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|---|---|
| **Title:**<br>Amendment to the Furniture and Furnishings (Fire) (Safety) Regulations 1988<br>**IA No:**<br>**Lead department or agency:**<br>Department for Business, Energy and Industrial Strategy<br>**Other departments or agencies:** | **Impact Assessment (IA)**<br>**Date:** 20/07/2016<br>**Stage:** Development/Options<br>**Source of intervention:** Domestic<br>**Type of measure:** Secondary legislation<br>**Contact for enquiries:**<br>Christine Knox<br>European Reform, BEIS<br>020 7215 3465 |

## Summary: Intervention and Options

**RPC Opinion:** RPC Opinion Status

| 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** |
| £123.93m | £123.93m | £-14.17m | Yes | OUT |

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

The regulations (FFRs) have not been substantially revised since they were introduced in 1988. During a 2010 Red Tape Challenge review two issues came to light. Firstly, in order to meet the requirements, manufacturers use significant quantities of potentially harmful Flame Retardant chemicals (FRs) to make covers fire resistant to the required standard. Secondly, weaknesses in the current testing regime mean that the testing which takes place (particularly the 'match test') may not actually be delivering the desired outcome (i.e. match-resistant furniture) for finished products. Government intervention is required to resolve these two issues to ensure the regulations maintain fire resistance standards for all products.

**What are the policy objectives and the intended effects?**

1. To maintain the current high levels of fire safety of UK domestic upholstered furniture, which prevents injury and the loss of life.
2. To minimise the cost to business of meeting the flammability requirements of the FFRs.
3. To provide options to reduce the use of flame retardant chemicals, on health and environmental grounds, particularly those on the surface cover.
4. To give greater certainty to business on the scope of the regulations.
5. To improve the traceability of products and aid enforcement of the regulations.

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

Option 1, [preferred option] 'Update the regulations' – Meets policy objectives and brings clarity to the regulations and to enforcement. The new match test introduces the potential to reduce the use of flame retardant chemicals, and thereby reduce the amount and cost of chemicals currently used in meeting the flammability requirement of the FFRs in respect of cover fabrics. Revoking the cigarette test where the match test is required (on the basis that all fabrics that pass the revised match test will also pass the cigarette test) bring further savings to industry.
Option 2, 'Do nothing' - Industry will not benefit from technological progress and potential savings.
Option 3, 'Revoke the Regulations' - This would mean relying on the existing EU safety provisions which have lower fire resistance requirements than the UK's. This option was not taken further and is not costed in this Impact Assessment given the risk to consumer safety as detailed below.

**Will the policy be reviewed?** It will be reviewed. **If applicable, set review date:** 10/2021

| | | | | | |
|---|---|---|---|---|---|
| Does implementation go beyond minimum EU requirements? | | | Yes | | |
| 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, 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:**

**FULL ECONOMIC ASSESSMENT**

| Price Base Year 2015 | PV Base Year 2015 | Time Period Years 10 | Net Benefit (Present Value (PV)) (£m) | | |
|---|---|---|---|---|---|
| | | | **Low:** 52.08 | **High:** 197.12 | **Best Estimate:** 123.93 |

| COSTS (£m) | Total Transition (Constant Price) | Years | Average Annual (excl. Transition) (Constant Price) | Total Cost (Present Value) |
|---|---|---|---|---|
| **Low** | 0 | | 0 | **0** |
| **High** | 0 | 1 | 0 | **0** |
| **Best Estimate** | 2.6 | | 3.0 | **28.4** |

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

Estimated £1m familiarisation cost to upholstered furniture industry (retailers and manufacturers) and £0.6m one off costs due to product review outside of normal testing cycle. Ongoing administrative costs estimated at £3m.

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

Cost of familiarisation with the legislation to other groups, such as public bodies and other businesses that could be affected. Risks for increased costs or reduced benefits considered below were: increased risk of fires, cost savings not being passed on from test houses to manufacturers and product re-development costs. Any additional testing costs (for components and potential protective classification of cover fabrics) are expected to be low but will be tested in consultation.

| BENEFITS (£m) | Total Transition (Constant Price) | Years | Average Annual (excl. Transition) (Constant Price) | Total Benefit (Present Value) |
|---|---|---|---|---|
| **Low** | Optional | | 6.1 | **52.1** |
| **High** | Optional | | 22.9 | **197.1** |
| **Best Estimate** | | | 17.7 | **152.4** |

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

Cost savings to business, due to reduction in FR use would be in the order of £2.3m to £12.7m per annum. This benefit accrues to UK furniture manufacturers selling to the UK market. In addition, it is assumed that the savings from removing the cigarette test will be £7.5m in the central and most ambitious scenarios, plus potential savings of £2.7m if nursery products are removed from scope. This gives a total range of £6m to £23m per annum, with a central estimate of £18m.

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

Industry – the 'protective' cover route allows for innovation in the design of new barrier covers. Enforcement authorities – new regulations will make enforcement easier and more effective as will the new match test more closely reflecting the way furniture is made. Public health, environment - there are also health benefits that may result from this reduction in flame retardant use, particularly in cover fabrics. Less FRs in furniture will also mean that there is less in environment.

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

The key uncertainty is the balance between the different routes to compliance that industry could follow and the associated reduction in FR usage. Cost savings have the potential to be greater for those manufacturers following the match test/components close to the cover route and possibly also for those following the match test/cover protective route depending on the 'test' for protectiveness which is yet to be determined and tested through consultation.

**BUSINESS ASSESSMENT (Option 1)**

| Direct impact on business (Equivalent Annual) £m: | | | In scope of OITO? | Measure qualifies as |
|---|---|---|---|---|
| **Costs:** 3.3 | **Benefits:** 17.4 | **Net:** 14.2 | Yes | OUT |

**Evidence Base**

## 1. Background to the Furniture and Furnishings (Fire) (Safety) Regulations

1.1 The Furniture and Furnishings (Fire) (Safety) Regulations 1988 (FFRs) provide flammability performance levels for all UK domestic upholstered furniture, e.g. sofas, chairs, cushions, pillows, mattress fillings, etc. While the FFRs do not stipulate any particular route to compliance, in practice manufacturers mostly choose to use Flame Retardants (FRs) as the most cost-effective solution.

1.2 The FFRs are successful in preventing injury and loss of life. A BIS-commissioned report in 2009 shows that the current regulations were annually saving around 54 lives, preventing around 800 injuries and over 1,000 fires. These savings to health and property were valued at around £140m per year[1]. Therefore, any changes to the regulation have the primary objective of consumer protection and safety.

1.3 Enforcement of the FFRs is the responsibility of Trading Standards, with powers derived from the primary legislation, the Consumer Protection Act 1987. Regular exercises by Trading Standards reveal that a constant threat to UK consumers is from non-compliant furniture imports, because most of the rest of the world provides little flammability protection for upholstered products.

## 2. What is the problem? Rationale for intervention

*Testing regime*

2.1 The FFRs have not been updated, aside from minor amendments, since 1988 and stakeholders, whilst strongly supportive of the FFRs, have often lobbied for an update. One of the fire resistance tests, the match test, no longer reflects the way furniture is now manufactured. For the past four years, BIS has been working closely with all key stakeholders on a review of the FFRs to update the testing requirements and provide a way to reduce the use of FRs.

2.2 There is growing body of literature that has linked health and environmental harm with the flame retardant chemicals (brominated, chlorinated and phosphate) used in furniture[2]. Furniture flame retardants can be associated with endocrine disruption, immunotoxicity, cancer, and/or reproductive and neurological impairments, lowered IQ, and hyperactivity. Flame retardants migrate out of furniture, settle in dust, and are ingested by humans and animals. Young children have the highest blood levels due to hand-to-mouth behaviour. In the USA, a majority of residential fire deaths result from inhalation of toxic gases, and soot and smoke can obscure escape. One study indicates that US fire fighters have high rates of types of cancers associated with dioxin exposure; the dioxins produced when flame retardants burn are believed to contribute. There are some signs in the UK (from press and consumers) that consumer concern over the chemical treatment of furniture is growing here.

2.3 The current flammability tests required by the FFRs are: match and cigarette tests for cover fabrics and the 'crib 5' test for filling materials. Some FRs are needed for filling materials; however, these are largely non-contentious. More potentially harmful FRs - particularly the brominated variety (BFRs) - are used on cover fabrics to meet the stringent requirements of the match test. These are applied either by impregnating the fabric or by 'backcoating' it. There is growing evidence that a) BFRs are worn away during normal use, getting into house dust and b) they damage the environment by releasing toxins and dioxins when burnt or dumped in landfill at end of life (see Annex 1 for evidence linking chemicals with environmental and health outcomes).

2.4 The current FFRs match test (see text box) requires cover fabrics to be tested over highly-flammable (and now illegal in the UK) polyurethane foam fillings. This means the additional flame

[1] "A statistical report to investigate the effectiveness of the Furniture and Furnishings (Fire) (Safety) Regulations 1988" by Greenstreet Berman Ltd 2009, commissioned by BIS.

[2] See Annex for links to sample papers.

resistance supplied by the combustion-modified fillings that are present in the final product is not utilised, leading to a higher than necessary ignition resistance standard in the cover fabrics (and more chemicals used to meet it). More information is given in Annex 2 on the details of the test changes.

*Box 1: The match test*

- The current match test under the FFRs requires cover fabric to be tested over highly flammable polyurethane foam. However, this foam would not pass the FFRs filling test, i.e. it is not found in furniture sold in the UK. The EU match test, by contrast, requires cover fabrics to be tested over the same combustion-modified foam that appears in final products, which is the basis of BIS's new proposal. The proposed new match test will be undertaken over representative actual foam fillings. This will reduce the amount of flame retardant chemicals needed to pass the match test; without compromising the safety of the final product.
- The current test serves two purposes: to reduce the ignitability of the cover fabric and to protect the filling material underneath. The current test does not take account of the fact that the combustion-modified foam present in the actual product reduces the ignitability of the cover fabric and is also, by its nature, more protected than the test PU foam.

*Box 2: The Cigarette test*

- We also intend to remove the existing cigarette test for materials which are required to pass the match test. This is because the cigarette test is less stringent than the match test and many fabrics have never failed the test. The main reason they do not fail the cigarette test is because they must also pass the match test, which is a much more severe test.

2.5 Government intervention is necessary to amend a flammability test requirement that no longer matches current manufacturing methods and has led to furniture producers and retailers using large amounts of flame retardant chemicals to comply with the regulations. The new test updates the method to reflect current manufacturing practice and also introduces the potential to reduce the cost of meeting safety requirements to ensure furniture is fire resistant.

*Scope of the regulations*

2.6 Currently the scope of the regulations is defined by a prescriptive list of what's in and what's out. The 1988 regulations give a list of inclusions and a short list of exclusions but this can give rise to ambiguities – for example, sofas with scatter back cushions (where the sofa itself would be covered by the regulations but the covers of scatter cushions could be considered out of scope). We intend to clarify the scope and test potential exclusions (such as some baby products) through consultation.

*Traceability*

2.7 Currently the traceability requirements in the FFRs are limited to information about the product and the testing it has undergone. What is lacking is information on the product supply chain which is key to effective traceability to ensure the safety of consumer products, by allowing product recall if a product is faulty and enabling the enforcement authorities to easily identify and locate the source of any problem. Accurate record-keeping throughout the manufacturing process would aid traceability, and responsibility for safe products should be shared throughout the supply chain.

## 3. Previous engagement and consultation

3.1 The last Government decided to review the FFRs in 2010 in the context of the better regulation agenda, and this exercise was later incorporated into the Red Tape Challenge. The review initially focused on three elements: the testing regime for flame resistance, the scope of the regulations and traceability of furniture products.

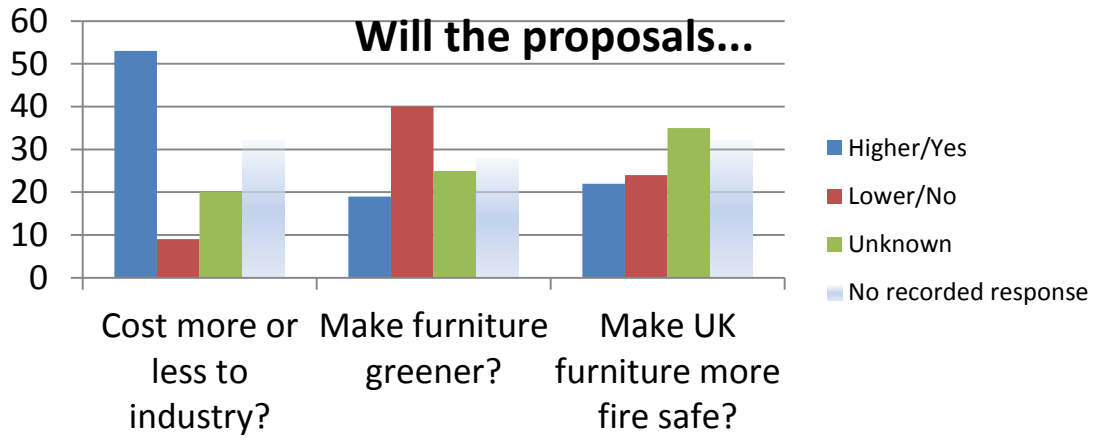
3.2 We decided to bring forward the test element of the FFRs (the match test) because it appeared this could be introduced quickly to offer savings and benefits to health and the environment. It also presented an opportunity to change the test to make it more realistic relative to modern furniture construction.

3.3 However, there was a lack of consensus among stakeholders on the proposal to change the testing regime, which we put out to consultation in 2014. The last Government therefore decided not to implement any changes and instead said that we would work with stakeholders to seek greater consensus on all three original elements of the review (tests, scope and traceability).

*Consultation and responses*

3.4 The original proposal on a new test went out to consultation on the 7th August 2014 and closed on 7th October 2014. The consultation received 113 responses. A number of these were positive; most fire and rescue services welcomed the anticipated safety benefits of the changes while Trading Standards cited better enforcement options with the new test. However, industry stakeholders largely did not agree with the benefits originally estimated by BIS of reduced costs, environmental benefits and safer products.[3] The main issue highlighted by respondents was that they did not believe industry would benefit from cost savings as shown in the chart below.

*Fig 1. Analysis of consultation responses to Q1*




3.5 The analysis of the consultation shows that most of the respondents thought costs would be higher or give no net benefit. This was largely because respondents stated that although costs may be reduced from less flame retardants in cover fabrics, these savings would be offset by increased costs in other areas giving no net effect or an increase. More respondents did not agree there would be environmental benefits. Those that did not think there would be environmental benefits wrote that FR chemical reductions in some products may be outweighed by increases in others. Finally, there was a mixed opinion on whether the regulations would be safer.

3.6 In response to the consultation and stakeholder discussions, BIS has made a number of changes to the proposals in light of industry concerns. More details are given below but these include:

[3] 57 respondents did not agree with BIS in the benefits the amendments would bring compared to 14 who agreed, the rest were unsure or did not directly respond.

- changing the proposed match test
- introducing flexibility into routes to compliance
- extending the period of transition to sell stock

3.7 The concerns expressed have led BIS analysts to reduce the cost savings from the previous consultation IA. The consultation responses we received largely argued that costs would increase due to the cost of transition (product re-design, lost inventory, re-testing) and an on-going increase in testing costs. There was also concern that the reduction in FR chemicals, the primary source of cost saving for this measure, was over-estimated. However the revisions made to the new match test and the routes to compliance should substantially reduce these concerns.

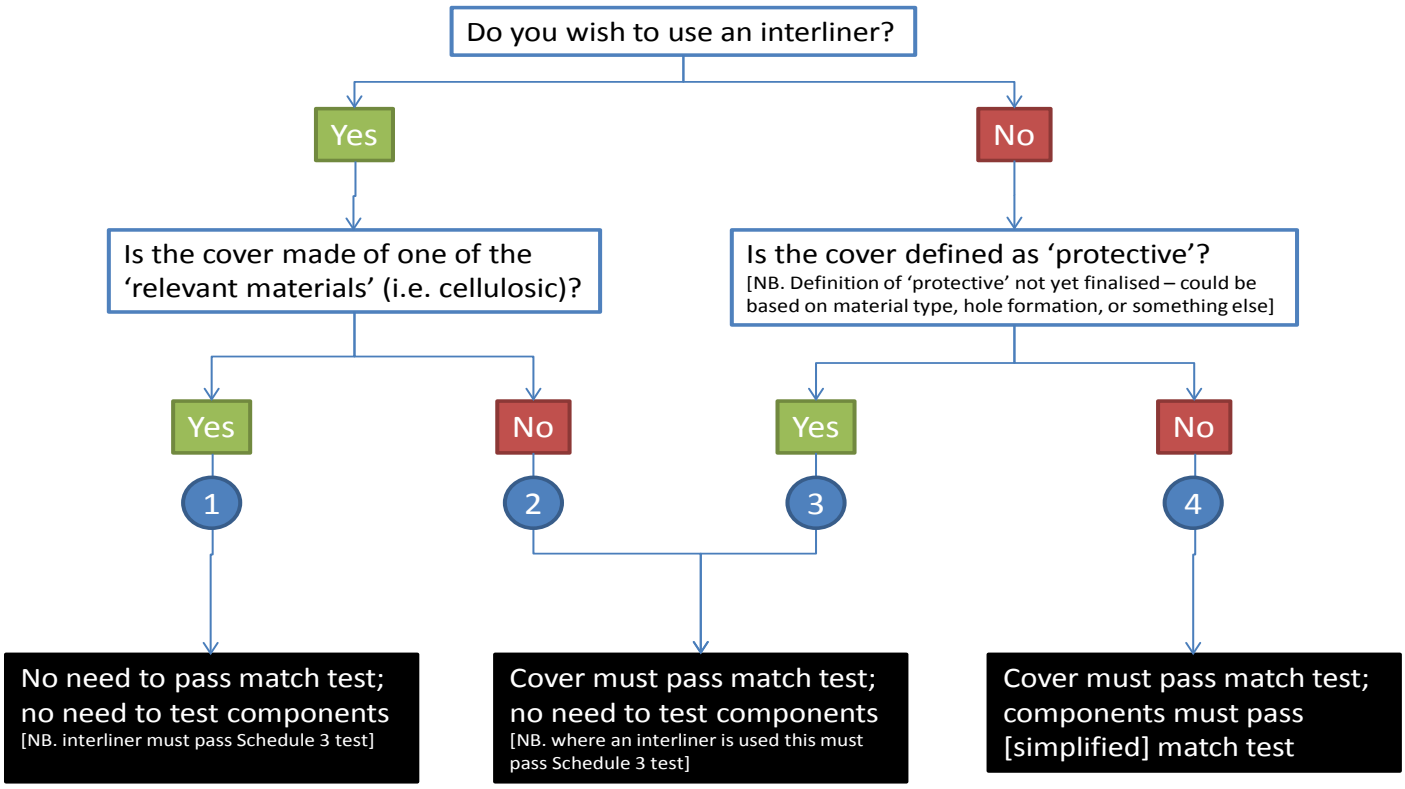
## 4 What solution is proposed?

4.1 BIS intends to update the regulations to include a new match test to determine the fire resistance of fabric covers, and make changes to the scope of the regulations as well as improving traceability requirements to make enforcement simpler.

*Testing*

4.2 BIS intends to introduce to the FFRs a new flammability match test which, while maintaining current safety levels, will allow manufacturers the potential to reduce FR use in cover fabrics. The proposed new routes to compliance are shown in the diagram below:

*Fig 2. Routes to compliance under proposed new testing requirements^*




**Estimate 25% will use this route** **Estimate 5% will use route ❷** **Estimate 50% use this route**
**Estimate 20% will use route ❸**

**^ Figures on route to compliance based on discussions with stakeholders and BIS estimates but to be tested further in consultation.**

4.3 Following the consultation responses and discussions with stakeholders BIS has developed new proposals by:

- **Changing the proposed match test -** the original proposal stated that one of two test set ups could be used under the new match test (i) with the cover directly over a foam filling (Filling 1) and (ii) with the cover stretched over a fibre wrap over a foam filling (Filling 2). Work with stakeholders has suggested that this overcomplicates the test so the new proposal is limited to one test set up only (eg Filling 2) so that the testing (under route ❷, ❸or ❹ as shown in Figure 2 above) now includes a fibre wrap and more closely replicates the finished product.

- **Introducing flexibility into routes to compliance** – the original proposal included an additional test to classify the fabric cover as 'pass protect' or 'pass non-protect'. Failure was to be determined by hole formation of the fabric. If the cover was classified as 'pass non-protect' then components close to the cover would need to be tested for fire resistance. Given concerns over the workability of using hole formation to determine failure rates the new proposal drops the requirement to classify covers and introduces an *optional* alternative route (route ❸ in Figure 2) which would allow a test for a protective cover via a list of 'protective materials' or an alternative methodology. We will test this approach in consultation.

4.4 The new proposal would allow the following routes to compliance for testing cover fabrics under the regulations:

**Route ❶ - interliner for cellulosic fabrics**

This route already exists under the current regulations. It allows for an interliner to be present in the finished item between the cover fabric and the foam filling. All interliners need to meet the requirements set out in 'Schedule 3' of the 1988 FFRs. Currently if the interliner is made of a 'relevant' material (eg is cellulosic as defined in Regulation 8) then the fabric cover does not need to meet the match test requirement. Our best estimate is that currently 25% of products are produced using an interliner.

**Route ❷ - interliner + match test for non-cellulosic fabrics**

Again this route is currently an option under the 1988 regulations. Interliners can be used with non-relevant materials (ie non cellulosic fabrics) but they then also need to comply with the match test, thereby losing the financial benefit (for cellulosic fabrics) of the match test exemption. We expect that there would be a minimal shift to this route as it is likely to be the most expensive and estimate that around 5% of products would comply through this route.

**Route ❸- 'Protective' cover no need for components test**

This is a new option. For covers which are deemed to be protective, there is no need to test the components close to the cover for fire resistance. This is less onerous than the original proposal that required hole formation testing on all match tests. We believe that this route would only be likely to apply to 'niche' fabrics and estimate that around 20% would use this route though, having already consulted with industry, there are no figures available that breakdown the types of cover fabrics used.

**Route ❹- Non 'Protective' cover + components test**

This is another new route to compliance. The simplified match test allows for a reduction in FR use on cover fabrics. Where these fabrics are deemed to be 'non-protective' then components close to the cover ie within 40mm must be tested for fire resistance. Given current construction methods we expect this to be the most favoured route to compliance for around 50% of products.

4.5 We also intend to continue with the proposal to remove the cigarette test as confirmed by our further work. Most fabrics which pass the match test will automatically pass the cigarette test

because the match test is more severe. When the FFRs were introduced, this was not foreseen, and has become apparent over the years with the results of multiple tests. We now plan to revoke the cigarette test for all fabrics which are required to pass the match test, and will be seeking views on this approach through consultation.

*Scope*

4.6 The key question in relation to **scope** is whether certain products, or groups of products, should or should not be within the scope of the FFRs. There is a debate about certain baby products (specifically prams/pushchairs and child car seats). These are currently specifically included in the FFRs, but the Baby Products Association in response argued strongly for their removal as they impose a burden on manufacturers which is disproportionate to the risk (not least because of concerns about the use of FRs in baby products, and the fact that pushchairs and car seats are predominantly for use outside the home and therefore present a lower fire risk). We propose to test this approach in consultation bye including an option that these products are removed from scope.

4.7 In addition, there are a number of 'grey areas' in terms of what falls within scope of the current Regulations. These include outdoor furniture, scatter cushions, sleeping bags, and washable mattress protectors. In general, we would propose that the rules here should be clarified in a way which seeks to maintain the status quo as much as possible. The removal of products falling in these ambiguous areas would reduce the number of products which require testing and thereby the use of flame retardants. In line with the approach taken in other product safety legislation (the so-called 'New Legislative Framework' or NLF) we propose to explicitly remove second hand furniture from the flammability requirements of these regulations and their safety will be ensured through the General Product Safety Regulations as for the majority of other consumer products. We plan to use the consultation to explore the appetite for removing these products from scope.

*Traceability*

4.8 Our proposals here build on a combination of stakeholder feedback and the approach which is used elsewhere in other product sectors. This would introduce new labelling and documentary requirements into the Regulations, but these would largely reflect what is already considered to be good practice, thereby not adding significant new administrative burdens.

4.9 Manufacturers and importers will be asked to keep records (technical files) showing the history of a product to include:

- Name of manufacturer (UK and overseas)
- Name of importer (where applicable)
- Single postal address at which the manufacturer can be contacted
- Single postal address at which the importer can be contacted (where applicable)
- Constituent materials
- Batch number (materials)
- An indication of whether flame retardant chemicals have been used in the product
- Date and place of testing
- Product name or reference number (finished article)

4.10 Product records should be kept for 10 years dating from when the product is first placed on the market which would bring requirements into line with the new requirements in product safety Directives. Product records should be made available upon request to enforcement authorities. The changes are that more complete data is required to be held such as:

- For imported products, the name of the manufacturer is now also required along with an address
- Data on all constituent materials should be held
- Data on FR treatment is now required to be held
- Additionally the proposal extends period data should be held for from 5 to 10 years

4.11 Following the consultation we also intent to **extend the period of transition to sell stock.** The original proposal stated BIS envisioned an 18 month transition period. In response to industry

stakeholders who are worried about re-testing costs and loss of stock, particularly for SMEs, this has been changed to: 24 months from the coming into force date for manufacturers to change to the new test requirements (they can change instantly if they wish) and 24 months for any retailers to sell off old stock.

4.12 We also propose to extend the time available for trading standards to bring a prosecution under the Regulations from 6 months to 12 months, in line with other consumer safety legislation.

## 5 Costs and benefits for Option 1

*Economic Context*

5.1 Upholstered furniture manufacturers provide approximately £1.2 bn to Gross Value Added, employing 45,000 people in 3,800 enterprises in 2014 of which 96% are small and many of those micro businesses.[4] Turnover was £3.7 bn with £2.2 bn of purchases in the wider supply chain.

5.2 The proposed new regulatory regime is likely to lead to additional costs and benefits for affected businesses (including furniture retailers and repairers as well as manufacturers) that are both one-off and on-going.

5.3 This IA includes evidence collected for the earlier consultation IA and as part of the August 2014 consultation along with some industry estimates of likely testing costs to give an indication of the likely scale and direction of the costs and benefits. In particular the earlier IA focused significantly on the proposed savings to manufacturers from reduced FR usage. The discussion of the new testing regime with stakeholders to date suggests that cost savings may vary depending on the route to compliance chosen by industry. The behavioural response to the new testing regime will be one of the key areas of the IA to test through the consultation process.

5.4 The costs and benefits of the new regulatory regime (quantified with a proposed range of outcomes) is set out below. There still remain a number of key uncertainties particularly in relation to the amount of material being treated with FRs, the balance between the routes to compliance and the size of reduction in FR usages. This means that the savings presented cover a wide range and will need to revised in light of consultation responses.

*Fig 3. Difference between old and new regulations*

| | Old Requirements | New requirements where cover fabric 'protective' (route ❸) | New requirements where cover fabric is not 'protective' (route ❹) |
|---|---|---|---|
| **Testing required on fabric** | Cigarette Test<br>Match Test | New Match Test only | New Match test for cover fabric plus test for all components within 40mm of the cover fabric |
| **Cost** | Unknown | Potential cost of determining if cover is 'protective' – this will be negligible if use list of 'protective' covers | Potential cost of determining if cover is 'protective'/'non-protective' but negligible if use list<br><br>Components testing cost is unknown but expected to be minimal and one-off |
| **Benefits** | | Limited reduction in FR use as these types of fabrics not expected to be affected by the proposals<br><br>Removal of cigarette test - | New match test – savings from reduced FR use in range £2.3m to £12.7m per annum with best estimate £7.5m<br><br>Removal of cigarette test - estimated |

[4] ONS Annual Business Survey November 2015 release. Manufacturers of mattresses and manufacturers of other furniture were assumed to comprise the upholstered furniture sector, SIC codes 31.03 and 31.09.

| | | | |
|---|---|---|---|
| [redacted] | | estimated saving of £7.5m per annum[5] compared to the old requirements | saving of £7.5m per annum[6] compared to the old requirements |

## Costs

5.5 The costs of the proposal consist of both one-off costs, as UK manufacturers and retailers adjust to the new testing regime, and on-going costs reflecting possible changes in manufacturing processes as a result of the revised testing regime. There are also likely to be costs associated with the new traceability requirements that extend both the scope of the information to be retained and the length of time over which records must be kept.

### TRANSITIONAL COSTS

5.6 These are short-term costs to business in adapting to the new regulations. The information on one-off or transitional costs arose from the previous consultation and stakeholder workshops. The costs of the new proposals are thought to consist of:

a) Familiarisation costs – the cost of businesses in familiarising themselves with the new regulations
b) New testing regime costs:
   - potential set up costs for introducing the new match test and components tests. Test houses may pass these onto customers.
   - cost of having to test materials that have previously passed the 1988 regulations
c) New Traceability requirements - the costs of adjusting systems to collect additional information to meet the revised traceability requirements

### a) Familiarisation Costs

5.7 There will be a cost to business in familiarising themselves with the new legislation. To calculate these costs it was assumed it would take a day's work: 8 hours of a retail or wholesale employee's time[7]. There are assumed to be around 9,300 businesses affected (see table below), giving a total cost of approximately £1m for companies to familiarise themselves with the updates to the furniture regulations. This calculation is summarised in the table below:

*Fig 4. Total familiarisation cost estimate*

| | Median hourly wage Uprated x19.8%) | No. of hours | Cost per business | No. of businesses | Total Costs |
|---|---|---|---|---|---|
| Manufacturers/importers | 11.62 | 8 | £92.96 | 5,300 | £0.49m |
| Retailers | 12.99 | 8 | £103.89 | 5,000 | £0.52m |

5.8 The cost per business is an average: some businesses are likely to incur greater costs and some less as a function of the complexity of their supply chain and internal due diligence systems. The estimate for the number of firms that will need to familiarise themselves with the regulations are shown in the table below and includes the small number of test houses who will also need to know the new requirements:

*Fig 5. Estimate for the number of firms needing to familiarise themselves with the regulations*
*Source: BIS analysis using FIRA estimates and ONS/HMRCdata*[8]

| Type of firm | Number of firms |
|---|---|

[5] Cost savings provided by UK test houses

[6] Cost savings provided by UK test houses

7 Hourly salary assumed to be £9.70 for manufacturers and importers in the furniture industry and £10.80 for furniture retailers. 2015 ASHE data - This was up-rated by 19.8% to account for non-wage costs.

[8] Taken from FIRA's consultation submission to BIS and data from ONS and HMRC – Overseas manufacturers (5,000) and the supply chain (1,000) estimates were removed as only UK based costs are counted and the cost of familiarising the supply chain is assumed to be captured in the 8 hours estimate

| | |
|---|---|
| UK Upholstered Furniture Manufacturers | 3,800 |
| UK Furniture Retailers | 5,000 |
| Importers | 1,000 |
| Furniture repairers | 500 |
| TOTAL | 10,300 |

5.9 The estimates for familiarisation costs have increased since the consultation Impact Assessment, which were originally estimated at £160,000. This is based on consultation responses (qualitative replies) that indicated the number of hours and businesses were underestimated, although there were only a limited number of responses that provided figures. Some responses also indicated wages were under-estimated, however this analysis keeps the assumption taken from ASHE data as this an industry wide median and there were only two organisations of the six that provided figures who suggested higher wages.

**b) Costs of new testing regime**

5.10 The costs of re-testing for those materials that fail the new testing regime (either the regulated materials or protective cover test) also need to be factored into the one-off costs. Once manufacturers are aware that a particular fabric now doesn't pass then they will not use it in future. We assume that there is already some cost associated with re-testing in relation to those products that fail the current match test so do not add anything in relation to this aspect.

5.11 The transition period chosen can affect the cost to business in two ways. If stock tested under the previous regulations is not allowed to be sold then there will be a cost to business as the stock will have to be scrapped if the cover fabric doesn't comply with the new regulations. This is summarised in the inequality: stock turnover in months > period in months where existing test is valid for new furniture sold. If cover fabric is routinely tested less frequently than the transition period then testing may have to be brought forward, increasing costs. This is summarised in the inequality: testing of cover fabrics by companies in months > transition period in months where new test is valid.

5.12 The transition period should therefore aim to minimise the number of firms who have this inequality – where the transition is too short it would imply costs to inventory held over 18 months or where 18 months is less than the normal testing cycle. Consultation responses that responded on the optimum transition period generally indicated a longer transition period of 24 months. In light of this, BIS has extended the transition period for completed products, such as sofas or chairs, to 24 months and also extended the transition period for fabrics to 24 months.

5.13 The second cost identified of an early product review, that may be influenced by the transition period, are where fabrics are tested less frequently than 24 months, therefore costs of testing will be brought forward. This analysis compared two streams of hypothetical costs over 10 years comparing a company that tested every 2 to 3 years to the new regime where the cycle was brought forward by a year. Under this modelling, and applying the social discount factor, would give a maximum cost increase of 4%. This would only occur if UK manufacturers tested less frequently than 24 months. BIS do not have estimates for the annual cost of testing but industry sources have indicated removing the cigarette test could save £7.5 million per annum. Crudely doubling this figure to account for the match test as well and applying the 4% gives £0.6m of additional one-off costs. This is a crude estimate but the cost is added to the total transition costs to account for potential re-testing of fabrics outside of the normal testing cycle.

**c) Traceability Requirements**

5.14 The revised regulations will require both manufacturers and importers to keep additional information on the products that they manufacture or import. This includes the names of the constituent materials not just filling materials and data on FR treatment. For importers they will be required to record and keep the name of original manufacture as well as the address. There will be some minor administrative costs in changing systems to collect and retain this information. Assuming an additional 16 hours of admin time for manufacturers and importers to make these changes to their reporting systems would suggest a total one-off cost of £1m (using the data set out in figure 4 above).

**ONGOING COSTS**

5.15 The ongoing costs of the regulatory changes fall into the following categories:

a) Additional **testing costs** for components close to the cover and optional cover protective test
b) **Adjustments** and additional costs in manufacturing processes needed to pass new test regime
c) Additional storage of product and manufacturer information to meet revised **traceability r**equirements.
d) Additional **labelling** costs

**a) Testing costs**

5.16 The new regulations have introduced new testing costs for those manufacturing and selling furniture in the UK as well as possible additional costs related to the existing match test. We have limited information on these costs from earlier consultation with stakeholders and will look to strengthen the evidence base as part of the consultation process.

5.17 The new tests that may add to business costs are the components close to the cover test that those supplying furniture without a protective cover or the use of an interliner will have to undertake and the protective cover test for those who chose to follow this route to compliance (route ❹) - if this is to be achieved through testing. Stakeholder workshops have indicated that the cost of testing for components close to the cover will be small.

5.18 The 'protective cover' test is to be determined through consultation. We will test our assumptions further through the consultation.

5.19 It is proposed that the cigarette test will be removed for covers that match the match test, ith an associated saving for businesses of £7.5m a year.

**b) Adjustment and Additional Processing Costs**

5.20 In order to make furniture products compliant with the new more realistic match test and to meet the additional components close to the cover or protective cover tests it is likely that some companies will need to make changes to their furniture products and associated manufacturing processes. It will be a strategic business choice as to whether businesses go for a big re-engineering of product line or make a few small alterations. We will explore this in consultation.

5.21 It is not anticipated that the substitution of materials that pass the components close to the cover test for any that do not (meaning that the product is not compliant with the regulations) is likely to add significantly to costs although some substitutes may be more expensive. We will consider this further as part of the consultation process.

<u>Interliners</u>

5.22 Following the previous consultation several stakeholders said that they would use Schedule 3 interliners to meet the new requirements. The revised proposal does not encourage the use of interliners more than before but retains this route to compliance as an option to the match and other testing requirements.

5.23 The decision to use an interliner in order to meet the requirements of the regulations will remove the need for products to undertake the other tests (match, components close to the cover, protective cover) but additional production costs could reduce any such savings. It is possible that the use of interliners may lead (now or in the future) to a reduction in the use of brominated FRs which could also reduce the costs of this route to compliance and this will be tested further as part of the consultation. Interliners will still be coated with FRs but these are usually organophosphates which have fewer links to health effects and environmental impacts.

**c) Traceability Costs**

5.24 Under the revised regulations manufacturers and importers will be required to retain relevant product and supplier information for 10 years rather than 5 and as discussed above the scope of this information will also be extended slightly. Although the additional information to be collected is relatively small compared to the existing requirements, and indeed many companies may already be collecting this as best practice, the extra 5 years that the data must be kept is likely to add to storage costs even if many firms are already storing such information electronically. We do not have any information on the likely costs to businesses of these additional storage requirements. The consultation for the EUs New Legislative Framework, which imposed similar requirements across a range of products did not find any evidence that this was a significant cost to business. However, the NLF IA did acknowledge that there were likely to be additional administrative costs associated with the requirements.

5.25 It is assumed therefore that after the regulations have been implemented there will be additional costs equivalent to 48hours of administrative time a year. For the 5,300 firms affected (UK manufacturers and importers) this gives an annual cost to business of £3m (using the hourly rates in figure 4 above) .

**d) Labelling costs**

5.26 The new requirements in respect of labelling are likely to add to costs for manufacturers in the UK. However, we do not currently have any information on baseline labelling costs or the increase in costs, particularly the increased size of the label, that the new requirements will necessitate. We will consider this further as part of the consultation process but expect any cost increase to be small in scale relative to the other changes proposed here.

*Fig 6. Summary of monetised costs*

| | Ongoing per annum | One-off |
|---|---|---|
| Familiarisation | | £1 m |
| Transition | | £0.6m |
| Traceability | £3m | £1m |
| **TOTAL** | **£3m** | **£2.6m** |

## Benefits

5.27 In the original proposals consulted on in August 2014 it was anticipated that the revised match test would lead a to significant reduction in the use of FRs within furniture manufacture providing significant financial savings to businesses affected and environmental benefits from the reduced use of potentially harmful chemicals. We expect the revised testing proposals to also lead to some reduction in FR usage in cover fabrics.

**MONETISED BENEFITS**

*Consultation Responses*

5.28 Only a limited number of organisations responded with cost figures to the earlier consultation with respects to cost saving. However, the majority of respondents believed that the original range of £19m-55m was highly unrealistic and indeed the majority argued there would not be any net cost savings (see section 3). Whilst the majority of respondents stated there would not be any cost savings, those who provided figures indicated there would be annual savings from £1.5m to £32m annual savings. This analysis uses responses to the assumptions and further discussions with stakeholders on the revised match test and other routes to compliance to derive the figures as a way to generate the final range.

5.29 If there are more firms using the interliner compliance route then this could potentially lead to

more FRs being used on interliners but they are generally organophosphates which are largely considered to be safer than the Brominated Flame Retardants used on covers. There will therefore be a positive effect from the reduction of FRs in the covers and in the longer term from the incentives provided by these new regulations to adjust the construction of furniture to better meet fire safety standards without the use of chemicals as set out above. However, the reduction in usage of FRs could be more limited and consequently the financial savings in the proposals are significantly reduced from the earlier consultation IA.

5.30 There are several monetised ongoing economic benefits of the change in regulation:

a) Net reduced cost of fabric testing.
b) Net reduced cost of fabric treatment due to a reduction in chemicals needed in the manufacture of some products.
c) Remove from scope of the regulation baby products leading to a reduction in testing and FR treatment.

**a) Reduced cost of fabric testing – removal of cigarette test**

5.31 The removal of the requirement for furniture to undergo a cigarette test as well as a match test was previously assumed to provide a saving to business of £7.5m annually based on figures provided by the UK test houses. The consultation raised the issue of whether all of this cost saving will be passed on to businesses but further discussions with industry suggest that they are well aware of the testing costs and likely savings from the removal of this requirement. It is therefore assumed that the full saving is realised in the best estimate benefit scenario with a 50% saving being assumed in the low benefit scenario.

5.32 The reduced cost to furniture manufacturers selling in the UK market is a loss in earnings to test houses. This revenue is a regulatory cost and therefore not considered to be a loss in economic benefit to the UK. This is because the labour previously allocated to testing can be re-allocated to more economically productive activity.

**b) Reduced cost of fabric treatment**

5.35 One of the policy aims of the proposal is to reduce the use of FRs. The new test should reduce FRs in furniture covers but to a lesser extent than under the 2014 proposal because we have excluded a test directly over foam which led to greater savings. We believe that the level of FR savings will vary depending on the route to compliance taken (see *Fig* 2 above.)

5.34 Of the four existing and new routes to compliance only the match test and components close to the cover approach (route ❹) is now thought to lead to significant reductions in FR usage. Whilst the match test and interliner route might lead to a small net overall increase in FR usage (reduced usage to meet the match test is offset by use of FRs in interliner) this would only have an impact if there was a large increase on the current users of this route (estimated to currently stand at around 25% of the market). We will try once more to get a feel through the consultation for better data.

5.35 The earlier IA set out a number of alternative approaches to determining the amount of fabric that is used and treated by the furniture industry in the UK but due to data limitations used a bottom up approach (see Annex 3 for further detail on the alternative methods). The assumptions used are summarised in the table below. The figures only include the demand for UK manufacturers, assumed to be 54% of the market, as the scope of this cost benefit is for the UK only.[9] ONS figures give the number of households in 2015 as 27 million[10] and combined with the assumption that between 17 and 45 metres of upholstered fabric are replaced per household every 5 years gives a range of 50-130m of fabric treated annually.

[9] BIS analysis of PRODCOM data.

[10] http://www.ons.gov.uk/ons/rel/family-demography/families-and-households/2015/stb-families-and-households.html

*Fig 7. Estimates provided for upholstered cover fabric by item and replacement rate*

| Household Item | Upholstered cover fabric estimate | Replacement rate |
|---|---|---|
| Sofa (2 seater) | 8-12 metres | 5-8 years |
| Sofa (3 seater) | 14m | 5-8 years |
| Sofa and two upholstered chairs | 40 metres | 5-8 years |
| Other upholstered household items | 5 metres | 5-8 years |
| Outdoor furniture | 25 metres | 2-3 years |

5.36 The upper bound is based upon each household having a sofa, two upholstered chairs and other upholstered household items. The lower bound is a separate estimate of one sofa and other upholstered household items. Outdoor furniture has not been included as no figures were readily available for the number of households with outdoor furniture. The central estimate of 36 metres is based on industry representative feedback: of 1 x 3-seater sofa (14m), 1 x 2-seater sofa (12m) and 1 x armchair (10m) per household.

5.37 Discussions with industry suggest that total treatment costs are on average £1.15 - £1.30 per metre of which around 50% represent the costs of FRs (industry stakeholders have suggested that the costs faced by smaller businesses with smaller fabric demands could be significantly higher). The original IA assumed a reduction of 20-50% of FRs (10-25% total treatment costs) but this was felt to be overstated by respondents to the earlier consultation.

5.38 Also under the revised proposals we expect that not all businesses will follow the match test and components close to the cover route to compliance although this is thought to be the dominant route given current construction methods.

5.39 In calculating the benefits of reduced FR usage we have therefore assumed a lower level of FR reduction than that in the earlier IA – 10 to 12.5% (equivalent to a saving of 12p to 16p per metre) in line with industry feedback - and now assume that this would only apply to 40-60% of furniture tested. These assumptions will be tested further as part of the consultation process.

5.40 Using these assumptions generates a fairly wide range of possible annual savings in FR usage of £2.3m to £12.7m annually with a best estimate of £7.5m:

*Fig 8. Benefits from reduced FR usage in furniture industry using different assumptions*

| | | |
|---|---|---|
| Fabric used annually(million metres) | 50 | 130 |
| **40% of businesses affected** | | |
| 10% reduction in FR usage (40% of businesses) £m | 50m * 12p * 0.4 = 2.3 | 130m * 12p * 0.4=6.8 |
| 12.5% reduction in FR usage £m | 50m * 16p * 0.4 = 2.9 | 130m * 16p * 0.4=8.5 |
| **60% of businesses affected** | | |
| 10% reduction in FR usage £m | 50m * 12p * 0.6 = 3.5 | 130m * 12p * 0.6=10.1 |
| 12.5% reduction in FR usage £m | 50m * 16p * 0.6 =4.3 | 130m * 16p * 0.6=12.7 |

**d) Changes to Scope of the regulations**

5.41 The regulations will provide clarity in relation to products such as sleeping bags, mattress protectors and garden furniture around the need for testing. For these products there will be a potential reduction in both testing costs and FR usage for those that were previously tested. Unfortunately, given the niche nature of these products we do not have robust information on which to base a calculation of savings (number firms and products, use of FRs) and there is

some uncertainty whether they businesses in this sub-sector were using FRs and having products tested under the existing regulations. We have not therefore been able to quantify these benefits.

5.42 Under the option set out above the exclusion of baby products from the scope of the regulations would lead to reduced testing costs and FR usage in this subsector. If baby products are excluded from scope completely then it is likely that there will be a reduction in FR usage equivalent to £2.7m per year based on BIS analysis of evidence submitted by the Baby Products trade association. If baby products need to meet the full requirements of the new proposals and potentially be subject to additional components and cover testing. However the removal of the cigarette test is likely to offset these costs. We will look to improve the costings of these options through consultation.

*Summary*

*Fig 9. Summary of monetised cost and benefits – ongoing per annum*

| | Costs | Benefits | Net savings |
|---|---|---|---|
| Cigarette Test removal | | £3.75 to £7.5m | |
| Potential Reduction in FR use from testing changes | | £2.3m to £12.7m | |
| Changes to scope – excluding some baby products | | £0m to £2.7m | |
| Traceability – admin costs | £3m | | |
| **Total** | **£3m** | **£6.05m to £22.9** | |
| **NET SAVINGS** | | | **£3.05m to £19.9m** |

5.43 Given the uncertainties identified we have expressed savings to give a range of **£3m to £20m annual cost savings, with a best central estimate of £15m**. Although some responses to the consultation expressed concern that these cost savings might not be fully passed on to UK manufacturers, BEIS believe the resource savings will occur in the UK economy either from pressure to reduce the cost of treatment by UK manufacturers or cost savings will be captured by UK fabric treatment facilities.

5.44 The net cost savings to business, as shown above, for option 2 are counted as an "out" in this appraisal. The Equivalent Annual Net Cost to Business of this "out", in 2014 prices, over the 10 year appraisal period is **- £14.17m**.

**NON-MONETISED BENEFITS**

5.58 The benefits of the proposal fall under the following headings: Consumer benefits; Health; Environment (including disposal); and Compliance. Given the nature of these benefits and the uncertainties surrounding the behavioural response of businesses to the revised testing proposals many of these benefits are unquantified and may remain so even after discussion with stakeholders as part of the consultation process. Each of the potential benefits is considered in turn below.

**Consumer**

5.45 There will be a safeguarding of improved fire safety for consumers as a result of a furniture testing regime that more closely mirrors the reality of furniture manufacture and is easier to enforce. The existing FFRs have been successful in preventing injury and loss of life in the UK. However, it has become clear that there are weaknesses in the current match and to ensure the continuation of those fire safety benefits of around £140m per year an updated testing regime is required.

5.46 Better labelling will enable consumers to make informed choices. More transparency on routes to compliance for furniture businesses supplying the UK which may enable businesses to reduce compliance costs and pass these on in reduced prices to the consumer.

**Health benefits from reduced use of FRs**

5.47 Various researchers have shown that brominated flame retardants are present in house dust, from various consumer products such as furniture (see Annex for sources). Traces of BFRs have been found in human blood, particularly children, and in pets, i.e. because these tend to be in closer proximity to house dust (see 5.3 and 5.4 above). Other research shows long-term effects in rats from inducing BFRs at the post-natal stage, e.g. loss of attention and mood swings (see Annex for sources). UK furniture retailers/manufacturers have reported that they are receiving increasing correspondence from the public concerned about the health effects of chemicals in furniture.

**Environmental benefits**

5.48 At present, old upholstered furniture ends up in land-fill. Some of the FR chemicals present therein leach out into the environment and, according to Food Standards Agency research, get into the food chain (see Annex for sources). REACH[11] the EU's chemical legislation, is proposing to restrict the use of decaBDE, a Brominated Flame Retardant (BFR) widely used in furniture production. If adopted the restriction would come into force in 2018. Defra reports that there are significant problems with the destruction of FR-containing products at end-life, e.g. with building waste. BEIS, therefore, wishes to alleviate this problem by introducing an FR-reducing flammability test (as well as allowing for innovation in new 'barrier' technology that could eventually lead to a total absence of FRs in furniture).

5.49 BEIS acknowledges that in practice manufacturers will continue to use FRs at least in the short term, and that that means products containing them will still need to be disposed of safely at end-life (when forthcoming EU legislation demands it). However, the new test will allow the use of inherently flame-resistant fibres which would not pass the current test. We believe an increased demand for such fibres will drive down the price so that their use will be cheaper than FR treatment costs. There are also other new developing technologies which should also become more attractive to manufacturers and thereby decrease in cost.

**Compliance**

5.50 We should see greater levels of compliance as a result of improved traceability requirements.

[11] Registration, Evaluation, Authorisation and restriction of Chemicals

## 6 Risks associated with option 1

*Guidance and dissemination*

6.1 Given the consultation responses, businesses will need help and guidance initially to familiarise them with the changes. BEIS will draft guidance, in conjunction with key stakeholders, and place it on BIS's website. The final paper will also contain clear guidance as to what will be necessary to meet compliance. We will also work with the appropriate trade associations. In addition, UK test houses will be an available and accessible source of guidance given that SMEs regularly use their services.

*Fire safety*

6.2 BEIS believes the new test will maintain safety, because testing can now include previously unregulated parts of furniture that can be exposed to flame where foam filling is thinner, e.g. the arms. Test houses inform us that in recent years, cheap and highly flammable materials have sometimes appeared in these unregulated parts, making the overall product more flammable than was envisaged at the introduction of the FFRs.

*Cost savings of flame retardant treatment not passed onto furniture producers and ultimately the consumers*

6.3 This risk is minimal as furniture manufacturers are well aware of the breakdown of treatment costs, i.e. that half the cost covers the processing while half covers the chemicals, and will therefore be able to negotiate effectively with treatment companies. Some larger manufacturers have their own treatment facilities so will directly benefit from the savings.

## 7 Micro/SME Business Assessment

7.1 There are 3,800 SME furniture manufacturers in the UK, comprising roughly 97% of all manufacturers.[12] Micro/SME businesses are not exempted from the requirements of the FFRs because they must produce furniture that is as safe for the consumer as that produced by larger companies.

7.2 Due to economies of scale, anecdotal evidence has suggested SMEs can pay three times more than larger companies for FR treatment of their fabrics. This doesn't mean their savings will be 3 times higher, i.e. because the saving is in the cost of chemicals not the treatment process. The resource cost saving will be the same with larger companies. However, there is an uncertainty as to whether SMEs will receive the cost savings from treatment plants or cover fabric sellers, an issue raised in the 2014 consultation responses which we plan to test in our next consultation.

7.3 However the costs (outlined above) for the initial transition and ongoing routes to compliance, may be disproportionately larger for SMEs eg they may be less likely to already hold the technical information required and the costs of compliance may bear more heavily on small firms. We plan to test this in consultation. We will implement in a way to reduce the costs to small businesses as far as possible eg we have extended the transition period to 24 months and will prepare clear guidance.

[12] ONS ABS data 2015.

## 8 Costs and benefits for Option 3 - revoke the regulations and rely on EU standards

8.1 The FFRs go beyond the minimum EU requirement on the grounds that they provide a higher level of consumer safety. We do not have comparative data which allows us to assess whether the UK regulations actually lead to safer furniture than in the rest of the EU. However, the EU standard is not seen as being particularly robust, is not published in the Official Journal of the EU and thus does not provide a 'presumption of conformity' under the General Product Safety Directive. This would make it difficult to effectively enforce these EU standards. We do have evidence that the FFRs are effective in saving lives and preventing fires in furniture.

8.2 This would be the most deregulatory approach, and would significantly reduce compliance costs for business since it would also reduce testing costs further and by definition remove requirements such as labelling. As above, it would also help businesses who want to export to the rest of the EU. This option would have the added benefit of removing the need to decide which products are within scope of the Regulations, thereby making the compliance regime significantly simpler.

8.3 However we would not propose this option as the potential risk to consumer safety, from less robust standards and enforcement issues, absent an EU standard is too large.

## 9 Conclusion

9.1 The preferred option is Option 1. This will bring in testing requirements that more closely replicate current manufacturing processes, thereby improving enforcement as the new match test will better reflect the actual finished product. Enforcement will also be enhanced by better traceability of products and greater clarity in the scope of the regulations. The changes will provide the ability to reduce FRs in the fabric covers used whilst maintaining fire resistance standards by testing other previously unregulated components close to the cover in the furniture. It will also allow for innovation in the development of new 'protective' cover fabrics and maintain the safety of upholstered furniture and bring long-term health and environmental benefits.

9.2 Implementation will be done by revoking the current regulations and replacing them with a new set of regulations which will make the legislation easier to read and bring greater clarity to business and enforcing authorities.

**ANNEX 1 - Brief list of reference material regarding the effects of FRs on health/environment**

FLAME RETARDANTS IN FOOD

**Scientific Opinion on Polybrominated Biphenyls (PBBs) in Food**
http://www.efsa.europa.eu/de/efsajournal/pub/1789.htm

**Scientific Opinion on Polybrominated Diphenyl Ethers (PBDEs) in Food**
http://www.efsa.europa.eu/en/efsajournal/pub/2156.htm

**Scientific Opinion on Hexabromocyclododecanes (HBCDDs) in Food**
http://www.efsa.europa.eu/fr/efsajournal/pub/2296.htm

**Scientific Opinion on Tetrabromobisphenol A (TBBPA) and its derivatives in food**
http://www.efsa.europa.eu/en/efsajournal/pub/2477.htm

**Scientific Opinion on Brominated Flame Retardants (BFRs) in Food: Brominated Phenols and their Derivatives**
http://www.efsa.europa.eu/en/efsajournal/pub/2634.htm

**Scientific Opinion on Emerging and Novel Brominated Flame Retardants (BFRs) in Food**
http://www.efsa.europa.eu/en/efsajournal/pub/2908.htm

FLAME RETARDANTS IN HUMANS, HOUSE DUST, ETC

**Study on Toxic Exposure and Health Risks to US Firefighters**
http://www.meriresearch.org/RESEARCH/Publications/FirefighterStudyHighlights/tabid/361/Default.aspx

**Indoor Contamination with Hexabromocyclododecanes, Polybrominated Diphenyl Ethers, and Perfluoroalkyl Compounds: An Important Exposure Pathway for People?**

Harrad et al 2010 BFR review.pdf

***In Utero* and Childhood Polybrominated Diphenyl Ether (PBDE) Exposures and Neurodevelopment in the CHAMACOS Study**
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3569691/

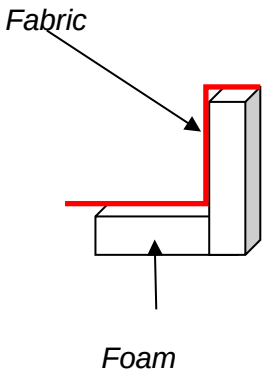
**Prenatal Exposure to PBDEs and Neurodevelopment**
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2866690/

**Prenatal Exposure to Organohalogens, Including Brominated Flame Retardants, Influences Motor, Cognitive, and Behavioral Performance at School Age**
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2799472/

**Advisory Committee on Hazardous Substances: opinion on decabrominated diphenyl ether (decaBDE):**
http://archive.defra.gov.uk/environment/quality/chemicals/achs/documents/achs-decaBDE-opinion-100923.pdf

## ANNEX 2 – Non technical description of changes to the FFR testing regime

1. The new design removes the incentive to over-use FRs, and provides a more realistic test. The design was chosen after intensive work before the consultation to identify the best way forward.

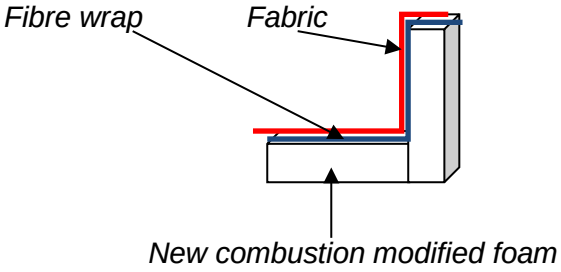



In the current test, cover fabric is placed directly against a block of highly flammable polyurethane test foam. A flame is applied to the cover fabric for 20 seconds. For the fabric to pass, any flame must extinguish within 2 minutes. Because the fabric is placed tightly against the foam, no air is present to feed the test flame. However, most modern furniture contains a fibre wrap between foam and filling which means air is present and the fabric can be ignitable in the finished product. Modern use of thermoplastic materials, which quickly form holes, has led to the heavy

2. In the new test, BEIS are making two changes:

   a. Adding a fibre wrap round the foam (to simulate the wrappings used in modern furniture);
   b. Changing the test foam from the flammable kind (illegal for use in actual furniture due to its flammability) to a combustion-modified foam (as commonly used in finished products); and

*Fig 2. Proposed test method*




3. Essentially, these changes make the test set-up a closer approximation of an actual piece of furniture. Now, because cover fabrics will not need to carry the full burden of acting as a barrier to ignition, less FRs will be required.

## *Annual Demand for treating fabrics used in furniture sold in the UK*

There are a number of methodologies that can be employed to estimate the total amount of fabric treated by UK manufacturers. Due to the uncertainties, however, all methodologies are presented, even those where BEIS currently have no data. The different methodologies are represented in the table below:

Table 1. Methodology table for calculating annual demand for fabric treatment

| Methodology | Calculations Detail | Current Robustness? | Estimated here? |
|---|---|---|---|
| (1) Sales data (top down) | Sales<br>/Average cost of unit sold<br>x average metres of fabric used<br>= metres of treated fabric | LOW - Sales categories from Prodcom or ONS are in residual product categories, therefore estimating the average cost per unit and m2 of fabric used in a residual category is likely to be inaccurate given the diversity of products included. | FIRA |
| (2) Household demand (bottom up) | metres of treated fabric in average household<br>x no. of households<br>/ average annual replacement rate<br>x UK manuf. share of domestic market<br>= metres of treated fabric | LOW/MED – The major uncertainties are on the amount of treated fabric in the average UK home and the average replacement rate. Therefore, likely to generate a large range. | BEIS |
| (3) Company cost estimates up-rated | Cost of treating fabric<br>/ market share<br>= total cost of treating fabric | MED/HIGH – Company data on treatment costs is the most direct way to estimate cost savings. Robustness will improve with an increase in the market share covered by company provided data | |
| (4) Company volume of fabric estimates up-rated | Volume of fabric treated<br>/ market share<br>= metres of treated fabric | MED/HIGH - Company data on the volumes of treated fabric is a direct way to estimate the annual amount of treated fabric in the UK. Robustness will improve with an increase in the market share covered by company provided data | |
| (5) Company sales volumes up-rated | Volume of sales in a product group e.g. sofas<br>x average fabric needed<br>/ market share<br>= total cost of treating fabric | MED – Same as above but less likely to get good coverage of market share | |

*Methodology 1 – Sales data (top down)*

Firstly, sales data needs to be estimated for those product groups affected. Estimates on the sales of the product groups that use treated fabric are listed below:

Table 2. UK Manufacturers Furniture Sales

| | Category | Includes | Sales | Volume |
|---|---|---|---|---|
| ONS | Manufacture of furniture: other furniture and mattresses[13] | Sofas, mattresses, sofa beds | £3.2 bn | N/A |
| Prodcom[14] | Manufacture of other furniture and mattresses except plastic garden seats and non-domestic | Sofas, mattresses, note: may include non-upholstered | £3.16 bn | 4 million units |
| Prodcom[15] | Manufacture of furniture in the 'upholstered' category only and mattresses | Upholstered seating only and mattresses | £1.5 bn | |
| Prodcom (FIRA choice of product categories) | Manufacture of furniture in the 'upholstered' category only | Upholstered seating only | £0.96 bn | |

6.14 As can be seen above, there are several product groups that are not captured in any of the sales data:

- baby and nursery furniture
- furniture used in caravans
- garden upholstered furniture

6.15 This sales data is then used with estimates of average cost per item of upholstered furniture (£175) and average metres of treated fabric needed per unit (12 metres) both of which are provided by FIRA, an industry research organisation. These estimates were based on a smaller subsection of furniture sales FIRA believed will be affected compared to BEIS estimates. Therefore, this estimate can be considered a lower bound, although as noted in the methodology table below, we do not believe these figures are robust given the difficulty in calculating averages for a diverse category. The calculation of this lower bound of metres of treated fabric annually is shown below and then the cost savings range is applied to give an estimate of treatment cost savings. Finally, an estimate of cost savings from BPA, Baby Products Association, is added to both estimates since this gives an estimate of one of the product categories excluded in the sales data.

[13] ONS Annual Business Survey, November 2013 release. Manufacturers of mattresses and manufacturers of other furniture were assumed to comprise the upholstered furniture sector, SIC codes 31.03 and 31.09

[14] http://epp.eurostat.ec.europa.eu/portal/page/portal/prodcom/introduction

[15] Ibid

Table 3. FIRA's estimate of annual demand for treating fabrics

| | Unit | Value |
|---|---|---|
| Sales | £ | 956,318,000 |
| Average cost per item | £ | 175 |
| No. of items | No. | 5,464,674.29 |
| Metres per item | metre | 12 |
| Metres of treated fabric | metre | 65,576,091.43 |

*Methodology 2 – Household demand (bottom up)*

The calculations below shows that demand for treating fabric was estimated by calculating consumer demand for furniture, rather than through sales, as above. As highlighted in the table above, this methodology is likely to contain some uncertainties. This is because no survey data is available that calculates the average amount of treated fabric in households. This is the major uncertainty in estimating demand, therefore a range is used. In the high estimates it is assumed each household has one sofa, two upholstered chairs and 5m of other upholstered goods, such as floor cushions, pouffes and dining chairs.[16] The low estimate assumes each household has one sofa only, which is assumed to contain only 12m of fabric and 5m of other upholstered goods. As discussed above, we have not included estimates for other FFRs products such as garden furniture, furniture for mobile homes, baby products (prams, buggies, strollers, car seats) and nursery furniture, which may raise the final estimates. Additionally, many households will have more than one sofa, and a sofa can contain around 15-20 metres of fabric. The other sensitivity towards calculating total costs is the cost savings for fabric treatment (above). The assumptions, together with their sources, are shown in the table below:

Table 4. Annual domestic Demand for treated fabric: Bottom up methodology

| | HIGH | LOW | SOURCE |
|---|---|---|---|
| Number of Households in the UK | 26.4m | 26.4m | ONS (2012)[17] |
| UK manufacturers' share of domestic furniture sales | 54% | 54% | PRODCOM data, BEIS calculations |
| Furniture replaced every 5 years | 5 | 5 | Furniture Industry Research Association (FIRA) |
| Treated metres per household range | 45 | 17 | BEIS estimates from Industry discussions |
| Total demand for fabric treated (metres) | 128 million | 48 million | |
| Cost savings per metre (£) | 0.325 | 0.115 | FIRA and BEIS, see above |

[16] One sofa and two chairs was estimated to use 40m2 of treated fabric following discussions with manufacturers

[17] Available at: http://www.ons.gov.uk/ons/rel/family-demography/families-and-households/2012/stb-families-households.html