

## Reforming the UK Furniture and Furnishings (Fire) (Safety) Regulations 1988

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# Reforming the UK Furniture and Furnishings (Fire) (Safety) Regulations 1988

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## Abstract

This paper discusses the need for wider reform of UK chemicals policy following exit of the UK from the EU, focusing on chemical flame retardants as an example. Exposure to these chemicals presents a range of human environmental health issues and reveals important limitations in the UK's approach to reconciling fire safety with environmental and public health protections. Key strategic issues that would advance evidence-informed policy in this area are identified.

## Keywords

chemical flame retardants, furniture and furnishings (Fire) (Safety) regulations, fire safety, health, environment, circular economy, 'governance

## Background

Chemical flame retardants (CFRs) are a class of compound added to a wide range of goods including furniture, fabric, electronic equipment, building materials, and other items, in order to meet fire safety standards. Released from products during manufacture, use, and disposal, CFRs have become ubiquitous environmental contaminants. They are routinely found in near-field environments such as

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schools, homes, offices, public buildings, and vehicles,<sup>1</sup> and are present in rivers, lakes, sediments, mammals, birds, and fish worldwide.<sup>2</sup> Exposure is unavoidable and cannot be significantly mitigated by personal choices or lifestyle. Due to the UK's relatively stringent fire safety requirements, particularly in domestic furnishings, the UK population has some of the highest levels of exposure to CFRs in the world.<sup>3</sup>

Exposure to CFRs risks deleterious health effects including developmental disorders, neurotoxicity, endocrine disruption, metabolic disruption, and other issues.<sup>4</sup> Very young children are particularly exposed because of their small relative size, and hand-to-mouth and mouthing behaviours.<sup>5</sup> Specific health risks typically only become known after a CFR has been introduced to market and exposure has already become widespread. Because many CFRs are environmentally persistent, used in products with long lifetimes (such as sofas or building insulation), or recycled into other goods,

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1. S. Brommer and S. Harrad 'Sources and Human Exposure Implications of Concentrations of Organophosphate Flame Retardants in Dust from UK Cars, Classrooms, Living Rooms, and Offices' (2015) 83 *Environment International*, 202–207. Available at: <https://doi.org/10.1016/j.envint.2015.07.002>; F. Tao, M.A.-E Abdallah and S. Harrad, 'Emerging and Legacy Flame Retardants in UK Indoor Air and Dust: Evidence for Replacement of PBDEs by Emerging Flame Retardants?' (2016) 50(23) *Environmental Science & Technology*, 13052–13061. Available at: <https://doi.org/10.1021/acs.est.6b02816>; R.E. Dodson et al. 'Flame Retardant Chemicals in College Dormitories: Flammability Standards Influence Dust Concentrations' (2017) 51(9) *Environmental Science & Technology*, 4860–4869. <https://doi.org/10.1021/acs.est.7b00429>; J. Persson, T. Wang and J. Hagberg. 'Organophosphate Flame Retardants and Plasticizers in Indoor Dust, Air and Window Wipes in Newly Built Low-energy Preschools' (2018) *The Science of the Total Environment*, 628–629, 159–168. <https://doi.org/10.1016/j.scitotenv.2018.02.053>; N. Wemken et al. 'Concentrations of Brominated Flame Retardants in Indoor Air and Dust from Ireland Reveal Elevated Exposure to Decabromodiphenyl Ethane' (2019) 53(16) *Environmental Science & Technology*, 9826–9836. Available at: <https://doi.org/10.1021/acs.est.9b02059>.
  2. R. Hou et al. 'Occurrence, Bioaccumulation, Fate, And Risk Assessment of Novel Brominated Flame Retardants (Nbfrs) in Aquatic Environments – A Critical Review' (2021) 198 *Water Research*, 117168. Available at: <https://doi.org/10.1016/j.watres.2021.117168>; C. Yao, H. Yang, Y. Li, 'A Review on Organophosphate Flame Retardants in the Environment: Occurrence, Accumulation, Metabolism and Toxicity' (2021) 795 *The Science of the Total Environment*, 148837. Available at: <https://doi.org/10.1016/j.scitotenv.2021.148837>.
  3. Brommer and Harrad 2015 (n. 1); S. Harrad, S. Brommer and J.F. Mueller 'Concentrations of Organophosphate Flame Retardants in Dust from Cars, Homes, and Offices: An international comparison' (2016) 2(2) *Emerging Contaminants*, 66–72. Available at: <https://doi.org/10.1016/j.emcon.2016.05.002>; K. Kademoglou et al. 'Legacy and Alternative Flame Retardants in Norwegian and UK Indoor Environment: Implications of Human Exposure via Dust Ingestion' (2017) 102 *Environment International*, 48–56. Available at: <https://doi.org/10.1016/j.envint.2016.12.012>.
  4. H.B. Patisaul, et al. 'Beyond Cholinesterase Inhibition: Developmental Neurotoxicity of Organophosphate Ester Flame Retardants and Plasticizer' (2021) 129(10) *Environmental Health Perspectives*, 105001. Available at: <https://doi.org/10.1289/EHP9285>; A. Blum et al. 'Organophosphate Ester Flame Retardants: Are they a Regrettable Substitution for Polybrominated Diphenyl Ethers?' (2019) 6(11) *Environmental Science & Technology Letters*, 638–649. Available at: <https://doi.org/10.1021/acs.estlett.9b00582>; H.S. Hendriks and R.H.S. Westerink, 'Neurotoxicity and Risk Assessment of Brominated and Alternative Flame Retardants' (2015) 52(Pt B) *Neurotoxicology and Teratology*, 248–269. Available at: <https://doi.org/10.1016/j.ntt.2015.09.002>; B. T. Doherty et al. 'Organophosphate Esters: are these Flame Retardants and Plasticizers Affecting Children's Health?' (2019) 6(4) *Current Environmental Health Reports*, 201–213. <https://doi.org/10.1007/s40572-019-00258-0>; P. Xiong, et al. 'A Review of Environmental Occurrence, Fate, and Toxicity of Novel Brominated Flame Retardants' (2019) 53(23) *Environmental Science & Technology*, 13551–13569. <https://doi.org/10.1021/acs.est.9b03159>; I. van der Veen and J. de Boer, 'Phosphorus Flame Retardants: Properties, Production, Environmental Occurrence, Toxicity and Analysis', (2012) 88(10) *Chemosphere*, 1119–1153. Available at: <https://doi.org/10.1016/j.chemosphere.2012.03.067>; Wei, G.-L. et al. (2015) 'Organophosphorus Flame Retardants and Plasticizers: Sources, Occurrence, Toxicity and Human Exposure' *Environmental Pollution* (Barking, Essex: 1987), 196, 29–46. <https://doi.org/10.1016/j.envpol.2014.09.012>.
  5. E. J. Sugeng, et al. 'Toddler Behavior, the Home Environment, and Flame Retardant Exposure' (2020) 252 *Chemosphere*, 126588. Available at: <https://doi.org/10.1016/j.chemosphere.2020.126588>.

exposure to problematic substances can continue long after they have been phased out or prohibited for further use.<sup>6</sup>

## Fire and furniture regulations

The Furniture and Furnishings (Fire) (Safety) Regulations 1988 (henceforth “FFRs”) regulates furniture upholstery, furnishing and other products containing upholstery.<sup>7</sup> The UK Fire Safety Regulations are based on exacting ignition standards which are largely met by the addition of CFRs to furniture fabric and fillings. The FFRs apply to all furniture, with few exceptions listed in section 5 of the regulations and prescribe several requirements that impose obligations on different persons and entities in the supply chain. With regards to filling material, any filling material must meet the relevant ignitability test.<sup>8</sup> Furniture supplied with permanent covers has to pass the match test set out in the Part I of Schedule 5 to these Regulations.<sup>9</sup> This test firstly involves a water-soaking procedure followed by the exposure of a fabric to flame ignition source.<sup>10</sup> The same requirement to meet the relevant ignitability test applies to any form of loose covers. The Regulations impose strict labelling requirements and to that end make a distinction between display label exposed by the retailer and permanent label that must be attached to every new item of furniture.<sup>11</sup> For example, schedule 7 (Permanent Labelling Requirements) of the FFRs lists the exact content of the label which among other things has to indicate that “carelessness causes fire”, as well as ways in which furniture meet the requirements of these regulations. It also prescribes labelling requirements for second hand items.

Although the use of CFRs is not specifically regulated by the FFRs, it is the demanding requirements that they set out, combined with the tendency of manufacturers to use low-cost, easily-worked materials that are innately highly flammable, that leads to a *de facto* requirement to add large quantities of CFRs to furniture to pass the required fire FFR safety tests. As a result, the UK has some of the highest levels of use of CFRs in the world. However, the gains in fire safety through the use of CFRs are not clear. Passing the fire test does not obviously cause significant increases in fire safety: there are many factors that influence the risk of fires starting and people being injured in them, many of which are closely correlated to socioeconomic status (e.g., fuel poverty leading to use of halogen heaters instead of central heating; drug and alcohol misuse leading to accidents in environments very unlike those simulated in fire tests).<sup>12</sup> This makes it difficult to reconcile the use of CFRs for fire safety purposes with the health and environmental issues they present. The trade-off has been recognised for decades, but UK regulations have never been comprehensively revised to properly address this. Changes in policy responses by other countries and shifts in understanding of the scientific evidence supporting CFRs use is making more urgent the need to revise fire safety standards and their use in products, in particular with regards to furniture and furnishing components.

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6. D. Klinčić, et al. ‘Levels and Distribution of Polybrominated Diphenyl Ethers in Humans and Environmental Compartments: A Comprehensive Review of the Last Five Years of Research’ (2020) 27(6) Environmental Science and Pollution Research International, 5744–5758. Available at: <https://doi.org/10.1007/s11356-020-07598-7>.

7. The Furniture and Furnishing (Fire) (Safety) Regulations 1988, *The Furniture and Furnishings (Fire) (Safety) Regulations 1988* (legislation.gov.uk).

8. See Furniture and Furnishing (Fire) (Safety) Regulations 1988 above n. 7 at s. 6(1); some types of foam fillings are allowed only if certain requirements are met.

9. *Ibid.* at section= 8.

10. *Ibid.* at Part I, Schedule 5 of the Furniture and Furnishing Regulations.

11. *Ibid.* at sections 10 and 11.

12. London fire brigades have said there have been 100+ incidents in the capital that stem from fuel poverty. <https://www.theguardian.com/uk-news/2022/may/09/london-fire-chiefs-warn-against-fires-in-homes-to-save-on-heating-bills>

Despite this, high levels of CFR use have continued due to successive failures to implement legislative reforms that would allow for fuller scrutiny of the fire testing requirements specified by the FFRs. The first attempt to revise the fire regulations occurred in 2009 under the Department for Business, Innovation and Skills (BIS),<sup>13</sup> which commenced a preliminary review of the Regulations as a result of the Greenstreet Berman Report. This was followed by two rounds of consultations (in 2014 and 2016) initiated by BIS (now renamed Department for Business, Energy & Industrial Strategy, BEIS). Neither have led to any revisions of the FFRs. In its response to the 2016 consultation, the UK Government noted broad support for clarifying the “definition of scope (of the regulations) as it provides greater clarity about the products that need to meet the requirements” as well as support for strengthening the requirements on traceability of products.<sup>14</sup> While there is a commitment for these measures to be included when the FFRs are revised, no timeframe for doing so has been identified. Consultations also exposed different views about the need to reform testing requirements. In 2017, the Advisory Panel convened for this purpose by BEIS decided not to proceed with any reforms to furniture testing requirements, instead opting to “develop an outcome-focussed approach criteria based on a set of essential safety requirements”.<sup>15</sup>

The UK House of Commons Environmental Audit Committee report, *Toxic Chemicals in Everyday Life*, published in 2019, exposes how current legislation is outdated with regard to contemporary understanding of the causes of risk of injury and death in fires, environmental harm, and technological innovations. This contemporary understanding could potentially justify a reduction in the use of CFRs or the substitution of potentially problematic chemical substances with safer alternatives. The report also describes how the FFRs are out of step with other jurisdictions that are reforming fire regulations that have historically incentivised high levels of CFR use. For example, in 2014 California revised its domestic furniture standard Technical Bulletin 117, which led to reduced use of these substances in upholstered furniture and children’s products,<sup>16</sup> and has banned “sale of furniture, baby products and mattresses containing flame retardants”.<sup>17</sup> Finally, the report noted concerns raised by whistle-blowers about “alleged inappropriate behaviour by individuals working in the fire sector and officials at BIS during the review of the Regulation”<sup>18</sup> as well as allegations of very close ties of government and industry and potential regulatory capture.<sup>19</sup>

## Reforming the FFRs

Having exited the EU, the UK is at a strategic crossroads with regards to its chemical strategy. CFRs are a very good example of the intersecting challenges of science, policy, and governance being faced by the UK government. Prior to Brexit, chemicals such as CFRs were regulated in the UK under EU REACH. According to section 3 of the European Union (Withdrawal) Act 2018, the EU REACH Regulation was incorporated into UK law on 1 January 2021 and as such forms part of UK domestic law.<sup>20</sup> This was an important step in securing the continuation of the robust chemical risk assessment and risk management frameworks that exist in the EU. However, there are ongoing concerns that the Government will in time repeal important EU legislation, including

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13 House of Commons Environmental Audit Committee: *Toxic Chemicals in Everyday Life*, Twentieth Report of Session 2017–19 at para. 49, *Toxic chemicals (parliament.uk)*; See the report at a statistical report to investigate the effectiveness of the Furniture and Furnishings (Fire) (Safety) Regulations 1988 ([britishfurnitureconfederation.org.uk](http://britishfurnitureconfederation.org.uk)).

14 BEIS: *Updating the Furniture and Furnishings (Fire) (Safety) Regulations 1988* Government response to consultation, paras. 12 and 13, *Updating the Furniture and Furnishings Fire Safety Regulation: Government response* ([publishing.service.gov.uk](http://publishing.service.gov.uk)).

15 *Updating The Furniture and Furnishings (Fire) (Safety) Regulations 1988* Government response to consultation, above n. 14 at para 23.

16 See *Toxic Chemicals in Everyday Life*, above n. 13 at para 46.

17 *Ibid.* at para 46.

18 *Ibid.* at para 69.

19 *Ibid.* at para 72.

20 See *UK REACH: UK REACH Explained* ([hse.gov.uk](http://hse.gov.uk)) and *European Union (Withdrawal) Act 2018* ([legislation.gov.uk](http://legislation.gov.uk)).

legislation governing protection of human and environmental health leading to greater regulatory divergence with the EU. The recent introduction of the Retained EU Law (Revocation and Reform) Bill<sup>21</sup> confirmed these concerns as this Bill, if adopted, will enable the quick repeal of EU legislation that was retained by the 2018 EU (Withdrawal) Act. The Government argues that the wide-ranging powers of the Bill are justified by the aim of creating a better regulatory environment and “broader concerns about the volume of retained EU law that remained on the domestic statute book”<sup>22</sup>.

In light of this, the UKRI Clean Air Champions<sup>23</sup> initiative held a round-table in June 2022 to discuss the ongoing challenges relating to UK chemicals regulation, using flame retardants to illustrate the issues. This consisted of representatives from UK academia, industry, government agencies, and NGOs. Participants had special expertise in areas related to the impact of chemical substances on human health, their use and substitution in consumer goods, and environmental law and policy. Using CFRs as a specific example, the round-table produced a Consensus Statement identifying several broad issues that should be addressed in order to ensure effective UK chemicals policy in a post-Brexit environment.<sup>24</sup>

The Consensus Statement lays out 14 considerations in arguing why CFRs are currently inadequately regulated. These highlight a broad range of problems including human health risks, widespread environmental contamination, and problems for the circular economy. The Consensus Statement then presents six “Asks” (see Box 1) that lay out a revisioning of chemical risk assessment and risk management processes for the UK. These aim to take advantage of closer political proximity of stakeholders to decision-makers and UK regulatory autonomy post-Brexit. Further, they aim to build the UK’s expertise and capacity in human environmental health, and improve the processes by which environmental health policy can be responsive to scientific research and other key issues in effective, equitable decision-making. In its “Asks”, the Statement emphasises a need for recognising the complexity of the issues involved, arguing against reductive thinking in defining and managing health and environmental risks posed by exposure to chemical substances.

**Box 1. Summary of Asks in the Consensus Statement.**

1. Minimise the need for CFRs via benign-by-design principles
2. Adopt a systemic approach to assessing and managing fire risks
3. Improve regulatory governance, including transparency, management of interests, and stakeholder involvement
4. Improve UK human environmental health research capacity, to develop a base of expertise able to respond to the complexity of the issues
5. Ensure a high level of certainty in safety of CFRs is demonstrated before they are used, and implement evidence monitoring systems that can quickly flag changes to evidence of safety
6. Create systems for tracking chemicals in products to support the circular economy

21 The Retained EU Law (Revocation and Reform) Bill, Retained EU Law (Revocation and Reform) Bill – Parliamentary Bills – UK Parliament.

22 The Retained EU Law (Revocation and Reform) Bill, Retained EU Law (Revocation and Reform) Bill 2022–23 – House of Commons Library (parliament.uk).

23 <https://www.ukcleanair.org/>

24 M. Bellingham, L. Birnbaum, A. Cavoski, D. Fetherston-Dilke, R. Garside, S. Harrad, F. Kelly, A. Kortenkamp, O. Martin, J. Page, A. Stec, P. Whaley, T. Woolley, ‘Consensus Statement on the Use of Flame Retardants in the United Kingdom’. Available at: <https://zenodo.org/record/7304029#.Y2pYCHb7SJY>.

Of particular significance for this current discussion are policy and legal recommendations which allow for building a comprehensive governance structure. The first “Ask”, to incentivise industry to follow benign-by-design principles, is fully-aligned with the key environmental principle of substitution, which requires the substitution of substances of concern with less hazardous alternatives.<sup>25</sup> This “Ask” also reflects current policy shifts, especially in the EU with the European Green Deal, that emphasise the EU’s commitment to a zero-pollution ambition for a toxic-free environment.<sup>26</sup> This also entails addressing hazardous chemicals and encouraging research and innovation with the aim of developing safe and sustainable alternatives.<sup>27</sup>

To that end, the Commission adopted the EU Chemicals Strategy for Sustainability<sup>28</sup> and plans to revise REACH in 2023. In its Chemical Strategy, the European Commission referred to recent EU human biomonitoring studies that are finding “a growing number of different hazardous chemicals in human blood and body tissue, including certain pesticides, biocides, pharmaceuticals, heavy metals, plasticisers and flame retardants”.<sup>29</sup> The EU has also adopted the New Circular Economy Action Plan, which is important for products containing CFRs as it promotes design of more sustainable products and the embedding of circularity in production processes.<sup>30</sup> This legal reform at the EU level should result in improving risk assessment of chemicals, allowing for quicker and more comprehensive risk assessment. Improved risk assessment will be key in ensuring high levels of certainty in safety of CFRs before they are used. It remains to be seen whether the UK will use this opportunity to improve its regulatory environment, or whether this will lead to regulatory divergence from the EU regime. Notably, moving away from a linear model and creating a circular economy is an objective both at the EU and UK level. This includes chemicals which are around us and some chemicals such as flame retardants which are ubiquitous environmental contaminants. Thus, creating systems for tracking chemicals in products (as outlined in Ask 6) to support a circular economy will form an important part of regulatory reform.

In order to put the first “Consensus Statement Ask” into action, there needs to be greater investment and governmental push for innovation. The conventional approach has led to favouring of materials that have good physical properties for manufacturing (lightweight, good insulation, easy to cut and handle) but poor flammability and fire toxicity<sup>31</sup> (formation of cyanide gas during fires). Current fire safety standards lead to a *de facto* requirement to add large quantities of FRs to furniture to pass the required tests. Countries such as the United States have created room for eco-innovation in furniture design by relaxing fire safety tests.<sup>32</sup> This decision was made on the basis of the tests resulting in large quantities of FRs being added to furniture without a clear enough benefit in reduction of risk of death or injury in a fire.

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25 See for example Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, OJ L 396/1.

26 COM(2019) 640 final at pp. 14–15.

27 See COM(2019) 640 final, above n. 26.

28 COM(2020) 667 final.

29 See COM(2020) 667 final, above n. 28 at p. 2.

30 COM(2020) 98 final.

31 S. T. McKenna, et al. ‘Flame Retardants in UK Furniture Increase Smoke Toxicity more than they Reduce Fire Growth Rate’ (2018) 196 *Chemosphere*, 429–439. Available at: <https://doi.org/10.1016/j.chemosphere.2017.12.017>. A. A. Stec, ‘Fire Toxicity – The Elephant in the Room?’ (2017) 91 *Fire Safety Journal*, 79–90. Available at: <https://doi.org/10.1016/j.firesaf.2017.05.003>

32 See Toxic Chemicals in Everyday Life, above n. 13 at para 46.

This feeds into the second “Ask” of the Consensus Statement: to urge that risk assessment and management innovation is shaped by systemic views of product safety. This means avoiding a reductive view of product safety as being demonstrated by passing a simple test, with policy interventions instead being evaluated as part of a system. In standard-setting, the “Asks” emphasise the centrality of transparent and inclusive processes that systematically account not only for evidence of harm but other stakeholder concerns, to ensure decision-making is equitable and not compromised by any particular vested interest. Accompanying the development of standards, a good illustration of further regulatory interventions to support this systematic approach would be the introduction of labelling requirements that would list the presence of CFRs. This could be done via a bar code linked to a free, open access data base listing all flame retardants in the product which could be read by recyclers, regulators and consumers. The preference would be to set this up as mandatory labelling rather than on a voluntary basis as is currently the case. This will not only allow for dissemination of information and allow customers to make an informed purchase, but it is closely linked to promotion of eco-design and eco-friendly products and services. It also gives greater clarity as to responsibilities within the life cycle of a product and allows for more informed decisions about after-life treatment of products containing flame retardants.

To support the complexity of this task, the fourth “Ask” emphasises a need for the UK to invest in human environmental health research, to develop the culture and expertise necessary to anticipate and manage the challenges of use of chemicals in modern, sustainably-focused economies. The Statement advocates proactive building of a research culture around human environmental health issues to mirror countries such as Germany, France, and in particular the United States.

## Direction of travel in the UK

The above discussion concerns the need to undertake wider reform of UK chemicals policy following exit of the UK from the EU. In terms of developing new fire safety standards, a post-Brexit UK has an opportunity to develop even more robust standards and regulatory framework. However, the current discourse on regulatory divergence rather than regulatory alignment with the EU poses reasons for concern about the direction of regulatory travel in the UK. The UKRI Clean Air Champions consensus statement draws to the fore the inadequacy of the current approach to CFRs and highlights important “Asks” that need to be addressed as a part of any future chemicals reform. Reform of risk assessment and the move towards a circular economy form key components of the ongoing regulatory changes in this area. Furthermore, given some of the issues discussed above on the lack of transparency in decision-making when it comes to the development of relevant standards for fire safety and chemicals, it is clear that this process needs to be open and inclusive, integrating different stakeholder views and expertise.

With particular regard to flame retardants, there is a need to amend the FFRS, to lead to reduced use of CFRs in furniture and the development of more sustainable alternatives. This push is underpinned by extensive and ever growing research demonstrating the health risks and widespread environmental contamination posed by CFRs as well as new research into appropriate substitutes. There is also a wider governance question that requires attention, of whether fire and furniture regulations should continue to fall within the remit of agencies such as BEIS, whose mission primarily relates to economic growth and industrial strategy rather than consumer and environmental safety.<sup>33</sup> This may lead to an inherent conflict because the economic position of some stakeholder groups, that BEIS should in general be promoting, can be adversely affected by restrictions that BEIS may need to introduce for consumer and environmental safety. Conflicting goals such

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33 Department for Business, Energy and Industrial Strategy ‘About us’. Available at: <https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy/about>.



as this may contribute to the very long delays seen at BEIS over many years to revise fire and furniture regulations in line with current scientific and technical advances and suggests the need to give serious consideration to this wider governance issue.

Finally, the current level of political uncertainty may delay future reform initiatives. This is coupled with the fact that the reform of UK's chemical policy does not feature high on the governmental agenda as compared with more immediate economic concerns. Bearing in mind the general levels of inertia associated with any legal change, it will be even more challenging to undertake legal reform that will bring all relevant stakeholders together in the current political climate.

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