EXPLANATORY MEMORANDUM TO

The Control of Artificial Optical Radiation at Work Regulations (Northern Ireland) 2010

S.R. 2010 No. 180

1. Introduction

1.1 This Explanatory Memorandum has been prepared by the Department of Enterprise, Trade and Investment (DETI) to accompany the Statutory Rule (details above) which is laid before the Northern Ireland Assembly.

1.2 The Rule is made under Articles 17(1), (2) and (4) and 55(2) of, and paragraphs 1(1), 7, 8, 10, 11, 12(2) and (3), 13, 14(1) and 15 of Schedule 3 to, the Health and Safety at Work (Northern Ireland) Order 1978 and paragraph 1A of Schedule 2 to the European Communities Act 1972 and is subject to the negative resolution procedure.

2. Purpose

2.1 The Statutory Rule places duties on employers to protect workers from the risks from hazardous sources of artificial light (artificial optical radiation) in the workplace.

2.2 The Rule implements Directive 2006/25/EC of the European Parliament and of the Council on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation) ("the Directive").

3. Background

3.1 The Directive is the nineteenth daughter directive of the health and safety Framework Directive 89/391/EEC, and the fourth and last in a sequence of so-called "physical agents" Directives. The physical agents Directives are derived from an amendment of the European Commission's original proposal in 1993 for a single Physical Agents Directive covering noise, vibration, electromagnetic fields and optical radiation.

3.2 The aim of the Directive is to protect workers from the risks arising from exposure to sources of artificial light that the Directive describes as artificial optical radiation. Artificial optical radiation can occur as ultraviolet light, infrared radiation and as laser beams with the risks from exposure dependent on the type and intensity of the light and the parts of the body exposed. The skin and eyes are the areas of the body most at risk.

3.3 The Statutory Rule requires employers to consider whether there are any foreseeable risks of adverse health effects to the eyes or skin of their workers as a result of exposure to artificial light. HSENI guidance will

help employers to do this. Depending on the outcome of that assessment, and if they haven't taken steps to eliminate, or reduce to as low as is reasonably practicable these risks (HSENI guidance will help them determine this), they will need to carry out a detailed risk assessment. Additional measures may also be necessary, such as developing an action plan, which will depend on the results of the risk assessment.

3.4 The risk from exposure to intense forms of artificial light is not a significant problem within NI. Many businesses will only have innocuous light sources such as those found in office environments. The number of businesses using intense sources of light that can be hazardous is estimated to be 2,000. These include research and education institutes using powerful lasers, metal fabrication work using welding equipment, printing processes using ultraviolet light and industries using furnaces. However, even within these sectors, there are few if any reports of ill health or injury.

3.5 The Directive has been implemented in the most proportionate manner which meets the objectives of the Directive while avoiding unnecessary burdens on employers. Employers are only obliged to carry out a detailed risk assessment (which includes assessing, and if necessary measuring, levels of exposure to artificial light) under the Regulations where an employer carries out work which could expose its employees to levels of artificial optical radiation that could create a reasonably foreseeable risk of adverse health effects to the eyes or skin and where those risks have not already been eliminated or controlled.

3.6 The Rule also fulfils the obligation under Article 9 of the Directive to provide for adequate penalties for infringement of the Regulations that are effective, proportionate and act as a deterrent. Article 31 of the Health and Safety at Work (Northern Ireland) Order 1978 will apply and this makes it an offence for employers to contravene any health and safety regulations.

4. Consultation

4.1 A consultation exercise ran from 17 December 2009 to 19 March 2010. There were approximately 600 consultees, including individuals and bodies representative of section 75 of the Northern Ireland Act 1998 and other organisations with an interest in equality and related issues (including each member of the Northern Ireland Assembly). No adverse comments were received in relation to the proposed Statutory Rule.

5. Equality Impact

5.1 The Statutory Rule has been screened for any possible impact on equality of opportunity affecting the groups listed in section 75 of the Northern Ireland Act 1998 and no adverse or differential aspects were identified.

6. Regulatory Impact

6.1 An Impact Assessment was conducted in respect of the corresponding Great Britain Statutory Instrument and is attached to this memorandum at Annex A. The Department of Enterprise, Trade and Investment is of the opinion that the analysis and considerations set out in the Great Britain Impact Assessment can be applied proportionately to Northern Ireland. Consequently the impact on business, charities or voluntary bodies in relation to the first year costs is **£116K** (best estimate with a range of £74K - £167K) and **£314K** (best estimate with a range of £185K - £476K) at 10 year present value. These costs are spread fairly evenly between the implementation costs arising from screening, familiarisation and worker information to the policy costs associated with risk assessment and necessary action to reduce exposure.

6.2 The Statutory Rule applies only to people at work but exclude the self-employed.

7. Financial Implications

7.1 As detailed in paragraph 6.1 above.

8. Section 24 of the Northern Ireland Act 1998

8.1 The Department has considered the matter of Convention rights and is satisfied that there are no matters of concern.

9. EU Implications

9.1 The Statutory Rule is essential to implement Directive 2006/25/EC.

9.2 A Transposition Note appears at Annex B to this memorandum.

10. Parity of Replicatory Measure

10.1 In Great Britain the corresponding Statutory Instrument is the Control of Artificial Optical Radiation at Work Regulations 2010 (S.I. 2010/1140), which was made on 30 March 2010 and came into force on 27 April 2010.

10.2 As the Great Britain and Northern Ireland proposals, taken together, are intended to ensure that the UK meets the necessary requirements and implement Directive 2006/25/EC, it is essential that the same legal requirements apply throughout the United Kingdom.

11. Additional Information

11.1 The Statutory Rule relies on the power in paragraph 1A of Schedule 2 to the European Communities Act 1972 so that the Regulations can refer to Annexes of the Directive "as amended from time to time". This is

because Article 10 of the Directive allows technical amendments to be made to the Annexes so they may be updated in the future.

11.2 The use of this enabling power is considered by DETI to be appropriate and expedient. Any amendments to the Annexes will be technical in nature, and the use of the power avoids the need to bring forward new legislation that would simply reproduce or refer to the amended Annexes. In this way, references in the Regulations to the Annexes of the Directive will always reflect the most up to date version of the Annexes without the need for time consuming amendments that will simply be technical in nature.

Department of Enterprise, Trade and Investment
14 May 2010

GREAT BRITAIN IMPACT ASSESSMENT

FOR

CONTROL OF ARTIFICIAL OPTICAL RADIATION AT WORK REGULATIONS 2010 (SI 2010/1140) ("THE GB REGULATIONS")

1. The following pages contain a copy of the Impact Assessment, prepared by the Great Britain Health and Safety Executive, in respect of the GB Regulations.

2. The overall assessment shows that the impact on business, charities or voluntary bodies in relation to the first year costs is **£4.64 million** (best estimate with a range of £2.96m - £6.67m) and **£12.55 million** (best estimate with a range of £7.4m - £19.06m) at 10 year present value. These costs are spread fairly evenly between the implementation costs arising from screening, familiarisation and worker information to the policy costs associated with risk assessment and necessary action to reduce exposure.

3. The Department of Enterprise, Trade and Investment is of the opinion that the analysis and considerations set out in the Great Britain Impact Assessment can be applied proportionately to Northern Ireland. Consequently the overall assessment of the impact of the Northern Ireland Regulations is that they will also include additional costs to industry as detailed in paragraph 6.1 of the Explanatory Memorandum.

Impact assessment Summary: Intervention & Options		
Department /Agency: Health and Safety Executive	**Title:** Impact Assessment of the Control of Artificial Optical Radiation at Work Regulations 2010	
Stage: implementation	**Version:**final	**Date:** 15 March 2010
Related Publications: http://www.hse.gov.uk/radiation/nonionising/riaadoptiondirect.htm		

Available to view or download at:

http://www.

Contact for enquiries: Matthew Penrose, HSE **Telephone:** 0151 951 4909

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

Businesses have a duty to ensure that hazardous sources of Artificial Optical Radiation (AOR) in their workplace (e.g. lasers and UV light) are managed so that the health and safety of their workers is protected. The Control of Artificial Optical Radiation at Work Regulations 2010 will ensure that those businesses not already doing this take action to ensure the risks to their workers are reduced to as low a level as is reasonably practicable; those businesses where workers are already at low risk will not need to do anything more. The Regulations will transpose the specific requirements of the European Physical Agents (Artificial Optical Radiation) Directive.

What are the policy objectives and the intended effects?

To transpose a Directive from the European Union which prescribes control measures to protect the health and safety of workers across European Member States from hazardous sources of AOR. The policy objectives are to (a) ensure that all workers in Great Britain are sufficiently protected (b) to meet the Governments Treaty obligations to transpose the Directive and (c) to meet these in a proportionate way which minimises unnecessary burdens on business. The intended effect is that those businesses not already reducing the risks to their workers to a sufficiently low level take further, proportionate action to ensure that this is achieved.

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

Three policy options were considered: (1) do nothing - continue to rely on existing regulatory provisions; (2) rely on existing regulatory provisions where appropriate - introduce new regulatory provisions limited to new requirements set by the Directive where necessary and (3) introduce a full set of new regulatory provisions to reproduce the full requirements of the Directive disregarding existing regulatory provisions. Option 2 is preferred. Option 1 would not meet the Government's legal test for transposition; Option 3 would require unnecessary risk assessments to be undertaken by businesses which would not result in a reduced level of risk to workers and would not be in line with Better Regulation; Option 2 is considered the best fit to meet all 3 policy objectives

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects? 3 years from coming into force – April 2013

Ministerial Sign-off For final proposal/implementation 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:

Summary: Analysis & Evidence

Policy Option: 1	Description: Do nothing - continue to rely on existing regulatory provisions already in place on Great Britain

COSTS

ANNUAL COSTS	
One-off (Transition)	**Yrs**
£ 0	N/a
Average Annual Cost (excluding one-off)	
£ 0	N/a

Description and scale of **key monetised costs** by 'main affected groups'. Costs have not been monetised for this option. This is because this option would not meet the Government's legal test for transposing the Directive. Any ongoing costs of complying with existing regulations will continue to be borne by businesses working with hazardous sources. There is no evaluative information on the ongoing costs of compliance with existing regs.

Total Cost (PV) **£ 0**

Other **key non-monetised costs** by 'main affected groups'

The fact that this option would not transpose the Directive would leave GB open to infraction proceedings from the European Commission. These are likely to require GB to develop new regulations – either Option 2 or 3 and may result in large financial penalties until delivered.

BENEFITS

ANNUAL BENEFITS	
One-off	**Yrs**
£ **0**	N/a
Average Annual Benefit (excluding one-off)	
£ **0**	N/a

Description and scale of **key monetised benefits** by 'main affected groups'. Benefits have not been monetised for this option. This is because this option would not meet the Government's legal test for transposing the Directive. Any ongoing benefits of complying with existing regulations will continue to be borne by businesses working with hazardous sources. There is no evaluative information on these ongoing benefits.

Total Benefit (PV) **£ 0**

Other **key non-monetised benefits** by 'main affected groups'

N/a

Key Assumptions/Sensitivities/Risks

N/a

Price Base Year N/a	Time Period Years 10	**Net Benefit Range** (NPV) **£ 0**	**NET BENEFIT** (NPV Best estimate) **£ 0**

What is the geographic coverage of the policy/option?				
On what date will the policy be implemented?				
Which organisation(s) will enforce the policy?				
What is the total annual cost of enforcement for these organisations?			£ N/a	
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 year?			£ N/a	
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 N/a	Small N/a	Medium N/a	Large N/a
Are any of these organisations exempt?	No	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)

Increase of £ 0 Decrease of £ 0 **Net Impact** **£** 0

Key: **Annual costs and benefits: Constant** **(Net) Present**

Summary: Analysis & Evidence	
Policy Option: 2	**Description: Rely on existing regulatory provisions where appropriate : introduce new provisions limited to specific requirements set by the Directive where necessary**

COSTS

ANNUAL COSTS	
One-off (Transition)	**Yrs**
£ 3.2m (2.2 to 4.3m)	1
Average Annual Cost (excluding one-off)	
£ 1.1m (0.6 to 1.7m)	10

Description and scale of **key monetised costs** by 'main affected groups' (Some minor costs omitted)

Familiarisation: 1.1m to 1.7m, best =1.4m

Worker information: 3m to 8.5m, best =5.4m

Risk assessment: 1.6m to 4m, best =2.7m

Reduce risk & health surveillance:1.6m to 4.7m, best =2.9m

Total Cost (PV)	£ 12.6m (7.4 to 19.1m)

Other **key non-monetised costs** by 'main affected groups'

BENEFITS

ANNUAL BENEFITS	
One-off	**Yrs**
£ 0	N/a
Average Annual Benefit (excluding one-off)	
£0m (0m to 0.1m)	10

Description and scale of **key monetised benefits** by 'main affected groups'

Evidence suggests ill health due to AOR is low. As a result, very low levels of additional health benefits are expected. The maximum credible number of avoided cases was estimated to be 200 (top end of the range), with 2 taken as a minimum.

Total Benefit (PV)	£0.3m (0m to 0.6m)

Other **key non-monetised benefits** by 'main affected groups'

Key Assumptions/Sensitivities/Risks

Price Base Year 2009	Time Period Years 10	**Net Benefit Range** (NPV) £-19m to -6.8m	**NET BENEFIT** (NPV Best estimate) £ -12.24

What is the geographic coverage of the policy/option?				
On what date will the policy be implemented?				
Which organisation(s) will enforce the policy?				
What is the total annual cost of enforcement for these organisations?			£ N/a	
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 year?			£ N/a	
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 N/a	Small N/a	Medium N/a	Large N/a
Are any of these organisations exempt?	No	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)

Increase of £ 0 Decrease of £0 **Net Impact** £ 0

Key: **Annual costs and benefits: Constant** **(Net) Present**

Summary: Analysis & Evidence	
Policy Option: 3	**Description: Inroduce a full set of new regulatory provisions to reproduce the full requirements of the Directive, disregarding existing regulatory provisions**

COSTS

ANNUAL COSTS	
One-off (Transition)	**Yrs**
£ 5.2m (2.9 to 6.2m)	1
Average Annual Cost (excluding one-off)	
£ 1.5m (0.8 to 2.3m)	10

Description and scale of **key monetised costs** by 'main affected groups' (Some minor costs omitted)

Familiarisation: 1.1m to 1.7m, best =1.4m

Worker information: 3m to 8.5m, best =5.4m

Risk assessment: 4.1m to 10.3m, best =7.7m

Reduce risk & health surveillance:1.7m to 5m, best =3.1m

Total Cost (PV) **£**17.9m (10.2 to 25.8m)

Other **key non-monetised costs** by 'main affected groups'

BENEFITS

ANNUAL BENEFITS	
One-off	**Yrs**
£ 0	1
Average Annual Benefit (excluding one-off)	
£0m (0m to 0.1m)	10

Description and scale of **key monetised benefits** by 'main affected groups'

Benefits are expected to be the same as under Option 2 due to the low levels of baseline risk, and therefore opportunity to reduce risk through the additional risk assessment effort involved with Option 3.

Total Benefit (PV) **£**0.3m (0m to 0.6m)

Other **key non-monetised benefits** by 'main affected groups'

Key Assumptions/Sensitivities/Risks

Price Base Year 2009	Time Period Years 10	**Net Benefit Range** (NPV) **£** -25.8m to -9.6m	**NET BENEFIT** (NPV Best estimate) **£** -17.6

What is the geographic coverage of the policy/option?				
On what date will the policy be implemented?				
Which organisation(s) will enforce the policy?				
What is the total annual cost of enforcement for these organisations?			£ N/a	
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 year?			£ N/a	
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 N/a	Small N/a	Medium N/a	Large N/a
Are any of these organisations exempt?	No	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)

Increase of £ 0 Decrease of £0 **Net Impact** **£** 0

Key: **Annual costs and benefits: Constant** **(Net) Present**

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.]

Control of Artificial Optical Radiation at Work Regulations 2010

Aim of the proposal

1. To ensure that all workers in Great Britain are protected from hazardous sources of artificial optical radiation in the workplace and benefit from the requirements of the Physical Agents (Artificial Optical Radiation) Directive – 'the Directive'.

Background

2. Optical radiation is another term for light; artificial sources of light (artificial optical radiation - AOR) in the workplace can generate visible, ultraviolet, infrared and laser radiation.

3. AOR is present in virtually all workplaces and the vast majority of sources pose no health and safety problems. However a minority of sources can produce sufficiently high levels of radiation to damage the eyes and/or skin of workers if they are not managed properly. For example ultraviolet radiation generated in welding can cause inflammation of the cornea (the condition 'arc eye') and laser radiation generated in a number of industrial and research processes can permanently damage eyes and skin.

4. These hazards are, in general, already well understood and well managed in Great Britain; inspectors do not come across many instances of workers at risk and there are very few cases of ill health or injury arising from known exposure to AOR reported.

5. Nevertheless, AOR hazards were considered sufficiently serious at a European level for the European Commission to propose a Directive to specify common control measures that need to be in place in workplaces across European Member States and for arrangements to be made to enforce these controls.

6. The Directive was adopted ('approved') in 2006[1] and must be transposed and implemented (its requirements brought into law) throughout the UK by 27 April 2010 to ensure a harmonised control regime across European Member States.

Reason for Government action

7. For the purposes of implementing this Directive, Great Britain, Northern Ireland and Gibraltar collectively make up the United Kingdom. The Health and Safety Executive (HSE) takes the lead for Government for ensuring the Directive's requirements come into force in GB. This will be the focus of this impact assessment.

8. In considering the best method to achieve implementation, the policy objectives were to ensure that the eyes and skin of workers are protected from hazardous AOR sources in the workplace and that the Directive is implemented in a proportionate way which achieves the aims of the Directive while also taking into account existing controls and minimising unnecessary burdens on business.

9. Three different options were considered to meet these objectives:

- **Option 1**: Do nothing – continue to rely on existing regulatory provisions already in place in Great Britain

[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)

- **Option 2:** Rely on existing regulatory provisions where appropriate and introduce new regulatory provisions limited to new, specific requirements set by the Directive where necessary
- **Option 3**: Introduce a full set of new regulatory provisions to reproduce the full requirements of the Directive disregarding existing regulatory provisions.

The pros and cons of these different options are developed below.

10. **Option 1** proposes no change from the current situation. Evidence from a number of official data sources[2] as well as inspector feedback indicates that the incidence of injury and ill health associated with AOR in the workplace is very rare. In the last 15 years there are estimated to have been fewer than 10 injuries that required workers to take more than 3 days off work reported to HSE and there have been no cases of work-related cataracts or neoplasia (new or abnormal tissue growth) attributed to AOR reported by general practitioners or occupational physicians. There have been 19 actual (30 estimated cases) of work related neoplasia reported by consultant dermatologists which were attributed by them to exposure to AOR through the Occupational Skin Surveillance Scheme (EPIDERM). In 90% of these cases, the workers were involved in welding which generates high levels of ultraviolet light. However, it was not clear how many of these workers also worked outside or spent their leisure time outside – which would also increase their exposure to natural optical radiation (sunlight). There have also been 65 cases of heat cataracts (a prescribed industrial disease) compensated under the Industrial Injuries scheme between 1992 and 2008. None of these occurred after 2002.
11. This indicates that, in general, AOR hazards are well understood and well managed. Welding and hot (eg foundry) work are traditional activities that have taken place in British workplaces for a great many years. This has allowed an awareness and appreciation of the risks to build up amongst workers, along with knowledge and adoption of sensible measures to manage the risks. It also reflects the valuable inputs from safety professionals and AOR specialists who have developed proportionate control measures for emerging AOR hazards, such as lasers.
12. In terms of the existing regulatory framework, there are no specific regulations for hazardous sources of AOR in Great Britain. However the Management of Health and Safety at Work Regulations 1999 (MHSWR) address the general principles of how hazards in the workplace need to be managed, through risk assessment and adoption of proportionate control measures to ensure that risks are reduced to as low a level as is reasonaby practicable. The MHSWR are regularly used by businesses working with hazardous sources of AOR as a framework on which to develop a proportionate risk management system, as evidenced by the few reports of harm.
13. These risk management systems involve using control measures proportionate to the activity being undertaken. The Directive effectively codifies these thereby ensuring that they are in place across all Member States. However, because these measures are now listed in a Directive, it means that they must also be covered in national law. Existing health and safety legislation does not address these specific measures and as such cannot be relied on to transpose the Directive. As such Option 1 would not transpose the Directive in an appropriate way and is not considered further.
14. **Option 2** represents a proportionate approach to achieve the aims of the Directive to protect the eyes and skin of workers. It builds on obligations already in place under existing regulations (eg MHSWR, Health and Safety (Consultation with Employees) Regulations) but includes new AOR-specific requirements where appropriate in order to ensure that businesses that need to take additional measures to reduce the level of risk associated with hazardous sources of AOR in their workplace do so.

[2] Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) and The Health and Occupation Reporting Network (THOR) which includes the discrete Occupational Skin Surveillance Scheme (EPIDERM), Occupational Physicians Reporting Activity (OPRA) and THOR-GP which covers General Practitioners)

15. In considering Option 2, HSE acknowledges that the vast majority of businesses do not need to do anything more to reduce the risks associated with AOR – either because they only have safe sources or already manage the risks associated with hazardous sources properly. Option 2 offers the opportunity to minimise unnecessary additional burdens by effectively removing these businesses from further obligations.

16. **Option 3** represents the more traditional approach to transpose European Health and Safety Directives, effectively reproducing all aspects of the Directive, even those that are already covered in existing health and safety law. One of the implications of this option is that all businesses would be required to undertake a potentially detailed risk assessment to determine whether the AOR sources they use are hazardous. Reproducing this exact requirement would make it more difficult to minimise unnecessary additional burdens, potentially placing responsibilities on dutyholders which we suspect will have little impact on the risks.

Data sources and general assumptions

17. In order to estimate the number of businesses potentially affected, HSE has used information from several sources:

    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;
    - 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: http://www.hse.gov.uk/radiation/nonionising/aor-guide.pdf

    UK information

    - Data supplied by EEF – The manufacturers' organisation - on likely number of businesses in the manufacturing sector using hazardous sources of AOR and reasonable specialist health and safety consultant fees
    - Data obtained from the Office of National Statistics on the Annual Business Inquiry – workplace analysis – for the numbers of businesses likely to be undertaking the activities involving hazardous sources of AOR listed below.

18. Unless otherwise stated, all other assumptions are based on judgements applied by HSE's technical specialists and feedback from stakeholders to the public consultation, which ran from November 2009 to February 2010. Costs have been discounted at an annual rate of 3.5% (in line with Treasury guidance). Prices are expressed in 2009 values.

Work activities likely to be affected by the Regulations

19. Activities involving hazardous sources of AOR that could pose a risk of harming the eyes and skin of workers 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 and molten products
    - Printing – UV curing of inks
    - Motor vehicle repairs – UV curing of paints (plus welding/cutting)

- Medical and cosmetic treatments – laser surgery, blue light and UV therapies, intense pulsed lights (IPLs)
- Research and education - all use of Class 3B and Class 4 lasers

Number of businesses likely to be affected by the Regulations

20. HSE interrogated the data sources listed above to estimate the numbers of businesses likely to be undertaking activities involving hazardous sources of AOR (for example we assumed that 100% of motor vehicle repair businesses will undertake welding and added this to 100% of businesses known to have furnaces).

21. HSE estimate the number of businesses using hazardous sources of AOR across all sectors to be **80,000.**

Benefits

Health and safety benefits

22. Hazardous sources of AOR in the workplace can cause harm and need to be managed. However evidence collected (from RIDDOR, THOR and inspectors – see above) indicates that in Great Britain this hazard is already well understood where it occurs and well managed by individual businesses, industry groups and safety professionals and radiation specialists that deal directly with it, resulting in very few reported cases of ill health or injury.

23. This gives a very low baseline level of harm associated with AOR and as such we expect to see very limited direct health and safety benefits with either Option 2 or 3. Nevertheless, HSE is aware of anecdotal evidence of exposures resulting in short term, acute eye and/or skin conditions. For example, 'arc eye' or 'welders flash' is a painful inflammation of the cornea, the clear tissue which covers the front of the eye, which can happen if the eye is exposed to an intense source of ultraviolet light, such as in types of welding. Although painful, the condition frequently clears after 1 or 2 days and rarely (if secondary infection occurs) results in long-term damage: as such, it is not reportable to HSE and as such may not appear in the statistics. In addition UV trans-illuminators used in molecular biology research have been known to cause short-term erythema (equivalent to sunburn) symptoms in researchers who have not taken appropriate precautions to protect their skin.

24. The fact that harm does still occur indicates that the risks could be managed more effectively in what we estimate to be a very small number of businesses. This clearly could result in realisation of some benefits for their workers.

25. The option chosen is likely therefore, to result in an increase in the level of protection offered to workers in the small proportion of businesses where risks are currently not being effectively managed, and where the employers respond appropriately to the legislation. This will result in a reduction in the number of minor injuries attributable to AOR.

26. However, we are unable to estimate the numbers involved. Accepting that the cost to society of a minor injury is estimated at £350[3] we recognise that the economic value of health and safety benefits are likely to be outweighed by the costs in economic terms. This can be demonstrated by proposing a test of benefits scenarios in which the benefits of a maximum credible number of annual cases is calculated. Doing this shows that even with 200 avoided cases annually (this is anticipated to be pushing beyond what is credible given the baseline evidence) benefits to society would remain well below costs (£600k over a 10-year period). Alternative minimum and best estimate benefits estimates are made, but clearly do not change the overall message that monetised benefits are expected to be significantly lower than costs, under any credible cost scenario (minimum / best estimate / maximum cost).

Other benefits

[3] HSE's Economic Analysis Unit's Appraisal values (2006, Q3). See: http://www.hse.gov.uk/economics/eauappraisal.htm

27. There will also be unquantifiable benefits due to the harmonisation of control regimes across Member States with the Directive ensuring equity of worker protection. This may encourage freedom of movement of British workers, allowing them to work in other Member States under the same level of protection as in Great Britain.

28. There will also be minor benefits in competition terms to UK businesses with hazardous sources of AOR, as the Directive will provide greater harmonisation and more consistent control regimes in place in all businesses across Member States with hazardous sources of AOR.

Costs

Costs to Business

Option 1

29. There are no direct costs from this option. However, this will not transpose the Directive properly and is not a viable option for further scrutiny. Any ongoing costs and benefits of complying with the MHSWR will continue to be borne by businesses working with hazardous sources of AOR and using the MHSWR as a framework on which to develop a proportionate risk management system. There is no evaluative information on the ongoing costs of compling with the MHSWR for the relevant activities.

Option 2 & 3

30. These will be assessed together under common headings.

Cost of Screening

31. Businesses with employees that use hazardous sources of AOR will be in scope of new regulations developed under either option 2 or 3. In order to determine whether they are in scope of the new AOR Regulations we assume that a proportion of businesses (including those not intended to be in scope) will undertake a basic screen which we assume will involve a process similar to the flow charts at Annexes 1 and 2 and by looking at the list of safe and unsafe sources in the HSE guidance

32. HSE will not be undertaking proactive communications around these new regulations. Furthermore, it is not immediately obvious to many employers what artificial optical radiation is and there is a low baseline of risk associated with this hazard. As a result of these facts, we assume that, for both options, only 3% (143,000) of total businesses in the UK[4] will undertake screening and that they will spend 10 minutes looking at the guidance and flow chart at an estimated labour cost of £29.25[5] per hour (production manager - or equivalent). Many of these will be those who have hazardous sources of AOR, and are therefore more likely to recognise the term 'artificial optical radiation'. We have a high level of confidence that a very low proportion of total UK businesses will screen. Increasing the 3% assumption to the boundary of what is considered likely, i.e. 5% does not have a significant impact on the total costs.

33. We therefore estimate the one-off costs of screening, for Option 2 and 3 will be around **£0.7 million** (best estimate with a range of £0.63m-0.77m).

Cost of familiarisation and resolving uncertainty

34. Because of this screening, we assume that there will be a proportion of businesses that familiarise themselves to determine whether they need to do more. However, we assume that reading the HSE guidance will be sufficient for those businesses with obviously safe sources to identify that they do not need to take further action. Because there has already been

[4] http://stats.berr.gov.uk/ed/sme/smestats2008.xls. 4.8 million companies in UK

[5] Source of information: Annual Survey of Hours and Earnings, earnings for production manager have been used and adjusted by a factor of 1.3 to convert earnings into total costs (to include overheads etc).
http://www.statistics.gov.uk/statBase/product.asp?vlnk=13101

considerable awareness raised amongst particular sectors about the forthcoming AOR Regulations, including through HSE's public consultation, we assume that the proportion of the estimated 80,000 businesses with hazardous sources of AOR that will (a) be aware of them and (b) will need to undertake significant familiarisation with the regulations to investigate whether they need to do any form of further action will range from 20-40% (with a best estimate of 30%).

35. These businesses will range from small/medium sized enterprises through to large research and manufacturing enterprises. Within these businesses, there may only be a single activity involving hazardous AOR which is relatively straightforward in nature (e.g. welding) or there may be a number of different AOR activities of varying complexities (e.g. research involving lasers).

36. We assume that all the businesses will familiarise themselves and resolve uncertainty by studying the HSE guidance. They will identify that they use hazardous sources and are in scope. This will require varying levels of familiarisation, but we assume this will be the same under both option 2 and 3. Taking an average across all businesses and all activities, we assume that this will, on average, require 1 hour at an estimated labour cost of £29.25 per hour (production manager - or equivalent).

37. We therefore assume the first year, one-off costs of familiarisation by those businesses with hazardous sources for Option 2 and 3 will be **around £0.7 million** (best estimate with a range of £0.5m-0.9 m)**.**

Cost of refreshing existing risk assessments and addressing uncertainty

38. It is from risk assessment onwards that the costs associated with Options 2 and 3 start to diverge.

Option 2

39. Option 2 would facilitate greater flexibility, requiring additional risk assessment activity to be undertaken only when (a) work involves hazardous sources of AOR that could harm the eyes and/or skin **AND** (b) measures have not already been implemented which reduce the risk to as low a level as is reasonably practicable.

40. We already have evidence of a very low level of employee exposure to risk within the baseline for this impact assessment, indicating that the majority of existing risk assessments are suitable and sufficient.

41. Nevertheless, we recognise that a proportion of businesses that already expose their employees to an appropriately low level of risk will take the opportunity to refresh their risk assessments. Whilst this will not give any benefits in terms of further reductions in risk, it will give unquantifiable reassurance that they do not need to take any further action. The costs associated with refreshing risk assessments are estimated below.

42. We have already assumed that 20-40% of the 80,000 businesses with hazardous sources of AOR will familiarise themselves with the AOR Regulations.

43. We now assume that 40% of these will do no more and that 30% of these will refresh their risk assessments even though their staff are at an acceptably low risk.

44. We assume that this will be achieved by cross-referencing their existing arrangements with the control measures outlined in the HSE guidance, and updating where appropriate.

45. In total, this may result in more than one risk assessment being refreshed, but we assume that each affected business will, on average, spend 2 hours refreshing their risk assessments at an estimated labour cost of £29.25 per hour.

46. We therefore estimate the one-off costs for refreshing risk assessments and resolving uncertainty for Option 2 will be **£0.4 million** (best estimate with a range of £0.3m-0.6 m).

Option 3

47. Option 3 would require all businesses with hazardous sources to develop a new risk assessment; as such a simple refreshing of existing risk assessments would not be appropriate.

48. We therefore estimate there will be no one-off costs for refreshing risk assessments and resolving uncertainty for Option 3.

Cost of developing new risk assessments to reduce risks

Option 2

49. We have already assumed that of the 20-40% of businesses with hazardous sources of AOR who have familiarised themselves with the new regulations, 40% will do no further work on their risk assessments and 30% will refresh them.

50. We now assume that the remaining 30% will develop a new risk, AOR-specific risk assessment. As this risk assessment is new, it involves a one off effort up front but also recurring activity to maintain risk assessments. Businesses are assumed to update their risk assessments approximately every 3 years and mirror the original effort, and are in line with costs of refreshing risk assessments outlined in the previous section. On that basis, we assume both one off first year, and recurring costs over the appraisal period (10 years) in order to calculate a total present value cost.

51. In calculating the one off costs for option 2, we assume that 70% of these will follow the HSE guidance, sector specific guidance and use information provided by manufacturers and revise the risk assessments themselves. This may result in more than one risk assessment being revised but we assume that each affected business will, on average, spend 3 hours reading the HSE guidance and revising their risk assessments at an estimated labour cost of £29.25 per hour.

52. We recognise that the specific risk assessment requirements are new, prescriptive and potentially complex and that there is likely to be a lack of in-house expertise or competence, particularly where measurements are being considered. We therefore assume that 30% of businesses developing new risk assessments will use a specialist or consultant. We assume that these will cost on average £750 per day and will on average spend 0.5 days revising the risk assessment.

53. We therefore estimate the total one off costs for developing new risk assessments under Option 2 will be £1.25 million (best estimate with a range of £0.7-2.0 million).

54. Recurring costs are calculated on the basis that all businesses that undertook a new risk assessment would update typically every three years, involving around 2 hours of a manager's time at the same labour cost. This results in a cost, recurring every 3 years, with a present value over ten years of around £1.03 million (best estimate with a range of £0.6m-1.5 m).

55. Total one off *and* recurring costs associated with new risk assessment under Option 2 results in a best estimate present value of **£2.3 million** (with a range of £1.3m-3.4m).

Option 3

56. We have already assumed that of the 20-40% of businesses with hazardous sources of AOR will familiarise themselves with the new regulations. For option 2 we have assumed 40% of these will do no further work, 30% will refresh their risk assessment and 30% will develop new risk assessments.

57. Option 3 requires more detailed revisions of risks assessment given that refreshing risk assessments would not be appropriate. We therefore assume for that, of those businesses that familiarise themselves with the new regulations, 40% will do no further work and 60% will develop new risk assessments. In addition, the simple guidance HSE would develop for Option 2 is unlikely to be sufficiently detailed to enable dutyholders to comply with their obligations and further reading or input from specialists will be required. As such, some of the assumptions will differ between Options 2 and 3.

58. In calculating the one off costs for option 3, we assume that 50% of these will follow the HSE guidance, European guidance, sector specific guidance and use information provided by manufacturers and revise the risk assessments themselves. This may result in more than one risk assessment being revised but we assume that each affected business will, on average, spend 4 hours revising their risk assessments at an estimated labour cost of £29.25 per hour.

59. We also assume that 50% of businesses developing new risk assessments under Option 3 will use a specialist or consultant. We assume that these will cost on average £750 per day and will on average spend 0.5 days revising the risk assessment.

60. We therefore estimate the total one off costs for developing new risk assessments under Option 3 will be £3.5million (best estimate with a range of £1.6m to 4.3m).

61. Recurring costs are calculated on the basis that all businesses that undertook a new risk assessment would update typically every three years, involving around 4 hours of a manager's time at the same labour cost. This results in a cost of around £1.7 million (best estimate with a range of £1 to 2.5 million), recurring every 3 years, with a present value over ten years of around £4.1 (best estimate with a range of £2.5 to 6 million.

62. Total one off *and* recurring costs associated with new risk assessment under Option 3 results in a best estimate present value of **£7.7 million** (with a range of £4m to 10 m).

Cost of reducing risks

63. We have already assumed a low baseline level of risk associated with this hazard. Nevertheless, whichever option is selected would need to ensure that the minority of businesses where the risks are not already reduced to a sufficiently low level adopt control measures to achieve this.

Option 2

64. Because of the low baseline level of risk, we are confident that only a small proportion of those businesses that revised their risk assessment will identify the need to take further measures to reduce the AOR risks to their employees. We therefore assume this number to be 10% (720).

65. To identify the controls needed, they will either use available guidance or will employ a specialist or consultant. The changes we expect to see made will involve a combination of organisational factors (such as demarcating areas where hazardous sources of AOR are used) and hardware issues (such as buying new PPE which is better suited to the activity and/or replacing old pieces of equipment for ones that better protect against AOR at source).

66. We have divided the impact costs into two components – the time taken to implement the changes and the cost of any equipment. In calculating the time, we assume that 70% of businesses will make the changes themselves and 30% will use consultants. Those undertaking themselves will follow the HSE guidance, sector specific guidance and use information provided by manufacturers and each affected business will, on average, spend 2 hours making the changes at an estimated labour cost of £29.25 per hour. Those employing consultants, we assume will cost on average £750 per day and will on average spend 0.5 days.

67. Recurring costs associated with time are calculated on the basis that all affected businesses will review their control measures every three years with the time and labour costs being the same as above. This results in a cost, recurring every 3 years, with a present value over ten years of around £0.38 million (best estimate with a range of £0.2-0.64 million).

68. Not all businesses will require new equipment. Averaging out the cost of new equipment over the 720 businesses affected, we assume will cost, on average, £1000 per business. This is assumed to be a recurring cost, which recurs typically every 3 years. This produces a best estimate present value over ten years of £2.48 million (with a range of £1.34m -4.01 million).

69. Total one off *and* recurring costs associated with implementing new control measures to reduce AOR risks under Option 2 results in a best estimate present value of **£2.86 million** (with a range of £1.54m-4.65 million).

Option 3

70. We assume that the same amount of businesses will identify that they need to take further measures whether they undertook risk assessments under Option 2 or Option 3. We therefore assume this number to be 720.

71. Businesses adopting control measures under Option 3 must develop an action plan as specified in the Directive. This will include a prescriptive list of measures required to reduce worker exposure below the exposure limit values

72. Because the assessment of exposure limit values is technically complex, we assume that a larger proportion of businesses will use consultants, and the task itself is more time intensive than under Option 2. Specifically, 50% of businesses affected will develop an action plan themselves, following European guidance, sector specific guidance and undertaking measurements. We assume that each affected business will, on average, spend 4 hours developing and implementing an action plan at an estimated labour cost of £29.25 per hour.

73. The remaining 50% will employ consultants at a cost on average of £750 per day and who will on average spend 0.5 days on the action plans.

74. Recurring costs associated with time are calculated on the basis that all affected businesses will review their control measures every three years with the time and labour costs being the same as above. This results in a cost, recurring every 3 years, with a present value over ten years of around £0.6 million (best estimate with a range of £0.4-0.9 million).

75. We assume that the action plans developed under option 3 will not result in any changes to the typical equipment costs assessed under option 2. Equipment costs for option 3 are therefore assumed the same as for Option 2.

76. Total one off *and* recurring costs associated with implementing new control measures to reduce AOR risks under Option 3 results in a best estimate present value of **£3 million** (with a range of £1.7-5.0 million).

Cost of providing information and training

Option 2 & 3

77. We assume that 100% (7200) of those businesses that develop new risk assessments will deliver additional training to their staff to ensure they understand what control measures and working practices they need to adopt to reduce the AOR risks. This training is likely to have a big impact on risk reduction by increasing the likelihood of staff adhering to local rules. Given that this number is the same for Option 2 or 3, we will assume the information and training costs will be the same for each option.

78. We assume that 20 – 30% of staff in each affected business will require additional training of 30 minutes at an average labour cost of £18 per hour[6]. We assume that this training will be delivered by production managers or safety professionals (or equivalent) time at an average labour cost of £29.25 per hour. We assume that, in order to develop and deliver this training, the trainers themselves will need to be trained so that they can continue to provide advice on AOR hazards. Taking an average across all businesses affected, we assume, on average, trainers will take 90 minutes to familiarise themselves with the topic and to develop the training and will then take 30 minutes to deliver.

79. We assume that this training will recur on an annual basis requiring the same preparation and delivery times, with an annual cost for both trainers and trainees of around £0.6 million (best estimate with a range of £0.4m-0.10 million)**.** Total annual costs associated with providing

[6] The UK average hourly wage, from the Annual Survey of Hours and Earnings (ASHE) 2009, plus an extra 30% for non-wage labour costs.

information and training under either Option 2 or 3 results in a best estimate 10 year present value of **£5.45 million** (with a range of £3.1m-8.5m).

Cost of providing medical examinations and appropriate health surveillance

Option 2 & 3

80. The requirement to provide medical examination and support in the event of an accidental overexposure to AOR, along with appropriate health surveillance is already enshrined in the Management of Health and Safety at Work Regulations 1999.

81. There will be no requirement for routine eye examinations as part of the final regulations developed under either Option 2 or 3. This is on the basis that the guidance published by the European Commission to accompany the Directive states that '50 years of experience has shown that such examinations have no value as part of a health surveillance programme and possibly introduce an additional risk to the worker…. A worker exposed to artificial optical radiation at work should not receive pre-employment, routine and post-employment eye examinations, just because they carry out such work'.

82. However the final regulations will require a worker whose eyes have been accidentally over-exposed to be offered a medical examination. Given that this mirrors current MHSWR requirements, this will place no additional duties on employers and therefore no additional cost.

83. Regulations developed under either Option 2 or 3 will place a specific requirement on employers to consider including skin surveillance in the event of a known over exposure. The guidance produced by the Commission states that "skin examinations are not usually justified purely on the basis of routine exposure to artificial optical radiation." We therefore interpret this to mean that examinations will only be required where the skin has been exposed to high levels of AOR, for example as the result of an accident, and because there are skin tests that occupational health providers could undertake, we will include this in the regulations.

84. As for accidental over-exposure of the eyes, workers whose skin has been over-exposed must be offered a medical examination, but given that this mirrors current MHSWR requirements, this will place no additional duties and therefore no cost.

85. Any additional skin surveillance will be undertaken at the direction of an occupational health provider but could involve examinations of the area of the skin known to have been subject to over-exposure for any changes which could be linked to exposure to high levels of AOR coupled with, for example, a self-reporting system on what changes in the skin to look for.

86. Whilst these will be additional requirements, because of the low baseline level of risk associated with this hazard, accidental over exposures are already considered to be very rare and will be even more so as a result of the new regulations. Assuming that 5 overexposures will still occur each year, with an annual cost for health surveillance of £1000 per business affected, this will result in a present value of around **£43,000** over 10 years (best estimate with range of £35k-52k).

Additional costs not already covered.

87. We assume that there will be no additional costs associated with insurance premiums for either Option 2 or 3.

Costs to HSE

88. HSE envisages no change to its enforcement strategy when the AOR regulations come into force. The main costs to fall on HSE will be in the development and maintenance of guidance. This will be easier to do for Option 2 and will be met through HSE's internal resources. Assuming the completion of the guidance requires the equivalent of three experts working full time on the guidance over a six month period, at an average gross wage rate of £40k[7] this would amount to around **£98,000**.

[7] Adjusted upwards to account for overheads by a factor of 1.3.

89. Guidance to support Option 3 is less likely to be delivered within HSE given its technical nature and this may need to be developed via an external contract. Assuming this requires around 300 days of consultants' time at a day rate of around £750, this would cost HSE around **£225,000**.

Total costs to society

90. The total cost to society will consist of two main components: the cost to employers of complying with the new requirements, and the cost to the HSE of implementing and enforcing them. The costs associated with the Option 2 and Option 3 are summarised in the tables below.

91. Total one off *and* recurring costs associated with implementing **Option 2** results in a best estimate present value of **£12.51 million** (with a range of £7.35m -19.01m).

92. Total one off *and* recurring costs associated with implementing **Option 3** results in a best estimate present value of **£17.83 million** (with a range of £10.12m-25.75m).

93. Taking into account the costs, the better regulation agenda and feedback from stakeholders, Option 2 was considered to be the best fit for the policy objectives. A summary of the Option 2 compliance assumptions and headline costs is provided in Appendix 3.

94. A statement by HSE's chief economist is provided at Appendix 4.

Table 1: Summary of Costs associated with Option 2

	First year costs £ million			Ten year present value £ million		
	Min	Best estimate	Max	Min	Best estimate	Max
Implementation costs						
Self screening	0.63	0.70	0.77	0.63	0.70	0.77
Familiarisation	0.47	0.70	0.94	0.47	0.70	0.94
Worker information	0.35	0.63	0.99	3.05	5.45	8.52
Policy Costs						
Refresh risk assessment	0.25	0.42	0.62	0.25	0.42	0.62
New risk assessment (one off)	0.72	1.25	1.90	0.72	1.25	1.90
New risk assessment (recurring)	0.00	0.00	0.00	0.62	1.03	1.51
Action to reduce exposure (time)	0.06	0.11	0.19	0.20	0.38	0.64
Action to reduce exposure (equipment)	0.39	0.72	1.16	1.34	2.48	4.01
Health surveillance	0.00	0.01	0.01	0.03	0.04	0.05
HSE costs						
Produce guidance	0.09	0.10	0.11	0.09	0.10	0.11
TOTAL	**2.96**	**4.64**	**6.67**	**7.40**	**12.55**	**19.06**

Table 2: Summary of Costs associated with Option 3

	First year costs £ million			Ten year present value £ million		
	Min	Best estimate	Max	Min	Best estimate	Max
Implementation costs						
Self screening	0.63	0.70	0.77	0.63	0.70	0.77
Familiarisation	0.47	0.70	0.94	0.47	0.70	0.94
Worker information	0.35	0.63	0.99	3.05	5.45	8.52
Policy Costs						
Refresh risk assessment	0.00	0.00	0.00	0.00	0.00	0.00
New risk assessment (one off)	1.61	3.54	4.28	1.61	3.54	4.28
New risk assessment (recurring)	0.00	0.00	0.00	2.48	4.13	6.05
Action to reduce exposure (time)	0.10	0.18	0.27	0.35	0.61	0.94
Action to reduce exposure (equipment)	0.39	0.72	1.16	1.34	2.48	4.01
Health surveillance	0.00	0.01	0.01	0.03	0.04	0.05
HSE costs						
Produce guidance	0.20	0.23	0.25	0.20	0.23	0.25
TOTAL	**3.75**	**6.70**	**8.66**	**10.15**	**17.88**	**25.80**

Specific Impact Tests

Statutory Equality duties

95. No negative impact on equality on any of the groups addressed are expected. Hazardous sources of AOR are used in a variety of work activities undertaken by all groups covered by equality aspects and for which the control measures prescribed should give a comparable level of protection. However we will monitor relevant measurable outcomes to determine whether any group is detrimentally affected.

Economic Impacts: Competition

96. The Directive is being implemented across European Member States. As such the AOR regulations will reduce the potential for competitive advantage from lower costs/standards associated with control of AOR hazards. This will contribute towards a more level playing field in the EU and therefore is, in general terms, likely to have a positive impact on competition for UK businesses, which already have high level of protection.

97. The Directive represents, for the majority of UK employers, an additional cost versus very low marginal benefits, due to a high level of protection already in place. This represents some additional costs for employers, but it is not expected to have significant impacts on the number or range of suppliers, or significantly limit their ability to compete.

Economic Impacts: Small Firms

98. 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.

Specific Impact Tests: Checklist

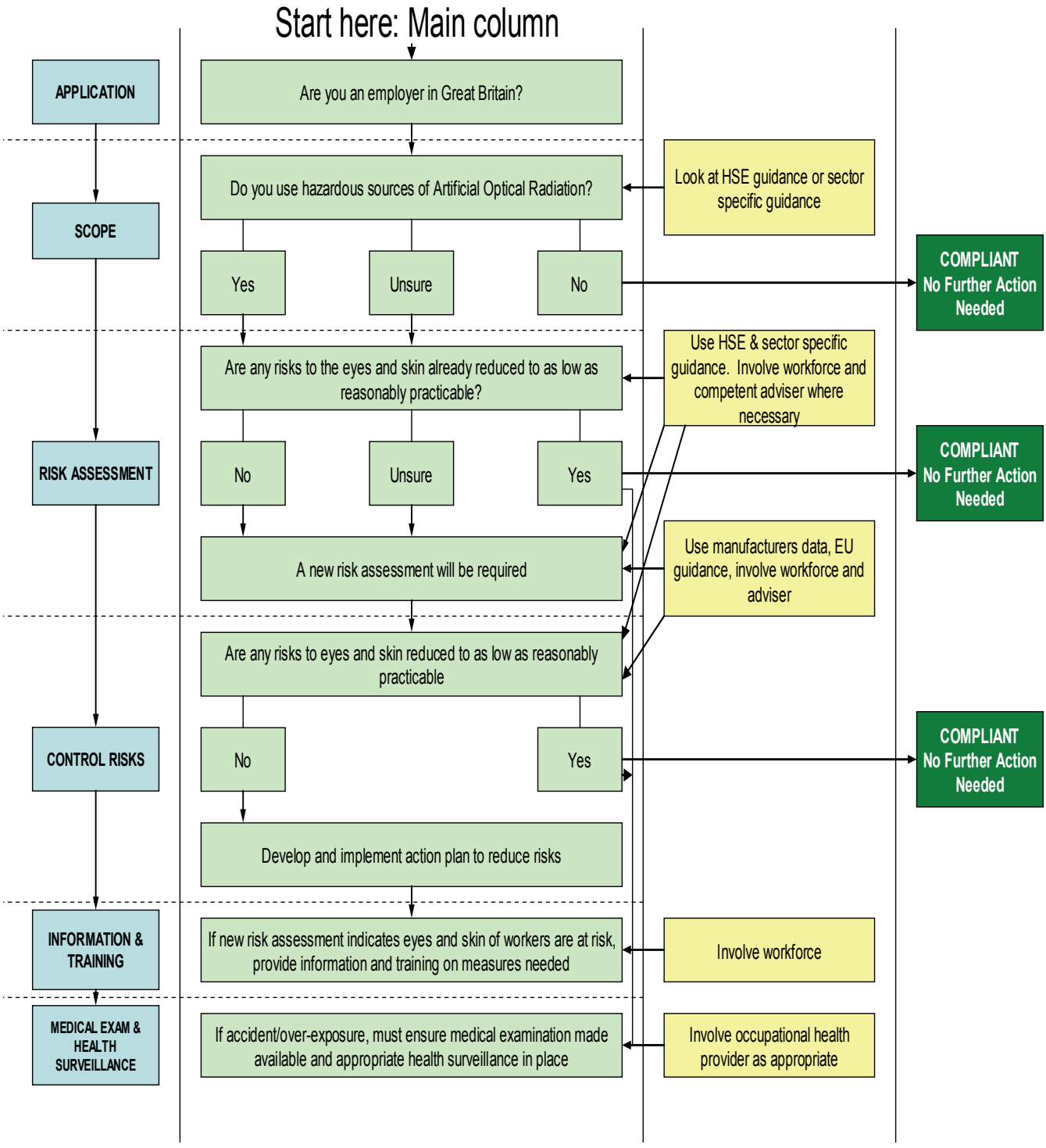
Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

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.

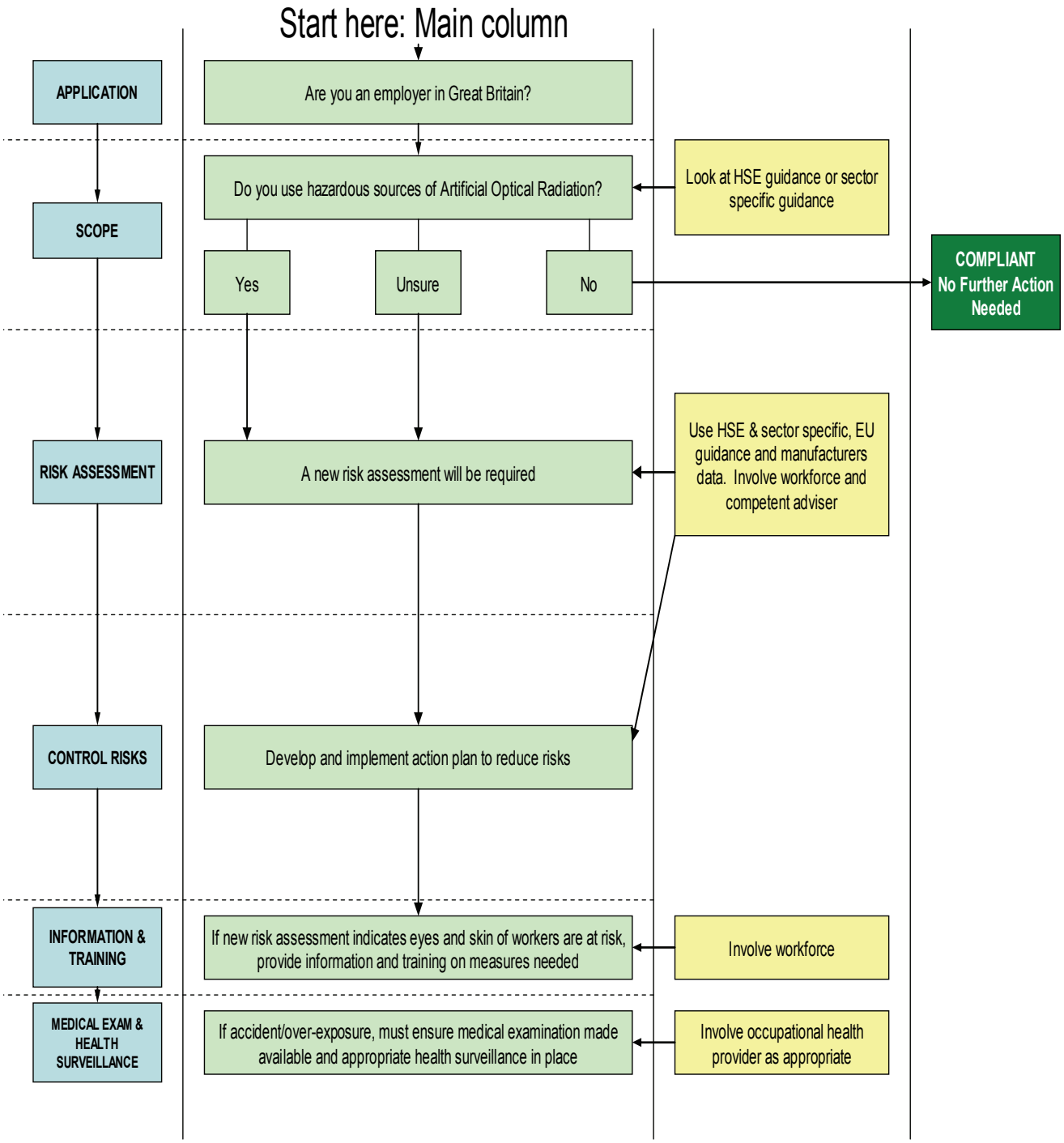
Type of testing undertaken	*Results in Evidence Base?*	*Results annexed?*
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality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

Annexes

Annex 1 - flow chart to be used by businesses who familiarise themselves with new AOR Regulations developed under Option 2



Annex 2 - flow chart to be used by businesses who familiarise themselves with new AOR Regulations developed under Option 3



Annex 3: Summary of compliance assumptions associated with the costs of Option 2

Activity	Businesses Affected % Number		Time or Equipment costs	Best estimate of costs (10 year present value) £million
Screening	3% of 1.2 million with employees	143,000	10 mins @ £29.25 per hour	0.7
Familiarisation	30% of 80,000 with hazardous sources	24,000	1 hour @ £29.25 per hour	0.7
Risk assessments – refresh	30% of 24,000 who familiarise	7,200	2 hours @ £29.25 per hour	0.4
Risk assessment – new	30% of 24,000 who familiarise	7,200	70% for 3 hours @ £29.25 per hour 30% use consultants for 0.5 day @ £750 per day	2.3
Control risks – time + equipment	10% of 7,200 who develop new RA	720	70% for 2 hours @ £29.25 per hour 30% use consultants for 0.5 day @ £750 per day 720 x £1000 for new equipment	2.86
Information and training	100% of 7,200 who develop new RA	7,200	7200 trainers for 1.5 hours @ £29.25 per hour 23,400 trainees for 0.5 hours @ £18 per hour	5.45
Medical Examination and Health surveillance	-	5 per year	£1000 per incident	0.04
HSE guidance	-	-	-	0.1
Total				**12.55**

Annex 4: Statement by Chief Economist, Health and Safety Executive

As HSE Chief Economist I confirm that the attached Impact Assessment (IA), prepared by HSE Work Environment, Radiation & Gas Division in collaboration with the Economic Analysis Unit, makes appropriate use of evidence in analysing the costs and benefits of the alternative options.

The Control of Artificial Optical Radiation (AOR) at Work Regulations 2010 are designed to transpose into Great Britain law the requirements of the European Directive 'Physical Agents (Artificial Optical Radiation)', so ensuring that the risks to workers from AOR (e.g. ultraviolet radiation) are as low as reasonably practicable, while minimising the regulatory burden on business.

The IA considers three options: (1) relying on existing regulations (i.e. 'do nothing'); (2) relying on existing regulations but introducing new provisions aimed specifically at those businesses where risks associated with hazardous sources of AOR are not already adequately controlled; and (3) introducing a new full set of regulations to reproduce all aspects of the Directive, even those already covered in existing health and safety law.

The IA reviews the evidence from various statistical sources and concludes that the baseline level of injuries and ill health in Great Britain from exposure to AOR is very low. This has important implications for the assessment of both benefits and costs.

The health and safety ***benefits*** of introducing new regulations (Options 2 or 3) are expected to be limited: the prevention of a small number of minor injuries. Based on HSE estimates of the cost to society of such injuries, and of the maximum credible number that could be prevented, the total benefits discounted over a ten-year appraisal period are estimated to be less than £0.6 million. There would be some further unquantified benefits in terms of EU harmonisation and competition. The benefits are not expected to differ significantly between Options 2 and 3.

Some of the ***costs*** are also estimated to be the same for both Options 2 and 3: businesses' familiarisation with the new Regulations including 'screening' to see if they are affected (best estimate of costs over ten years = £1.4 million), and provision of information and training to workers (£5.4 million). The main difference between the options relates to the development of risk assessments, some of which will require the use of consultants: Option 2 would involve some businesses 'refreshing' their existing risk assessments (best estimate of ten-year costs = £0.4 million) and some developing new ones (£2.3 million), while Option 3 would involve no 'refreshing' but significantly more new assessments (£7.7 million). The costs of actions to reduce exposure, and of health surveillance, would be relatively low, because of the low level of baseline risk. These too would be a little higher under Option 3 (£3.1 compared with £2.9 million under Option 2), as would the costs to HSE of producing guidance (£0.2 compared with 0.1 million). The costs of Option 1 have not been quantified; however a significant non-monetised cost for this option would be the risk of being subject to infraction proceedings from the European Commission, which would involve major financial penalties as well as legal costs and reputational damage.

The IA makes a number of ***assumptions***, based on a mixture of statistical data and informed judgement, about the number of businesses affected and the proportions that will take certain actions. Where appropriate, minimum and maximum figures are given to indicate the range of uncertainty, and sensitivity analyses have been performed to check that varying the assumptions within credible limits would not alter the broad conclusions. Nonetheless there must remain considerable doubt as to the scale of the likely benefits and costs.

The IA's preferred option is Option 2: this has significantly lower total estimated costs to society than Option 3 (by £5.3 million, or 30 per cent, over a ten-year appraisal period), without significantly lower expected benefits, and is preferable on grounds of proportionality and better regulation. Given that Option 1 has been ruled out because it would not transpose the Directive appropriately, I am satisfied that the evidence supports the choice of Option 2.

Alan Spence
Chief Economist
Health & Safety Executive
4S.3 Redgrave Court
Bootle, Merseyside L20 7HS
0151 951 4556
alan.spence@hse.gsi.gov.uk

Explanatory Memorandum Annex B

TRANSPOSITION NOTE

Transposition note for Directive 2006/25/EC of the European Parliament and of the Council 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 Directive 89/391/EEC) ("the Directive").

The Control of Artificial Optical Radiation at Work Regulations (Northern Ireland) 2010 ("the Regulations") implement the Directive.

These Regulations do what is necessary to implement the Directive. The main elements of the Directive implemented in these Regulations are as follows:

Article	Purpose	Implementation	Responsibility
1	Sets out the aim and scope of the Directive.	Implicit in the Regulations as a whole.	Department of Enterprise, Trade and Investment
2	Definitions.	Regulation 1 and 3(8)	Department of Enterprise, Trade and Investment
3	Establishes the exposure limit values for non-coherent and laser radiation.	Regulation 1	Department of Enterprise, Trade and Investment
4	Requires employers to conduct a risk assessment to assess/ measure/ calculate levels of exposure to artificial optical radiation (AOR) in accordance with the prescribed methodology and with reference to particular criteria.	Regulation 3	Department of Enterprise, Trade and Investment
5	Requires employers to eliminate, or reduce to minimum, risks of exposure to AOR and includes action and measures to take if the exposure limit values are exceeded.	Regulation 4	Department of Enterprise, Trade and Investment
6	Requires employers to ensure that workers receive any necessary information and training in relation to the outcome of the risk assessment, with particular reference to the matters listed.	Regulation 5	Department of Enterprise, Trade and Investment
7	Consultation and participation of workers in accordance with Article 11 of Directive 89/391/EEC on matters covered by the Directive.	The Safety Representatives & Safety Committees Regulations (Northern Ireland) 1979	Department of Enterprise, Trade and Investment

		& the Health and Safety (Consultation with Employees) Regulations (Northern Ireland) 1996 already provide for consultation with, and the participation of, employees in matters relating to health and safety.	
8.1	Member States to adopt measures to ensure appropriate health surveillance.	Regulation 6(1)	Department of Enterprise, Trade and Investment
8.2 - 8.3	Prescribes arrangements for health surveillance and access to health surveillance documents.	Regulation 6(2) - (5)	Department of Enterprise, Trade and Investment
8.4	Establishes obligation on employer to make available a medical examination where exposure above the limit values is detected and as a result of any adverse health effect of exposure found following health surveillance. In both cases there is an obligation on employers to review the risk assessment and measures taken in accordance with Article 5 and to carry out continued health surveillance and if necessary a medical examination in accordance with the prescribed arrangements.	Regulation 6(6) and (7)	Department of Enterprise, Trade and Investment
9	Establishes obligation for Member States to establish a penalty regime for breaches of the Directive.	The Health and Safety at Work (Northern Ireland) Order 1978 provides for penalties for breach of health and safety regulations.	Department of Enterprise, Trade and Investment
10 and 11	Prescribe the legislative procedure for amendments to the annexes of the Directive.	Transposition not required.	European Parliament, EU Council and European Commission.
12	Prescribes obligations for Member States to provide a report to the European Commission on the practical implementation of the Directive and for the Commission to inform the European Parliament,	Transposition not required. In any event this requirement was repealed with effect from 27.6.07 by 2007/30/EC.	

	the Council and the prescribed committees of the content of these reports and other associated information.		
13	European Commission to produce a practical guide.	Transposition not required.	European Commission
14	Prescribes measures for Member States to implement the Directive.	Transposition not required.	Department of Enterprise, Trade and Investment
15	Provides for the entry into force of the Directive.	Transposition not required.	Department of Enterprise, Trade and Investment
Annex I	Prescribes the exposure limit values for non-coherent radiation.	Regulation 1	Department of Enterprise, Trade and Investment
Annex II	Prescribes the exposure limit values for laser radiation.	Regulation 1	Department of Enterprise, Trade and Investment