Title: ALIGNMENT OF DOMESTIC LEGISLATION WITH THE EU DIRECT ACTING CLASSIFICATION, LABELLING AND PACKGING REGULATION (CLP) – TRANSPOSITION OF AMENDING DIRECTIVE 2014/27/EU

IA No: HSE 0087

Lead department or agency:
Health and Safety Executive (HSE)

Other departments or agencies:
Maritime and Coastguard Agency (MCA)

Impact Assessment (IA)

Date: 2 October 2014

Stage: Final

Source of intervention: EU

Type of measure: Secondary Legislation

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Summary: Intervention and Options

RPC Opinion: Green

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, Two-Out?**	**Measure qualifies as**
-£5.68 million	-£4.48 million	£0.41 million	No	N/A

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

The EU direct acting Classification, Labelling and Packaging Regulation (CLP), which implements in the EU the United Nations Globally Harmonised System (GHS) on the classification and labelling of chemicals, comes fully into force in June 2015. An amending directive with a transposition deadline of 1 June 2015 has been adopted which updates five health and safety directives, including the Safety Signs at Work Directive, to reflect CLP. In addition, consequential amendments to a range of domestic regulations to replace old references to align them with CLP also need to be made. Without these changes the regulations will become unworkable because the references used to define the scope of application will be obsolete.

What are the policy objectives and the intended effects?

The objective is to align domestic legislation with CLP to ensure the law continues to be workable so that the effective protection of workers (and others) is maintained. The amendments will be made in such a way to ensure any additional costs to business are minimised.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

The wording of the EU direct acting CLP regulation and the amending directive 2014/27/EU leave no discretion to implement other than by a range of technical amendments to existing legislation. Other options to make wider changes to the affected legislation were considered in the context of the Government's Transposition Guidance, but the only option proposed is to make the minimum changes legally required to correctly transpose the amending directive and to align domestic legislation with CLP to achieve legal certainty for business and avoid risk of possible EU infraction proceedings.

Will the policy be reviewed? It will not be reviewed. **If applicable, set review date:**

Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** n/a	**Non-traded:** n/a	

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs

Signed by the responsible Minister: Freud Date 12.1.15

Summary: Analysis & Evidence

Policy Option 1

Description: Make the minimum legally required changes to implement the amending directive and CLP consequential amendments.

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2015	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: - 8.75	High: - 3.19	Best Estimate: - 5.68

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	£3.2	1	0	£3.2
High	£8.7		0	£8.7
Best Estimate	**£5.7**		0	**£5.7**

Description and scale of key monetised costs by 'main affected groups'

- Businesses and public sector organisations (including some ships) will be required to replace a small proportion of existing hazardous substance signage. This is a one-off cost. Total estimated costs to businesses and public sector organisations of purchasing replacement signs are £810,000, while one-off labour costs for installing signs are £500,000. Total estimated familiarisation costs associated with signage changes are £4.4 million.
- Of £5.7 million total costs, £4.5 million are estimated to fall to businesses and £1.2 million to public sector organisations. There are no ongoing costs.

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

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	0		0	**0**
High	0		0	**0**
Best Estimate	0		0	**0**

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

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

- The proposed changes will ensure the various domestic regulations remain workable when the old classification system is withdrawn and the regulations that implement them (Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP)) are revoked. This will avoid confusion for business and the costs and economic efficiency losses that this would give rise to, and ensure that effective worker protection is maintained.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

- Costs associated with changes to the Safety Signs and Signals regulations are based on a number of assumptions, which are necessarily broad averages given the wide range of industries in scope. These assumptions are discussed in detail in the evidence base and have been refined following information received in response to the public consultation.
- A key assumption is that changes to other regulations as a result of the EU amending directive will be negligible due to their limited and technical nature, and that any changes in scope will have previously been covered by general duties under existing health and safety regulations. Responses to the public consultation have confirmed that the risk of significant additional costs from these changes is low.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0.4	**Benefits:** 0.0	**Net:** -0.4	No	Not Applicable

EVIDENCE BASE

1. Problem under consideration

1.1. EU direct acting Classification, Labelling and Packaging Regulation (CLP)

1. 'Classification' of a chemical is the scientific assessment of its intrinsic properties to identify whether it has the potential to cause harm - for example, to cause cancer, explode, irritate the eyes etc. Chemicals are classified and labelled so that those using them have information about their hazardous effects, to enable them to take suitable precautions to protect both people and the environment.

2. Across the world, a number of different systems, including a European one, for classifying chemicals and communicating this information have developed. Recognising this situation caused confusion, the United Nations has developed a Globally Harmonised System (GHS) on classification and labelling to facilitate international trade and to better protect people and the environment.

3. The direct acting Classification, Labelling and Packaging regulation (CLP) implements GHS in the EU. CLP has been progressively introduced since January 2009 and replaces the Dangerous Substances Directive (DSD) and Dangerous Preparations Directive (DPD), which currently deal with the classification, hazard communication and packaging of chemicals in the EU. These directives are implemented in the UK by the Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP).

4. The GHS is already in use outside the EU and it is likely that those organisations that export to/import from these markets will be both familiar with and using the CLP system for labelling which will mitigate to some extent the potential impact of any required changes to businesses.

1.2. Consequential amendments

5. On 1 June 2015, the final requirements of CLP will come into force and DSD and DPD will be revoked (transitional arrangements for products already in the supply chain will remain until 1 June 2017). The CHIP Regulations 2009 will also be fully revoked on 1 June 2015 by the Biocidal Products and Chemicals (Appointment of Authorities and Enforcement) Regulations 2013 (BCP 2013). As a result, consequential amendments will need to be made to existing UK regulations to replace out of date references to CHIP and DSD/DPD to align with CLP and ensure the legislation continues to make sense and is workable.

1.3. Amending Directive 2014/27/EU

6. Five worker protection directives refer to DSD and DPD to define their scope. As CLP will repeal DSD and DPD, an amending directive 2014/27/EU has been introduced, which updates references in these worker protection directives to align them with CLP. The amendments are technical changes to replace old references with the relevant new ones and are not intended to introduce new requirements. The worker protection directives affected are:

i) Safety Signs at Work Directive (SSWD) (92/58/EEC)
ii) Chemical Agents Directive (CAD) (98/24/EC)
iii) Carcinogens and Mutagens Directive (CMD) (2004/37/EC)
iv) Pregnant Workers Directive (PWD) (92/85/EEC)
v) Protection of Young People at Work Directive (YPWD) (94/33/EC)

7. These directives are transposed by a number of existing domestic regulations which include:

- Health and Safety (Safety Signs and Signals) Regulations 1996
- The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002
- Control of Substances Hazardous to Health Regulations (COSHH) 2002
- The Management of Health and Safety at Work Regulations 1999
- A number of health and safety Merchant Shipping and Vessels regulations

1.4. Previous Impact Assessment

8. In 2007, HSE carried out an initial regulatory impact assessment of the costs and benefits that would result from the implementation of CLP. This estimated one-off costs to the UK (industry, Government and other stakeholders) of between £95 million and £215 million (present value, 2006 prices), spread over the seven-year implementation/transition period. The assessment also concluded that the ongoing costs of compliance with CLP would be broadly the same as under the existing classification and labelling system and so estimated that there would be no additional ongoing costs.

9. The assessment included consideration of the costs for manufacturers and suppliers of switching from the previous classification system to CLP and the need to reclassify and re-label products, in addition to the benefits to business of improved international trade. It did not take account of the downstream costs of any changes required to domestic legislation necessitated by amendments to EU directives to reflect the revocation of DSD and DPD (i.e. the changes assessed in the present impact assessment).

10. An EU impact assessment has not been presented for Amending Directive 2014/27/EU, as it makes only minor technical modifications to bring the worker protection directives into alignment with CLP.

2. Rationale for action

11. We propose to implement the changes required by updating the existing domestic regulations, which transpose the relevant directives. If the amendments are not made the domestic legislation will become unworkable because the references used to define the scope of application of the regulations will be obsolete. Making the changes will avoid:

- creating provisions that are unenforceable in some cases, putting at risk the effective protection of workers; and

- costs and economic efficiency losses that would arise as a result of business confusion due to a lack of legal certainty.

12. Given the technical nature of the proposed changes, which are not designed to change the scope of the regulations, the additional costs to UK industry are expected to be limited and will be one-off, transitional costs only.

13. The introduction of the GHS by CLP in the EU is widely supported by business as it will remove barriers to trade that currently exist due to the use of several different classification systems worldwide. The changes required by CLP are not controversial and are welcomed as an overdue update of worker protection measures to reflect the evolution of the chemicals classification system.

14. Not making the necessary changes required by the amending directive and the consequential amendments would mean the relevant EU legislation would not be fully implemented, which may risk infraction proceedings.

3. Policy objective

15. The objective is to align existing domestic legislation with CLP to ensure it continues to be workable when the previous law dealing with the classification of chemicals is revoked. This will ensure the continued effective protection of workers (and others) and that there is legal certainty and clarity for business.

16. In determining the detail of the amendments to be made, the objective is to maintain the status quo as far as possible to minimise costs to business. This will be achieved by using copy-out and, where necessary, alternative wording which minimises changes in scope in the existing regulations, while implementing the minimum requirements of the amending directive.

4. Description of options

17. Three broad options were considered in the development of this IA;

a) Do nothing. This was not a viable option because:
   i. CLP Consequential amendments and transposition of the Amending Directive must be completed by 1st June 2015;
   ii. industry's desire for an integrated world-wide chemical classification system would not be realised;
   iii. a number of regulations, set out in paragraph 7, will refer to a classification system (CHIP) that does not exist, making them unworkable resulting in legal uncertainty for business;
   iv. it could leave the UK open to infraction proceedings.

b) Use non-legislative means. This option would leave the UK open to infraction proceedings by the EU, as UK legislation would not comply with EU obligations.

c) Make the minimum legally required changes to transpose the Amending Directive and implement consequential amendments.

18. Since a) and b) are not viable options, they have not been analysed any further in this IA, in accordance with Better Regulation guidance on Impact Assessments.[1] In reality, there is only one viable option, which is c) above, to make the minimum legally required changes to transpose the Amending Directive and implement CLP consequential amendments. This is referred to as Option 1 in this impact assessment.

[1] See the Better Regulation Impact Assessment Overview document : https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31606/11-1110-impact-assessment-overview.pdf

19. As explained under a) above, the 'do nothing' option is not viable. However, in order to appropriately reflect the additional costs and benefits of the proposed changes they must be compared to a baseline. The baseline used in this IA is the scenario whereby the existing CHIP classification system, and the references to it in domestic regulations, continues into the future i.e. the *status quo*. This allows comparison of the additional costs that will result from transposition of the amending directive and implementation of consequential amendments compared to the current situation, which is the relevant comparison for decision-making purposes.

4.1. Option 1 - To make the minimum legally required changes

20. This option involves making:

a. the changes required to existing domestic regulations to transpose the amending directive by 1 June 2015; and

b. the consequential amendments required due to the revocation of CHIP 2009 and repeal of DSD/DPD as a result of CLP coming fully into force on 1 June 2015.

a) Transposition of the amending directive

21. Most of the changes required by the amending directive are simple technical amendments required to update references from the old classification system to CLP and do not change the requirements of the regulations. The only impact on businesses will be the need to familiarise themselves with the changes where there is any practical effect.

22. One of the changes required by the amending directive to the Chemical Agents Directive means a limited extension of scope of application will need to be made to the DSEAR regulations. This is necessary to ensure all the physical hazard classes eg. '*corrosive to metals*' and *'gases under pressure'* listed in CLP are covered. The practical impact on business, if any, is minimal because the general duties of the Health and Safety at Work etc Act 1974 and the Management of Health and Safety at Work Regulations already place duties on businesses to carry out a risk assessment and put in place arrangements to safely manage hazardous chemicals not covered by other legislation. See Section 5.3.2 for further discussion.

Amendments to the Safety Signs and Signals Directive

23. The Health and Safety (Safety Signs and Signals) Regulations, which implement the Safety Signs and Signals Directive, require businesses to display a suitable safety sign or labels in the workplace to warn of hazards, including chemicals, only where a significant risk to workers remains after other control measures have been applied. The changes made by the amending directive aim to make the use of warning signs and labels for hazardous chemicals, where required, more specific. This means that, in some limited circumstances, businesses will need to replace certain signs and labels with the new hazard warning symbols (pictograms) introduced by CLP.

24. These changes will result in some transitional costs to business, which are assessed in Section 5.3.1. There are some transitional costs arising from equivalent changes to signage requirements in Merchant Shipping and Vessels Regulations, which are assessed in Section 5.3.3.

b) Consequential amendments

25. When CLP is fully implemented on 1 June 2015, DSD and DPD - and the CHIP regulations which transpose them - will be automatically revoked and replaced by CLP. In order to ensure domestic legislation continues to be workable references to the previous CHIP classification system, which will become obsolete when CLP comes fully into force, need to be replaced by references to the new CLP classification system. The use of the correct references is essential because they are used to define the scope of application of the various regulations affected. If the changes are not made there will be legal uncertainty about the application of the regulations which will create uncertainty for business. Therefore a number of minor technical consequential amendments will need to be made to a range of existing domestic regulations.

26. These changes will have very little, if any, impact on business. This is because the chemicals being stored and used by businesses and their intrinsic hazards will not change so the precautions that need to be taken to protect workers will remain the same.

27. The long lead-in period means there is a high level of awareness of CLP and the new classification system. On this basis, combined with the limited and technical nature of the changes, we do not expect significant familiarisation costs for business.

28. As the impacts on business arising from consequential amendments are expected to be negligible, and the UK has no discretion about how to implement the change to the classification system because it is implemented by an EU direct acting regulation, a proportionate approach has been taken to the analysis of the costs and benefits.

4.2. Consideration of other options

29. The wording of the EU direct acting CLP regulation and the amending directive leave no discretion to implement other than by a range of technical amendments to existing legislation. Therefore, HSE has not considered non-regulatory options.

30. Some of the sets of existing regulations affected by these changes go beyond the minimum requirements of the directives they transpose. The need to make amendments to the regulations provides an opportunity to consider whether there is a case at this stage to propose wider amendments to address this.

31. The requirements of the affected regulations, for example the Control of Substances Hazardous to Health Regulations, are informed by a long history of regulatory experience and are defined based on the body of evidence of risk to workers (and others) of exposure to hazardous substances and other hazards.

32. To justify proposing changes to the established regulatory arrangements, there would need to be new risk-based evidence available sufficient to challenge the existing position, supported by evidence that such changes would deliver significant benefits to business. The HSE Board considered the case for making wider changes but did not believe there was currently sufficient evidence available to propose such fundamental changes. They did, however, agree that further work should be done to consider the issues with view to making proposals in the future.

33. A principle aspect of gold plating in the regulations affected by these changes is their application to the self employed; the directives they implement only apply to workers. Inclusion of the self employed in the scope of the regulations reflects the scope of application as set out in the general duties of the Health and Safety at Work etc Act 1974 (HSWA) which pre-date European legislation. Measures to amend HSWA to address this situation to better align UK legislation with European health and safety law are currently being considered by Parliament as part of the Deregulation Bill. If passed, these measures will have the effect of disapplying health and safety requirements to the self employed except in prescribed circumstances, so removing this aspect of gold plating from all relevant secondary legislation.

34. The Control of Substances Hazardous to Health Regulations 2002 (COSHH) and Management of Health and Safety at Work Regulations 1999 (MHSWR) also contain a limited number of specific requirements which go beyond the minimum requirements of the directives they implement. In summary these concern, the frequency at which certain tests and examinations should be carried out, the inclusion of domestic concentration in air limit values and the definition of certain very hazardous substances/processes used to define when particular requirements are triggered and requirements relating to the recording and notification of specified information.

35. The requirements concerned are long established and have been carried forward from previous legislation, for example, when introduced COSHH replaced nearly fifty pieces of existing legislation. The areas of gold plating which remain have the effect of clarifying for duty holders the application of more general duties within the regulations. Feedback from business as a result of the Red Tape Challenge was supportive of the current regulations and there were no specific calls for changes to remove areas of gold plating in either COSHH or MHSWR. This position was further reinforced by the more recent public consultations on the Approved Codes of Practice which underpin these regulations.

36. As part of the consultation on the proposals, stakeholders were specifically asked to provide any wider comments they had on how the regulations implement the directives they transpose. No concerns about gold plating were raised and no comments were made seeking any other changes. One stakeholder representing the chemical and pharmaceutical industry commented ‘we fully support the COSHH Regulations as being a proven and effective legislative vehicle for implementing the requirements of both the Carcinogens and Mutagens Directive and Chemical Agents Directive’.

37. The issues concerned with possible wider amendments are potentially controversial and could be seen by some stakeholders as presenting a reduction in worker protection, which could therefore risk complicating and delaying the process to make the required amending regulations in time to achieve the transposition deadline. These wider changes are not being sought by business.

38. The timetable for achieving the minimum consequential changes required is very tight. The significant additional work wider changes would require would put this timetable at risk. The European Commission is also currently undertaking a review of all worker protection directives. It is likely therefore that more fundamental changes to some of the directives concerned, e.g. the Chemical Agents Directive, may be proposed by the European Commission in the near future, which would provide a further opportunity to consider wider changes.

5. Monetised and non-monetised costs and benefits of options

5.1. General assumptions

39. Given that all monetised impacts in this assessment are expected to occur in the first year of the appraisal period (transitional costs only), no discounting is applied to the monetised cost estimates. The analysis assumes the proposed changes would come into force as planned in mid-2015 and adopts this as the first year of the appraisal period.

40. All costs and benefits are calculated for Great Britain.[2] Estimates are given in constant (2013) prices.

41. Wage data is taken from the Office for National Statistics' Annual Survey of Hours and Earnings (ASHE) 2013 (provisional).

42. Estimates are presented to two significant figures throughout the analysis, unless stated otherwise. Because of this, there will be some rounding error present and estimates may not sum; however, the underlying analysis – including assessment of EANCB – has been performed using unrounded values. In addition, estimates rounded to the nearest whole number are provided in **Table 4**.

5.2. Public Consultation

43. An eight week public consultation was conducted from 12 June to 5 August 2014. The consultation was hosted on HSE's website and emails publicising it were sent to 363 key stakeholders. A total of 32 responses were received from a range of relevant stakeholders, including: health and safety professionals; trade associations and businesses from the chemical and related industries; public sector respondents representing the emergency services, local authorities and defence; and a trade union official and an employee.

44. The consultation was divided into four sections setting out the amendments needed to be made to each of the regulations affected by amending Directive 2014/27/EU changes. It sought views on whether the proposed changes were effective in implementing the amending directive and also if respondents had any wider comments about the way the regulations implemented the main directives they transpose. A range of questions were also asked about the likely impact of the changes on business, including specific questions to test the assumptions used in the consultation-stage impact assessment, and the responses to these are discussed in the relevant sections below.

45. Overall the proposed approach to make the minimum changes legally required was highly supported; stakeholders made positive comments about the adoption of CLP and alignment of domestic regulations with it and no significant issues were raised about the suggested drafting for the amendments. The feedback received will be used to help inform the guidance to be produced to explain the changes to workplace signage, which will include clarification that the majority of signage requirements have not changed, for example that supplementary text can still be used on warning signs, and where the CLP red diamond pictogram signs and yellow triangle warning signs are needed. This will ensure that costs to businesses and other organisations are minimised.

[2] Northern Ireland has its own separate relevant legislation which will be amended by the Northern Ireland Executive.

46. Since there is separate legislation for the maritime sector, an additional six-week targeted consultation with key stakeholders was carried out between 1 August and 15 September 2014, involving the UK Chamber of Shipping, seafarer unions, the fishing sector, domestic passenger shipping and the small commercial vessel sector, which built on the HSE consultation. This consultation highlighted the expected impacts for the maritime sector, and invited comments.

47. Four responses were received, including the UK Chamber of Shipping which had consulted its membership. All agreed that the changes were largely technical and that impacts would therefore be minimal. None raised concerns about the proposals themselves, although one consultee raised concerns that indicated limited familiarisation costs would be associated with the signage changes. This has been addressed in the impact assessment through consideration of familiarisation costs, in addition to the inclusion of limited costs associated with replacement signage.

5.3. Costs - Option 1 (To make the minimum legally required changes)

5.3.1. Health and Safety (Safety Signs and Signals) Regulations 1996

5.3.1.1. Description of changes to hazardous substance signage requirements

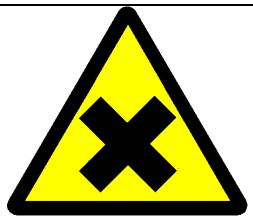
48. Anecdotal evidence from the safety sign industry is that the switch to new CLP signs and labels will have limited impact. Labels are typically printed and digitally reproduced, which means making changes is quick to do and relatively cheap. The long lead in for CLP means signs and labels with the new CLP pictograms are already available, so much of the costs of switching to the new system have already been absorbed. The industry also confirmed that stocks of existing signs are small, so no significant costs from the disposal of non-compliant stock are expected.

49. However, HSE expects that there will be some additional costs to businesses from having to replace a small proportion of affected workplace signage for hazardous substances, where previous uses are no longer compliant or where new signs have been introduced. The main changes are described below:

i) Removal of the *'Harmful or irritant material'* sign from use. Where this sign is used it will need to be replaced with one of the appropriate CLP pictograms for 'long term health hazard' and 'harmful' (see Figure 1a).

ii) Restriction on the use of the 'General danger' sign to warn of hazardous chemicals (Figure 1b). Under the proposals, this sign can only be used for stores that contain a number of hazardous chemicals. Where this sign has been used to warn of a single hazardous substance, it will have to be replaced by the appropriate CLP pictogram or a suitable warning sign using the same pictogram where one exists in the annex to the Regulations.

50. With the exception of the 'General danger' sign the use of the other five warning signs for hazardous chemicals is unchanged, these are the flammable, explosive, toxic, corrosive and oxidant material signs.

Figure 1a – removal of 'Harmful or irritant material' sign	Figure 1b – Restriction on the use of the 'General Danger' sign
 'Harmful or irritant material' Replaced by  'Long-term health hazard' ' Harmful'	 'General Danger'

51. CLP introduces red diamond pictograms to replace the CHIP orange square pictograms, which are placed on products by suppliers. Duty holders previously had the option of using CHIP orange square pictograms on pipes and containers. Changes to the Safety Signs and Signals Regulations mean that the previous CHIP orange warning pictograms are no longer to be used on containers and visible pipes; they must now be marked with the appropriate CLP pictogram or a suitable warning sign using the same pictogram where one exists. CLP introduces new pictograms for two new hazard classifications, '*long term health hazards*', and *'gases under pressure'*. In addition the label for corrosivity will now be used in circumstances where the chemical is *'corrosive to metals'*

52. As containers will already be appropriately marked by the supplier, the costs of which were included in the previous impact assessment described in Section 1.4 and pipe work is frequently marked using established colour banding systems or site-specific means of identification which will not need to change, these are not expected to lead to significant additional costs to organisations. Additionally, duty-holders will not be required to re-label existing product containers received from suppliers historically that are labelled according to CHIP. No issues relating to containers or pipes were raised during the consultation and one respondent specifically confirmed container signage would not need to be changed in their sector. Therefore, these are not assessed further in the analysis.

53. In order to inform the assessment of these costs, HSE consulted the Health and Safety Signs Association (HSSA), which represents suppliers and manufacturers of health and safety signs and labels. The HSSA was asked to circulate a survey to its members designed to elicit baseline information on the number of relevant signs sold on the market, to form the basis of estimates of signage replacement costs, and provide a sense check on the number of signs estimated through the 'bottom-up' analysis described below. Unfortunately, no specific responses to the survey were received that could provide information to use in our analysis. However, information provided during discussions with HSSA broadly supported the assumptions made in the initial assessment below.

54. In the absence of quantitative information, HSE undertook an initial assessment of signage replacement costs based upon informed assumptions regarding the number of signs and premises affected by the changes, and the costs of purchasing and removing/replacing relevant signs.

55. HSE sought to test the approach and assumptions through a range of specific questions during formal consultation, and further targeted follow up consultation to clarify responses and gain additional information where possible. Sections 5.3.1.2 to 5.3.1.8 discuss in detail the model used to estimate signage replacement costs and refinements made to the analysis to reflect additional information received from the consultation process.

5.3.1.2. Industries and premises using hazardous substance signs

56. Interdepartmental Business Register (IDBR) 2013 data on local units[3] by industry and unit size (measured by number of employees) was used to identify the number of potential premises currently required to display signage relating to hazardous substances. Firstly, industry classifications (at the two digit Standard Industry Classification (SIC) level) were sifted based on HSE expert knowledge according to whether premises were likely to display workplace signage relating to hazardous substances.

57. To facilitate this analysis in the absence of detailed information, this stage considered all workplace hazardous substance signage, rather than only those signs requiring replacement due to the changes described in Section 5.3.1.1.

58. During this initial exercise as part of the consultation stage IA, of 99 industry classifications, 48 were considered likely to display workplace signage relating to hazardous substances and 51 were not. Broadly, those industry classifications included were:

- All classifications related to mining, manufacturing, agriculture, and aquaculture (SIC 01–32, except 09 'Mining support activities);
- Energy generation, water treatment, sewerage and remediation activities (SIC 35-39);
- Wholesale, distribution, retail and transport activities (where hazardous chemicals may be transported and stored) (SIC 45-51)
- Scientific, research, testing and engineering activities (SIC 71, 72 and 74)
- Defence, education and human health (SIC 84-86)

59. Micro units (1-9 employees) were excluded from this exercise, as they will have small, less complex, premises and processes and therefore are more likely to rely on the labelling provided by the supplier on packaging to provide the necessary warning information. They are also likely to have a single store for a mixture of chemicals, which can continue to be marked with the 'general danger' sign, meaning no action needs to be taken. The majority of responses to the public consultation supported this exclusion.

[3] The Office for National Statistics defines a local unit as "an enterprise or part thereof (e.g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place", i.e. a premises.

60. This gave a total of 220,000 small (10 to 49 employees) to large (250+ employees) premises. Other sectors were excluded on the basis that significant use of hazardous substances was unlikely and therefore hazardous substance signage would not be required. These were mainly sectors related to administrative, financial, telecommunications and information services, advertising, sports and other recreational sectors. In these sectors, where hazardous chemicals use will be small scale e.g. for cleaning purposes, the labelling as supplied on packaging will normally be sufficient without the need for additional workplace signage.

61. The majority of respondents to the consultation agreed with the scope of industries selected. Nevertheless, HSE has made three revisions to the scope of industries for the final stage analysis, based on information received and further consideration of likely sectors affected. These are described below.

i. The inclusion of construction sites

62. Respondents provided useful information suggesting that some construction sites display relevant hazardous substance signage and should be included in the analysis. Construction sites are likely to display hazardous substance signs only when flammable substances are stored on site and when container labelling is not considered sufficient.

63. IDBR data was not considered suitable for identifying affected construction sites, since the data pertains to the fixed premises of construction businesses (e.g. head or area offices) rather than the construction sites they operate. Instead, data collected from notifications made to HSE for construction projects under the Construction (Design and Management) Regulations 2007 (CDM F10 notifications) was used to estimate the number of sites affected.

64. Project owners must notify HSE where construction projects are expected to last more than 30 days or involve more than 500 person days. Approximately 115,000 notifications are made to HSE each year. However, it is expected that a need for specific hazardous substance signage, other than that already included on product/container labelling, will only arise on larger construction sites. Feedback from HSE construction sector experts is the use of relevant signage is highly infrequent. Furthermore, given the transient nature of construction sites, and the fact that signs are often mounted externally and so exposed to weather and heavy processes, it is expected that new signage will be purchased routinely in the absence of regulatory change.[4]

65. Given this, the analysis excludes project sites expected to last less than 1 year. For the reasons above, these sites are very unlikely to use hazardous substance signage, and baseline replacement of any existing signs would be high. Using the CDM F10 notifications data, this resulted in 9,000 construction sites included in the analysis in this final stage IA.

ii. SIC 47 : Retail trade

66. Responses to the consultation indicated that certain specific retail sectors would be affected. The initial consultation-stage analysis included all retail trade sectors under SIC 47 'Retail trade, except motor vehicles and motorcycles'. Further assessment of retail trade sectors suggested that many under SIC 47 would not be affected, and so a more detailed analysis at the 4 digit SIC level was undertaken. Retail sectors relating to the sale of medical goods (4474), cosmetics and toilet articles (4775), fertilisers (4776), paints (4752) and automotive fuel (4730) were included, while the remaining retail sectors were excluded. This led to the exclusion of 45,000 premises that had been included in the consultation stage IA.

[4] Responses to the formal consultation suggested that signage displayed outdoor may need to be replaced yearly.

iii. SIC 84 : Public administration and defence; compulsory social security

67. Similar to SIC 47 above, further assessment of SIC 84 'Public administration and defence; compulsory social security' at the 4 digit SIC level suggested that a number of the sub-sectors included were not relevant to the analysis. For the final analysis, Defence (8422), Public order and safety (8424) and Fire Service (8425) activities were included, while the remaining SIC 84 sub-sectors were excluded. This led to the exclusion of a further 8,200 premises that had been included in the consultation stage IA.

68. This exercise, including the revisions made following consultation, provided an estimate of 180,000 premises (small to large) displaying hazardous substance signs for this final stage IA. These premises will include both public and private organisations. Three industry classifications in the list above were identified as comprising a significant proportion of public sector organisations, and the following assumptions were made to disaggregate these into public and private organisations:

Table 1 – assumptions regarding proportion of public sector premises in industries identified as having hazardous substance signage

Industry (2 digit SIC)	Number of premises (private and public)			Proportion public sector	Justification
	Small	Medium	Large		
84 : Public administration and defence; compulsory social security[a]	2,490	1,085	340	100%	All units public sector
85 : Education	21,965	12,420	950	90%	DfE national tables show just under 580,000 pupils at independent and non-maintained schools, or 7% of the 8.2 million school pupils in England. 90% of premises in public sector used as rough approximation. https://www.gov.uk/government/collections/statistics-school-and-pupil-numbers
86 : Human health activities	17,300	3,140	795	80%	ONS (2013) healthcare expenditure in UK (http://www.ons.gov.uk/ons/dcp171766_308689.pdf) estimates 83% healthcare expenditure was public. Some public expenditure represents commissioning of private providers, so 80% is used as an assumption for the proportion of premises in the public sector.

[a] Sub-sectors 8422, 8424, and 8425 only (see paragraph 67)

69. Multiplying the premises in Table 1 by the proportion of the industry estimated to be public sector gives an estimate of around 53,000 public sector premises. This leaves 130,000 private sector premises. These estimates will be used to estimate the number of signs to be replaced in the public and private sectors, and the associated costs, in order to estimate Equivalent Annual Net Costs to Business (see Section 7).

5.3.1.3. Total number of hazardous substance signs

70. The number of hazardous substance signs in use – and the number needing to be replaced under the proposals – will vary vastly between sites and industry sectors, depending on the residual risks posed by hazardous substances used or stored on site once other risk control measures have been applied. Given the very broad scope of the proposals covering a wide variety of industry sectors, the assessment of the number of signs affected is necessarily high level.

71. The approach taken is to identify which of the sectors described in Section 5.3.1.2 are expected to be 'low' and 'high' users of hazardous substance signs, based upon consideration of the likely intensity and variety of hazardous substance usage. The analysis then uses assumptions about the number of signs 'low' and 'high' signs users are likely to display, and the proportion of these that need to be replaced under the proposal. These assumptions have been informed by HSE expert knowledge and information gathered from consultation respondents, as described below.

I. Baseline replacement of signage

72. Premises will replace hazardous substance signs in the absence of regulatory change for a number of reasons. Either signs become faded or damaged by exposure to the weather or processes, or the underlying hazards they communicate may change due to a change in substance use, storage or process. This baseline replacement of signage was not included in the consultation stage assessment, hence – all other things equal – it will have overestimated signage replacement costs.

73. To address this gap, respondents to the public consultation were asked to estimate the typical service life of signs before they are replaced as above. Of 23 responses, twelve provided estimates, with a good degree of overlap and agreement. Answers ranged between one to 10 years, with the majority of responses between 3 and 5 years. To account for these responses, a range of 3 to 7 years is used in the analysis, with a best estimate of 5 years. We consider that this provides a reasonable range of likely baseline replacement frequency.

74. Assuming that across all industries, signage replacement is evenly distributed across these 5 years, 20% of signs will be replaced in the first year in the baseline. Therefore, this 20% baseline replacement is subtracted from estimates of signage replacement below (with a range of 33% (low cost estimate) to 14 % (high cost estimate)), to provide the additional signage replacement under Option 1.

II. 'High' and 'Low' hazardous substance signs users

75. Based upon HSE expert knowledge and information gathered at consultation, all industrial sectors relating to mining, manufacturing, energy generation, water, sewerage and waste treatment, in addition to two retail sectors plus defence and fire service activities, were identified as 'high' signs users (43,000 premises in total, of which 1,900 are public sector and 41,000 are private).[5] The remaining sectors, including construction and the remaining retail sectors, were identified as 'low' signs users (140,000 in total, of which 51,000 are public sector and 86,000 private).

76. Assumptions were then derived on the number of signs likely to be displayed by 'high' and 'low' intensity users, and the proportion of these signs that will need to be updated to comply with the proposed regulatory change. These estimates were drawn up in consultation with HSE experts based on experience on signage used the various sectors and sites under consideration, and modified based upon information received during consultation.

[5] Following information received at consultation, defence and fire services were moved from 'low' to 'high' sign users, in addition to the following retail sectors: 'hardware, paints and glass in specialised stores' (4752) and 'automotive fuel in specialised stores' (4730)

77. The following factors were considered: a) the signs concerned are those used to warn of hazardous chemicals and these are only required where a residual risk remains after other control measures have been applied; b) the use of hazardous chemicals is usually restricted to certain areas so the use of signs is likely to be targeted accordingly; and c) the number of signs displayed will, other factors constant, correlate to the scale and complexity of the physical premises.

78. Pipe work containing hazardous substances is usually marked using colour banding in line with International or British Standards and/or established site conventions, not signs and labels as set out in these regulations, and so the marking of pipes has been excluded in these assumptions.

79. For both 'low' and 'high' signs users, the number of employees per local unit is used as a proxy measure of unit size - unit size - small (10-49 employees), medium (50-249 employees) and large (250+ employees).

III. Number of signs - 'Low' hazardous substance signs users

80. As discussed in Section 5.3.1, the regulatory changes necessary under in Option 1 affect a small proportion of hazardous substance signs in practice. The consultation stage impact assessment used an assumption of 15% for the proportion of existing signs that would need updating, with a range of 5% - 25% to reflect uncertainty. Responses to the consultation broadly confirmed that the majority of signs will remain unchanged, so this assumption is maintained for the present analysis.

81. The formal consultation specifically asked respondents to estimate the number of signs they would need to change to comply with the proposal. Of the 15 respondents that provided an estimate, five were from industry sectors identified as 'low' signs sectors. All five estimated that they would not need to update any signs.

Table 2 – assumptions on number of signs by local unit – 'low' signs users (best estimates)

	Unit size (number of employees)		
Number of signs per 'low' premises	**Small (10 to 49)**	**Medium-sized (50 to 249)**	**Large (250+)**
Total existing hazardous substance signs per unit	1	3	5
Proportion of existing signs to be replaced under proposal (best estimate)	15%	15%	15%
Average number of signs replaced per unit	0.15	0.45	0.75
Number of 'low' premises	110,000	27,000	3,000
- of which private sector	*72,000*	*13,000*	*1,300*
- of which public sector	*35,000*	*14,000*	*1,800*
Total signs replaced (including those replaced in baseline conditions)[a]	16,000	12,000	2,300
Proportion of signs replaced in baseline (best estimate)	20%	20%	20%
Total *additional* signs replaced (excluding those replaced in baseline conditions)[a]	13,000	9,800	1,800

Note: Errors due to rounding

[a] Private plus public premises

82. This broadly concurs with the assumptions made for the consultation stage analysis for 'low' signs users, which are set out in **Table 2** for the best estimate. Here, the average number of signs replaced in the best estimate scenario ranges from 0.15 for a small premises to 0.75 for a large premises. Given the expected variability in signs usage across the range of industries affected, and the small number of responses received, we maintain these assumptions as a reasonable reflection of the average level of signage replacement under Option 1.

83. Applying the assumptions in **Table 2 results in a total estimate of approximately 24,000 signs replaced by 'low' users**, with a range of 6,800 to 44,000. Of these, around 14,000 are replaced in the private sector and 10,000 replaced in the public sector (best estimates).

IV. Number of signs - 'High' hazardous substance signs users

84. Nine consultation responses were received from users in 'high' signs industries, which varied from two to 20 signs to be replaced per site, with one 'zero' estimate. These responses were generally much higher than the effective replacement assumed in the consultation stage assessment, which estimated less than one sign replaced on average per small premises and 3 per large premises for 'high' use sites. While nine is a small sample, and we expect those who responded to the consultation to be skewed towards the upper end of the 'high users' distribution (as a highly engaged group), the responses taken as a whole are strongly suggestive that we underestimated our initial assumptions for this group and we have increased our assumptions accordingly.[6]

Table 3 – assumptions on number of signs by local unit – 'high' signs users (best estimate)

	Unit size (number of employees)		
Number of signs per 'high' premises	**Small (10 to 49)**	**Medium-sized (50 to 249)**	**Large (250+)**
Average number of signs replaced per unit	3	6	12
Number of local units – 'high' users	32,000	9,200	1,600
- of which private sector	*31,000*	*8,800*	*1,500*
- of which public sector	*1,500*	*430*	*60*
Total signs replaced (including those replaced in baseline conditions)[a]	97,000	55,000	19,000
Proportion of signs replaced in baseline (best estimate)	20%	20%	20%
Total *additional* signs replaced (excluding those replaced in baseline conditions)[a]	77,000	44,000	15,000

Note: Errors due to rounding

[a] Private plus public premises

85. Table 3 sets out the revised assumptions. Previous estimates regarding the number of signs replaced has been increased by a factor of four. These values are broad averages and accommodate the majority of responses to the formal consultation, while accounting for potential skew in responses towards the upper end of 'high' sign use and large variability in signs use across sectors that can bias a small sample.

[6] We made follow up contact with respondents to ensure that their estimate was made at the individual site level rather than across multiple sites, and that respondents were considering only those signs that required updating as a result of the proposals rather than *all* existing hazardous substance signs.

86. Applying the assumptions in Table 3 results in **a total estimate of 140,000 signs replaced by 'high' users**, with a range of 38,000 to 240,000. Of these, 130,000 are replaced in the private sector and 6,100 are replaced in the public sector (best estimates).

V. Total number of hazardous substance signs replaced – 'low' and 'high' users

87. Adding the estimated number of signs replaced for 'low' users (24,000) with estimate for 'high' users (140,000) results in a **total estimate of 160,000 signs replaced for all premises as a result of regulatory changes under Option 1**, with a range of 45,000 to 290,000. Under the best estimate, 140,000 of these signs are estimated to be replaced by private sector businesses and 17,000 signs replaced by public sector organisations.

5.3.1.4. Cost of purchasing signs

88. Hazardous substance signs come in a range of sizes and materials, with corresponding variation in unit costs. For the purposes of this analysis, taking account of the variety of signage types would represent too much detail, given the vast array of sectors and applications under consideration. Therefore, this analysis uses information gathered from an internet search of major online signs providers to estimate an average unit cost: £5 is used as a best estimate, with a range of £3 to £7 to reflect uncertainty. The formal consultation specifically asked respondents whether they agreed with the range used in the analysis; the vast majority agreed.

89. Multiplying the unit cost estimates by the estimated number of signs to be replaced in paragraph 87 (160,000 best estimate), gives a **best estimate of total purchase costs of replacement signs of £810,000** (with a range of £130,000 to £2.0 million). Under the best estimate, we estimate £720,000 of these costs to fall to private sector organisations, and £83,000 to public sector organisations.

5.3.1.5. Labour costs – signage replacement

90. In addition to the expense of purchasing signs, organisations will incur time costs from removing old signs and installing replacements. Based on HSE expert knowledge, we assume that the removal and replacement of signs will take an average of 15 minutes per sign replaced. Given that this time could have otherwise been used productively, this represents an additional cost to these organisations.

91. We use data from the Annual Survey of Hours and Earnings (ASHE) 2013(p)[7] to estimate the economic cost of this time at £12.32 per hour, based upon a 'Process, plant and machine operative'.[8] This gives a labour cost estimate of £3.00 per sign.

[7] http://www.ons.gov.uk/ons/rel/ashe/annual-survey-of-hours-and-earnings/2013-provisional-results/stb-ashe-statistical-bulletin-2013.html

[8] Median wage rate of £9.48 per hour for a 'Process, plant and machine operative' (ASHE 2013) uprated by 30% to reflect non-wage costs. The wage rate used in the consultation stage IA did not include this uprating, so the full cost of time used in this final stage IA is higher.

92. The majority of respondents to the formal consultation (18 of 26) agreed with the assumptions used regarding labour costs of replacing signs (wage rate and time). Of those that disagreed, two felt that labour costs would be lower, while four raised the additional time required to purchase signs, including searching for a signs provider and placing / processing an order.[9] We expect that much of this additional time would be incorporated into the process of reviewing existing signage and specifying any replacement signs required, which is assessed in under familiarisation (Section 5.3.1.7). We consider that the additional familiarisation time added for 'high' signs users more than sufficiently accounts for this time (see Section 5.3.1.7 for further discussion).

93. Applying the labour cost per sign in paragraph 91 to the estimated number of signs replaced in paragraph 86 gives a **best estimate total labour cost of £500,000** (with a range of £140,000 to £890,000) for the replacement of signs under Option 1. Of these labour costs, we estimate £450,000 labour costs to the private sector, and £51,000 costs to the public sector, under the best estimate.

5.3.1.6. Total cost of replacing signs

94. **Table 4** on page 21 shows total costs of replacing signs, and those falling to private and public sector organisations, resulting from the analysis above.

95. This analysis estimates a total signage purchase cost of £810,000 (best estimate) and a total labour cost of £500,000 (best estimate). Based on these estimates, **total costs associated with purchasing and installing signs under Option 1 are £1.3 million (best estimate),** with a range of £270,000 to £2.9 million.

96. Total purchase and labour costs to private sector organisations (i.e. businesses) are estimated to be £1.2 million (best estimate).

97. Total purchase and labour costs to public sector organisations are estimated at £130,000 million (best estimate).

5.3.1.7. Familiarisation costs – Safety Signs and Signals Regulations

98. Feedback received from businesses is that because of the long lead in time for CLP, many businesses are already familiar with the new classification system, since suppliers are already using the new hazard symbols on their products and informing customers of the changes. However, HSE expects that businesses currently using hazardous substance signs will need to spend some time to familiarise with the new requirements in order to determine which of their signs, if any, are no longer compliant and need replacing. This familiarisation would most likely be undertaken by a health and safety officer or a local manager with responsibility for health and safety at each premises.

[9] A similar number of respondents also raised the time taken to determine and specify signage requirements. This is already accounted for in the analysis under familiarisation costs (see Section 5.3.1.7).

99. Fifteen out of 26 respondents disagreed with HSE's assumptions in the consultation analysis that familiarisation could take between 30 minutes to 1 hour per premises, with a best estimate of 45 minutes. Several responses referred to the need for additional training for the wider dissemination of information on CLP classifications and pictograms throughout the organisation, rather than relating to the specific signage changes resulting from this proposal. As discussed above, the long lead-time of the CLP regulation means that there is a growing awareness of CLP classifications and pictograms, and signs with CLP pictograms have been available to purchase for some time. Furthermore, HSE's regulatory impact assessment of the introduction of CLP in 2007 (see paragraphs 8 and 9) accounted for familiarisation with CLP pictograms and classifications (including staff training), estimating costs of around £19 million (present value, 2006 prices) to chemicals manufacturers and downstream users. Therefore, accounting for wider CLP training and familiarisation costs in the present assessment would result in double counting.

100. Given that proposals under consideration in this impact assessment are limited to a small number of specific changes to workplace hazardous substance signage, HSE expects these changes can be effectively communicated to the wider workforce as part of routine team meetings/briefings and other existing workplace communication channels, without significant *additional* costs.

101. Nevertheless, HSE acknowledges that for 'high' signs users, the process of specifying replacement signage, including purchasing time as raised in paragraph 92, may be higher than estimated, particularly considering the increase signage estimates for this group (see paragraphs 84 to 86). To account for this, we double familiarisation time for 'high' sign users, resulting in a range of 1 to 2 hours and a best estimate of 1.5 hours. This broadly accommodates consultation responses relating specifically to signage changes. Assumptions for 'low' users are maintained: a range of 30 minutes to 1 hour, with a best estimate of 45 minutes. As discussed in Section 5.2 ('Public Consultation'), HSE will issue clear guidance on changes to signage requirements to ensure that any familiarisation time is minimised.

102. In order to estimate the economic cost of this time (assuming it would otherwise be used productively), we have used wage data from the Annual Survey of Hours and Earnings (ASHE) 2013(p) for 'Production Managers and Directors' (SOC 112) at £26 per hour.[10]

103. Given that the nature of hazardous substance use is likely to vary by premises, and therefore requirements for relevant signage would also be site specific, we assume that each premises would need to spend this time familiarising with the new requirements. Using the assumptions above on familiarisation time and hourly cost, this gives a familiarisation cost for 'high' signs users per premises of £39 best estimate, with a range of £26 to £52. Familiarisation costs for 'low' sign users per premises are £20 best estimate, with a range of £13 to £26. These are broad averages across a vast range of sectors; some premises will inevitably have much higher costs, while others will have none, and many businesses will own a number of premises so the costs per business will vary greatly. However, given the limited nature of the signage changes and low costs per premises, we still expect per business costs to be low.

[10] Median wage of £20 per hour, uprated by 30% to account for non-wage costs. This uprating was not included in the consultation-stage IA, so wage costs used here are higher. Three respondents to the consultation commented that the labour rate used in the initial analysis - £20 without uprating – was low. The uprated value of £26 per hour is now in the range of the comments received.

104. As discussed in Section 5.3.1.2, we estimate that around 180,000 premises to use or store hazardous substances in a way that requires the use of hazardous substance signage in the workplace, with 43,000 of these identified as 'high' signs users and 140,000 as 'low' users. As discussed in Section 5.3.1, only a small subset of hazardous subset signs are likely to require replacement under Option 1. However, it is reasonable to assume that regardless of whether existing signs need to be replaced in a given premises, the local manager responsible for workplace signage will need to spend some time familiarising with the new duties to determine whether signage changes are required.

105. On this basis, taking the assumptions on the number of premises and familiarisation costs per premises for 'high' and 'low' signs users, **we estimate familiarisation costs arising from changes to signage requirements to be £4.3 million best estimate**, with a range of £2.9 million to £5.8 million. Applying numbers of private and public premises in paragraph 69 under the best estimate, £3.3 million of these costs are expected to fall to the private sector, with £1.1 million incurred by the public sector.

106. This assessment does not include familiarisation costs to micro units. As discussed in paragraph 59, HSE expect that operations on the scale of micro units will largely rely on product labelling, rather than workplace signage. Given that these sites will use the relevant signs infrequently - if at all – they are unlikely to take the time to familiarise with the regulatory changes. This assumption was supported by the majority of respondents to the formal consultation.

5.3.1.8. Total costs – Safety Signs and Signals Regulations

107. **Table 4** summarises total costs to business from changes to Safety Signs and Signals Regulations. Estimated total costs of purchasing and replacing signs (including labour costs) are £1.3 million (best estimate), with a range of £270,000 to £2.9 million.

108. Estimated total costs of familiarising with changes to workplace signage requirements are £4.3 million (best estimate), with a range of £2.9 million to £5.8 million.

109. Therefore, **total costs associated with changes to the Safety Signs and Signals regulations are estimated to be £5.6 million (best estimate),** with a range of £3.2 million to £8.7 million. Total estimated costs to the private sector are £4.4 million (best estimate), and estimated costs to the public sector are £1.2 million (best estimate).

110. Estimated familiarisation costs are considerably greater than the estimate of costs associated with purchasing and replacing signage. This result is consistent with the expectation that the impact of replacing signs will be low, given that only a small number of all existing workplace hazardous substance signs are affected. However, because the scope of the changes in terms of number of premises that use all types of hazardous substance sign is broad, the cumulative cost of familiarisation across these premises is higher (although still very low at the premises and organisation level).

111. Given that the new requirements will come into effect immediately once the changes are enacted, all of these costs are assumed to occur in the first year. However, guidance will be provided to reassure business that a risk based and proportionate approach would be taken to enforcement in relation to any failure to display the correct sign. This will include an indication that it would be unlikely that formal enforcement action would be considered appropriate whilst businesses were in transition to the new signs.

Table 4 – Summary of costs analysis for changes to Safety Signs and Signals Regulations (unrounded)

i. Number of signs to be replaced due under Option 1	**Low**	**Best**	**High**
Total number of signs to be replaced under Option 1	44,825	161,370	288,161
Private sector + civil society organisations	40,237	144,854	258,668
Public sector	4,588	16,516	29,493

ii. Total cost of purchasing replacement signs under Option 1	**Low**	**Best**	**High**
Cost per sign (£)	£3	£5	£7
Total cost of purchasing signs to be replaced under Option 1	£134,475	£806,850	£2,017,125
Private sector + civil society organisations	£120,712	£724,270	£1,810,675
Public sector	£13,763	£82,580	£206,450

iii. Labour cost for installing replacement signs under Option 1	**Low**	**Best**	**High**
Labour time per sign (hour)	0.25	0.25	0.25
Hourly wage of sign installer (£)	£12.32	£12.32	£12.32
Total labour cost for installing replacement signs	£138,106	£497,181	£887,823
Private sector + civil society organisations	£123,971	£446,295	£796,956
Public sector	£14,135	£50,886	£90,868

iv. Familiarisation cost (signs)	**Low**	**Best**	**High**
Familiarisation time (hours per local unit) - HIGH signs user	1.0	1.5	2.0
Familiarisation time (hours per local unit) - LOW signs user	0.5	0.8	1.0
Hourly wage of familiarising manager	£26	£26	£26
Familiarisation cost per unit (£) - HIGH signs user	£26	£39	£52
Familiarisation cost per unit (£) - LOW signs user	£13	£20	£26
Total number of units with hazardous substance signs - HIGH	43,080	43,080	43,080
Total number of units with hazardous substance signs - LOW	136,499	136,499	136,499
Total familiarisation cost	£2,894,571	£4,341,856	£5,789,142
Private sector + civil society organisations	£2,184,127	£3,276,191	£4,368,255
Public sector	£710,444	£1,065,665	£1,420,887

v. Total monetised costs under Option 1 (signs changes)	**Low**	**Best**	**High**
TOTAL costs – (signs + labour + familiarisation)	£3,167,152	£5,645,888	£8,694,091
Private sector + civil society organisations	£2,428,810	£4,446,756	£6,975,886
Public sector	£738,342	£1,199,131	£1,718,205

5.3.2. The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002

112. The limited change in scope to application of DSEAR has the potential to increase the administrative costs on business, as a wider range of chemicals will need to be considered under the risk assessment requirements of the regulations. However, the intrinsic hazards of the chemicals being used by businesses are unchanged and the need to carry out a risk assessment and have in place procedures for the safe use of chemicals not currently under the specific scope of DSEAR are already required by the general requirements of the Health and Safety at Work Act and the Management of Health and Safety Regulations. Therefore, assuming businesses are already complying with their general duties, they will not need to take any additional action.

113. As part of the consultation, stakeholders were specifically asked whether they agreed with HSE's assumption that the limited change in scope to DSEAR would not require any additional action to be taken. The majority of respondents confirmed that they agreed with this assumption.

114. Of those that disagreed, the issue raised was the need to check that existing DSEAR risk assessments adequately covered the hazardous substances concerned. Health and safety regulations are not prescriptive about how risk assessments are recorded and there is no requirement to have a separate DSEAR-specific risk assessment record. Therefore, provided the hazardous substances concerned have been assessed and a record made as required under the general duties there is no need to make a new record.

115. In addition, it is a legal requirement to regularly review all risk assessments, therefore assuming duty holders are complying with this requirement, there will be no significant additional costs involved in reviewing risk assessments and amending the record, if necessary, to take account of these changes, beyond existing duties. No respondents indicated they anticipated needing to take any additional practical action beyond simple administrative steps to update risk assessment records.

116. HSE therefore expect no significant additional compliance costs associated with changes to DSEAR. Additionally, on the basis that requirements on business are unlikely to change in practice, HSE also expect no significant costs arising from the need to familiarise with the legislative change.

5.3.3. Merchant Shipping and Vessels Regulations

117. For the purposes of transposing the five health and safety directives affected by the amending directive there is separate, parallel legislation for UK ships made under the Merchant Shipping Act 1995 and the European Communities Act 2002. Although there are some presentational differences, the provisions they make are broadly the same as the legislation enforced by HSE in order to ensure common standards where work activities take place at the margins between the shore and the maritime sector. This means the majority of the changes that need to be made to the legislation are very similar, minor technical amendments for which the cost to the industry is similarly assessed to be negligible. As discussed in Section 5.2 ('Public Consultation'), all respondents to the MCA public consultation agreed that the impacts of the proposed changes would be largely minimal.

Safety Signs

118. Changes to hazardous substance signs on ships under Option 1 are expected to be very limited. The existing Merchant Shipping and Fishing Vessels (Safety, Signs and Signals) Regulations make provision for the use of international equivalent signing under international maritime conventions on the carriage of dangerous substances in bulk or as packaged goods. Therefore, on ships that operate internationally, it is likely that there will be very limited impact from signage changes. Moreover, for both domestic and international ships, cargo would arrive on the ship already labelled in accordance with the regulations, and accompanied by the relevant safety data sheets, meaning there would be no requirement for additional signage in relation to cargo.[11]

119. Costs to ship-owners are therefore only likely to occur in relation to ships' storerooms for *on-ship* supplies. Discussions with MCA have confirmed that in the vast majority of cases, these storerooms are likely to store a number of substances required for the functioning and maintenance of the ship, such as paint, cleaning materials, oils and fuel. As discussed in Section 5.3.1.1, stores containing a number of substances can continue to use the 'general danger' sign under Option 1; the 'flammable' substance sign, which is likely to be commonly used, is similarly unaffected. In these cases, which we expect to account for the great majority of signage use on ships' storerooms, changes will not be required.

120. However, changes may be required in a limited number of cases, for example where the general danger sign has been used to warn of a single hazardous substance. These have been accounted for as follows. According to data provided by MCA, there are an estimated 1,300 ships over 100 gross tonnes on the UK ship register.[12] The 1,300 ships includes a broad range of vessels of varying size and function, including large passenger ferries, cargo ships, oil tankers and workboats. For simplicity, we apply assumptions on signage use for large, 'low' signs users from **Table 2**, giving an average of 5 hazardous substance signs per ship, of which 15% are replaced in the best estimate scenario (with a range of 5% to 25% of signs replaced in low and high cost scenarios). MCA policy experts consider this to represent a reasonable average of the range of signs use across the shipping fleet.

121. Applying this assumption across the 1,300 UK shipping fleet gives a best estimate total of 1,000 signs to be replaced under Option 1 (with a range of 330 to 1,600). We use the same assumptions regarding signage purchase and installation costs: a purchase cost £3 to £7 per sign (paragraph 88), installed at a labour cost of £3 per sign (paragraph 91). This gives a total cost of replacing signs in the UK shipping fleet of between £2,000 to £16,000, with a best estimate of £8,000. This low replacement cost is consistent with responses to the MCA public consultation. None of the four respondents to the consultation raised signage replacement costs as an issue, and two specifically stated that the costs of changes would be minimal or negligible.

[11] Costs associated with the classification and labelling of products under CLP have been accounted for under the previous impact assessment described in Section 1.4.

[12] This figures differs from published Department for Transport (DfT) UK shipping data. DfT statistics account for "UK-owned" vessels, whereas MCA data counts UK-flagged vessels, to which Merchant and Shipping Vessels regulations apply. The estimate excludes small commercial vessels (under 24m in length). The majority of these are commercial yachts and will carry no hazardous substances beyond individually labelled, domestic products, where no additional signage is required. Other vessels may include workboats, which carry supplies of hazardous substances for the work that they do. However, given the size of the vessels it is expected that the stores would be mixed and therefore would be labelled with a general danger sign and therefore no changes are required. This treatment is consistent with the exclusion of micro units described in paragraph 59.

122. Ship owners or staff responsible for health and safety signs would also need to familiarise themselves with the changes and determine which of the signs are to be updated. On the basis that we expect ships to be low intensity users of hazardous substance signs (given that signage is not required for cargo as this will already be labelled), we apply familiarisation assumptions for 'low' signs users discussed in paragraph 101 (between 30 minutes to 1 hour, at a cost of £26 per hour). This gives an estimate of total familiarisation costs of between £17,000 and £35,000, with a best estimate of £26,000.

123. The above analysis provides estimated **total costs to the UK shipping fleet from signage familiarisation and replacement of between £19,000 and £51,000, with a best estimate of £34,000**.

124. Although some of these boats will be owned by public sector organisations, for simplicity and due to lack of data, we assume that all of these costs fall to the private sector.

5.3.4. Other regulations affected by the amending directive

125. The amendments required to the Control of Substances Hazardous to Health (COSHH) Regulations are minor technical ones, which update various references to align with CLP. They do not change the scope of application of the regulations or impose any new requirements. No new or additional action will be required by business. For these reasons, costs to business are assessed to be negligible. Stakeholders were asked specifically at consultation whether they agreed that the changes described to the COSHH regulations would not impose new requirements; the vast majority (25 out of 26) agreed.

126. The changes to the Management of Health and Safety at Work (MHSW) Regulations are limited to updating references to the appropriate annexes of the Pregnant Workers and Young People at Work Directives. These annexes set out non-exhaustive lists of hazardous chemicals to which the relevant duties of the respective directives apply. Because these lists are non-exhaustive the amendments, which extend the lists to include more chemicals, do not change the scope of application or impose any new requirements, given that residual risks are covered by existing general duties. Costs to business are therefore assessed as being negligible. Stakeholders were asked specifically at consultation whether they agreed that the changes described to the MHSW regulations would not impose new requirements; the vast majority (22 out of 24) agreed.

5.3.5. Consequential amendments

127. As described in Sections 1.2 and 4.1, a number of minor, technical consequential amendments are required to existing UK regulations to replace out of date references to CHIP and DSD/DPD to align with the direct acting CLP regulation and ensure the legislation continues to be workable and enforceable.

128. Given the technical nature of these changes, they are not expected to lead to changes in scope of the current requirements, and should therefore have very little, if any, impact on business. Even where there are limited changes in scope, we do not expect significant additional compliance costs, since the chemicals being stored and used by businesses and their intrinsic hazards are unchanged, and so the precautions that need to be taken to protect workers will remain the same.

129. The long lead in period means there is a high level of awareness of CLP and the new classification system. On this basis, combined with the limited and technical nature of the consequential amendments, we do not expect significant familiarisation costs for business.

130. HSE therefore expects that additional costs associated with consequential amendments will be negligible. Respondents to the consultation did not raise concerns relating to these consequential amendments.

5.4. Benefits

131. Making the necessary changes to align existing domestic legislation with CLP ensures the law remains workable when DSD and DPD and the CHIP regulations are revoked. This will avoid causing confusion for business and the costs and economic efficiency losses that this would give rise to. The changes will also mean there is a consistent use of the CLP classification system and hazard warning symbols across all supply, storage and use of hazardous chemicals, which will be simpler for business, and will help to ensure the continued proper protection of workers, which would be at risk if no action were taken.

132. With respect to the changes to the signs and labels required in certain circumstances, the new CLP hazard warning symbols differ in colour and shape compared to the old ones (e.g. from orange to red and white background, and from square to diamond shape) but the actual pictograms to indicate the hazard are broadly unchanged. This means replacement of the old signs for the new ones is not expected to improve worker protection beyond current levels. Some of the changes to the use of signs and labels require the signage to reflect the nature of the hazard more accurately, for example the restriction of the general danger warning sign. This should benefit the communication of hazards and risks to workers. Comments made in the consultation supported this and raised a possible benefit for the fire service benefiting from a more specific indication of the material in stores.

133. It has not been possible to quantify or monetise the benefits described above, given the level of data required and uncertainty as to how they may manifest. However, HSE expect that costs of inconsistent and confusing legislation to businesses, and potentially to workers, would be considerable.

5.5. Total monetised net costs

134. As it has not been possible to monetise the benefits of the proposal, net costs are based solely on the monetised cost estimates for changes to signs requirements described in Section 5.3.1.8 (Health and Safety (Safety Signs and Signals) Regulations) and 5.3.3 (Merchant Shipping and Vessels Regulations). Therefore, total monetised net costs associated with Option 1 are estimated to be £5.7 million (best estimate), with a range of £3.2 million to £8.7 million.

135. Total monetised net costs to the private sector (business) are £4.5 million (best estimate), and total monetised net costs to the public sector are £1.2 million (best estimate).

6. Rationale and evidence, risks and assumptions

136. Given the limited, technical nature of the changes introduced by the amending directive and limited scope for discretion in making required changes to domestic regulations, HSE has taken a proportionate approach to this impact assessment. An initial scoping exercise was undertaken in HSE to identify which of the regulatory changes would be likely to have significant impacts on business and other organisations. For the reasons discussed in Section 4.1, this exercise identified only changes to the Health and Safety (Safety Signs and Signals) Regulations 1996 as having the potential to lead to significant additional costs. Responses to the formal consultation have confirmed that this scope of analysis is appropriate and that significant costs are expected to arise only from changes to signage. The detailed assessment of costs and benefits has therefore focussed on these changes.

137. HSE made a number of assumptions to provide an initial estimate of the cost of changes to workplace hazardous substance signage, based on HSE expert knowledge and consultation with the Health and Safety Signs Association (HSSA). We asked a range of specific questions in the formal consultation to test the validity of these assumptions and gather further information. While responses broadly supported the assumptions, there are several refinements to the analysis to reflect information provided during the consultation period and from targeted follow-up discussions with respondents, which are described in detail in Section 5.3.1.

138. While a considerable degree of uncertainty remains around assumptions, the benefits of collecting additional information to refine assumptions further is limited. The very broad scope of industry sectors covered would necessitate a correspondingly wide array of detailed follow up consultations at considerable cost, which is disproportionate to the very low average costs per premises estimated. We followed up with those who responded to the consultation where possible to clarify responses and gain additional information. We therefore consider that the refined assumptions and analysis reflect the best information available given the justified, proportionate approach taken.

139. In order to reflect uncertainty around assumptions, we have provided low, high, and best estimate assumptions. These provide a range of total costs of £3.2 million to £8.7 million, with a best estimate of £5.7 million. HSE believe this range provides a reasonable reflection of uncertainty around the possible range of costs.

140. The limited and technical nature of these changes, and the objective to use copy-out or alternative wording where possible, will minimise any changes in scope and resulting costs to business. We expect that any minor changes in scope will in practice not impose additional costs on businesses, as where not specifically covered by the regulations being amended, the general duties of the Health and Safety at work Act and the Management Regulations already require suitable steps are taken to ensure the safe use of hazardous chemicals. Responses to the consultation have confirmed that the risk of additional costs arising from implementation of the amending directive, other than those estimated relating to signage changes, is low. As discussed in Sections 5.3.2 to 5.3.4, the vast majority of respondents agreed the technical amendments to DSEAR, COSHH and MHSW and Merchant Shipping and Vessels regulations would not lead to additional requirements or costs, given the long lead time of CLP and existing general duties.

7. Direct costs and benefits to business

141. Total costs to private sector business and civil society organisations are estimated to be £4.4 million. These are expected to occur in the first year of the appraisal period. As it has not been possible to quantify or monetise benefits associated with the policy proposal, net monetised costs to business are £4.5 million.

142. Applying the methodology set out in the Better Regulation Framework Manual,[13] Equivalent Annual Net Costs to Business (EANCB) over a ten-year appraisal period are £0.4 million.

143. This measure is out of scope of One-In-Two-Out because it is a result of a change in EU obligations.

8. Wider impacts

144. Given the technical and limited nature of the regulatory changes required under Option 1, HSE does not expect any significant wider impacts. While the costs associated with signage changes are estimated to be in the range of £3.2 million to £8.7 million, these are spread across a large number of organisations and sectors, giving an average cost (including signage purchase, installation and familiarisation) of around £31 per premises under the best estimate.

145. A single enterprise or business may operate a number of local units or premises, and costs per business will vary vastly given the nature of the chemicals used, with some businesses experiencing much higher costs, while others incur none. We have captured some of this variation in denoting 'high' and 'low' signs users in our analysis, though these still represent broad averages. Nevertheless, these figures suggest that, on average, the costs per business are likely to be very low. Additionally, the number of affected signs and the costs of replacing them are expected to correlate closely with business size, meaning that small businesses should not be disproportionately affected.

146. As discussed in paragraph 59, micro units (0 – 9 employees) were excluded from the analysis, as they are likely to be small, less complex premises and processes so are more likely to rely on the labelling provided by the supplier on packaging to provide the necessary warning information. The majority of respondents the formal consultation supported this assumption.

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211981/bis-13-1038-better-regulation-framework-manual-guidance-for-officials.pdf

9. Summary and preferred option

147. The preferred Option 1 is to make:

a. the changes required to existing domestic regulations to transpose the amending directive by 1 June 2015; and

b. the consequential amendments required due to the revocation of CHIP 2009 and DSD/DPD as a result of CLP coming fully into force on 1 June 2015.

148. Total quantified net costs with this option, arising from changes to the Safety Signs and Signals regulations, estimated to be £5.7 million (best estimate), with a range of £3.2 million to £8.7 million.

149. This does not include the potentially significant but unquantified benefits associated with the proposed changes in ensuring the law remains workable when DSD and DPD and the CHIP regulations are revoked. The proposed changes will avoid causing confusion for business and the costs and economic efficiency losses that this would give rise to.

150. Subject to gaining the necessary clearances, it is proposed to prepare an amending statutory instrument to make the necessary changes on 1 June 2015. Where appropriate HSE and Maritime and Coastguard Agency guidance will be updated to explain the changes made and what, if any action, business needs to take.