplicates some requirements already

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects? The impact assessment will be reviewed in light of the stakeholder consultation exercise to be undertaken in Autumn 2009.

Consultation Document: Appendix 3: Annex C

Ministerial Sign-off For consultation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

..... Date:

Consultation Document: Appendix 3: Annex C

Summary: Analysis & Evidence					
Policy Option:		Description:			
COSTS	ANNUAL COSTS		Description and scale of key monetised costs by 'main affected groups' Costs will be incurred by businesses familiarising themselves with the new Regulations. Additional costs will be incurred by businesses with hazardous sources of intense light that need to better manage the risks.		
	One-off	Yr			
	£ 0.56 - 1.12	10			
	Average Annual Cost (excluding one-off)				
	£ 0.4 - 0.83	Total Cost (PV)		£ 4.01 - 18.89	
Other key non-monetised costs by 'main affected groups'					
BENEFITS	ANNUAL BENEFITS		Description and scale of key monetised benefits by 'main affected groups' The Regulations will ensure that businesses not already managing the risks associated with hazardous sources will do so, resulting in unquantifiable health benefits. There will also be unquantifiable benefits due to the		
	One-off	Yr			
	£ 0				
	Average Annual Benefit				
	£ 0	Total Benefit (PV)		£	
Other key non-monetised benefits by 'main affected groups'					
<p>Key Assumptions/Sensitivities/Risks That familiarisation with the regulations will be higher than expected with many businesses reviewing their risk assessments, control measures and their training of staff. Uncertainty surrounding how many businesses will use consultants to advise them.</p>					
Price Base	Time Period	Net Benefit Range (NPV) £ n/a	NET BENEFIT (NPV Best estimate) £ n/a		
What is the geographic coverage of the policy/option?			Great Britain		
On what date will the policy be implemented?			by 27 April 2010		
Which organisation(s) will enforce the policy?			HSE		
What is the total annual cost of enforcement for these			£ 0		
Does enforcement comply with Hampton principles?			Yes		
Will implementation go beyond minimum EU requirements?			No		
What is the value of the proposed offsetting measure per			£		
What is the value of changes in greenhouse gas emissions?			£ n/a		
Will the proposal have a significant impact on competition?			No		
Annual cost (£-£) per organisation (excluding one-off)		Micro	Small	Medium	Large

Consultation Document: Appendix 3: Annex C

Are any of these organisations exempt?	No	No	N/A	N/A
Impact on Admin Burdens Baseline (2005 Prices)			(Increase - Decrease)	
Increase	£	Decreases	£	Net
				£

Key:

Annual costs and benefits: Constant Prices

(Net) Present Value

Evidence Base (for summary sheets)

[Use this space (with a recommended maximum of 30 pages) to set out the evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Ensure that the information is organised in such a way as to explain clearly the summary information on the preceding pages of this form.]

Proposed Control of Artificial Optical Radiation at Work Regulations

Aim of the proposal

1. To introduce new regulations to implement a Directive of the European Parliament and of the Council: the Physical Agents (Artificial Optical Radiation) Directive (2006/25/EC – ‘the Directive’).

Background

2. A small number of very intense sources of light in the workplace have the potential to damage the eyes and skin of workers.
3. The Directive has been introduced to afford all workers in Europe the same minimum level of protection.
4. It was adopted in 2006 and must be implemented by the UK by 27 April 2010.

Reason for Government action

5. There are three key objectives for this work: (a) ensuring the eyes and skin of workers are protected from hazardous light sources in the workplace (b) minimising unnecessary burdens on business (c) meeting the government’s responsibilities under the Treaty of Rome to properly implement the Directive.
6. New regulations – *The Control of Artificial Optical Radiation at Work Regulations* – the ‘AOR Regulations’ will complement the Management of Health and Safety at Work Regulations 1999 to ensure that all workers at risk are protected.

Data sources and general assumptions

7. The AOR Regulations are directed only at those businesses that use hazardous sources of intense light in the workplace. Only those that are not already managing the risks will need to do more. In order to estimate the number of businesses potentially affected, HSE has used information from several sources, viz:

Work commissioned by HSE:

- Review of occupational exposure to optical radiation and electric and magnetic fields with regard to the proposed CEC Physical Agents Directive, NRPB R265, 1994;

Consultation Document: Appendix 3: Annex C

- Occupational exposure to optical radiation in the context of a possible EU Proposal for a Directive on optical radiation NRPB-W35, 2003.

European Commission information:

- a practical guide produced by the Health Protection Agency under contract to the European Commission **[DN – insert HPA link]**

UK information

- Data supplied by EEF Ltd and
- data obtained from the Office of National Statistics on the Annual Business Inquiry – workplace analysis.

Unless otherwise stated, all other assumptions are based on judgements applied by HSE's technical specialists. Costs have been discounted at an annual rate of 3.5% (in line with Treasury guidance). Prices are expressed in 2008 values.

Work activities likely to be affected by the Regulations

8. Those involving very intense sources of light that could pose a reasonably foreseeable risk of harming the eyes and skin of workers. Only those businesses where appropriate control measures in place will need to do more. Examples of activities include:

- Metal working – welding (both arc and oxy-fuel) and plasma cutting
- Pharmaceutical and research - UV fluorescence and sterilisation systems
- Hot industries – proximity to furnaces
- Printing – UV curing of inks
- Motor vehicle repairs – UV curing of paints
- Medical and cosmetic treatments – laser surgery, blue light and UV therapies
- Research and education - all use of Class 3B and Class 4 lasers

Number of businesses likely to be affected by the Regulations

9. Using the data sources listed in paragraph 8, HSE estimate the number of businesses using hazardous sources of intense light to be **80,000**.

Benefits

Health and safety benefits

10. Whilst there are very few reports of ill health from exposure to artificial optical radiation in Great Britain, the AOR Regulations will ensure that businesses not already managing the risks associated with hazardous sources will do so, resulting in unquantifiable health benefits.

Other benefits

11. There will also be unquantifiable benefits due to the harmonisation of control regimes across Member States.

Costs

Costs to Business

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Cost of familiarisation

12. We assume that 80,000 businesses in GB use potentially hazardous sources of AOR. We assume that between 25-50% of these will read the HSE guidance to establish whether they are already doing enough or need to do more. On average we assume this will take 30 minutes of a production manager's (or equivalent) time at a labour cost of £28 per hour.
13. We therefore assume the first year costs of familiarisation will range from £0.56 to £1.12 million.

Cost of revising risk assessments

14. We assume that the majority of businesses with hazardous sources are already undertaking a proper risk assessment. We assume that 20 - 40% of those businesses that familiarise themselves with the AOR regulations (8 – 15% of total businesses with hazardous sources) will identify that they need to do more and will revise their risk assessments.
15. We assume that 75% of these businesses will revise the risk assessments themselves. We assume this will follow the approach in the HSE guidance and will take between 0.5 to 2 hours to complete. This may result in more than one risk assessment, but the total time per business will not exceed 2 hours. We assume these will be revised by a production manager (or equivalent) at a labour cost of £28 per hour.
16. We assume that 25% of the businesses revising their risk assessments will employ a consultant. We assume that the consultants will charge between £500 and £1000 per day and will on average spend 0.5 days revising the risk assessment.
17. We therefore assume the one-off costs for revising risk assessments will range from £0.09 – £1.63 million.

Cost of reducing risks

18. We assume that the majority of businesses with hazardous sources are already using appropriate control measures. We assume that 20 - 40% of those businesses that familiarise themselves with the AOR regulations will develop an action plan of new control measures as a result of their revised risk assessment.
19. We assume that 75% of these businesses will develop the action plan themselves and will take between 0.5 to 2 hours to complete. This may result in more than one action plan but the total time per business will not exceed 2 hours. We assume these will be developed by a production manager (or equivalent) at a labour cost of £28 per hour.
20. We assume that 25% of the businesses developing a new action plan will employ a consultant. We assume that the consultants will charge between £500 and £1000 per day and will on average spend 0.5 days developing the action plan.
21. We therefore assume the one-off costs for controlling exposure will range from £0.09 – £1.63 million.

Cost of providing information and training

22. We assume that the majority of businesses with hazardous sources are already delivering appropriate information and training. We assume that 20 - 40% of those businesses that familiarise themselves with the AOR regulations will deliver additional training to their staff as a result of their revised risk assessment.

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23. We assume that 20 – 30% of staff in each affected business will require additional training of 30 minutes at a labour cost of £18 per hour. We therefore assume the costs for the trainees will range from £0.15 – 0.42 million.
24. We assume that this training will be delivered by a production managers (or equivalent) time at a labour cost of £28 per hour. We assume that this will take 30 minutes to develop and 30 minutes to deliver. We therefore assume the costs for the trainers will range from £0.18 – 0.34 million.
25. We therefore assume the total costs for the first year training will range from £0.33 – 0.76 million.

Cost of providing medical examinations and appropriate health surveillance

26. The requirement to provide medical examination and support in the event of an accidental overexposure and appropriate health surveillance is already enshrined in the Management of Health and Safety at Work Regulations and can be accommodated under the existing national and occupational health provisions. We therefore assume that this places no additional duties and therefore no costs.

Costs to HSE

27. HSE envisages no change to its enforcement strategy when the AOR regulations come into force. As such the costs to HSE when the regulations come into force will be £0. There will be some costs to HSE during the period of developing the final set of regulations and guidance. These will be developed further in the final impact assessment.

Total costs to society

28. The total cost to society will consist of two main components: the cost to industry of complying with the new requirements, and the cost to the HSE. These are summarised in the table below.

<u>Background summary tables</u>	First year costs			Ten year present value		
	£ million			£ million		
<i>Implementation costs</i>						
Familiarisation	0.56	to	1.12	0.56	to	1.12
Worker information	0.33	to	0.76	2.84	to	6.53
<i>Policy Costs</i>						
Risk assessment	0.09	to	1.63	0.31	to	5.62
Action to reduce exposure	0.09	to	1.63	0.31	to	5.62
TOTAL	1.07m	to	5.14m	4.01m	to	18.89m

29. The total first year costs are therefore estimated to range from £1.07 to £5.14 million rising to £4.01 to £18.89 million at 10 year present value.

Impact on Small Businesses

30. The majority of the 80,000 businesses using hazardous sources of AOR will be SMEs, in particular those undertaking welding. As such it is likely that SMEs will be impacted on more than other business types as a result of these regulations.

Consultation Document: Appendix 3: Annex C

Impact on Competition

31. The Directive is being implemented across European Member States. As such the AOR regulations will ensure a level playing field and have a positive impact on competition.

Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	No	No
Sustainable Development	No	No
Carbon Assessment	No	No
Other Environment	No	No
Health Impact Assessment	Yes	No
Race Equality	No	No
Disability Equality	No	No
Gender Equality	No	No
Human Rights	No	No
Rural Proofing	No	No

Annexes

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