

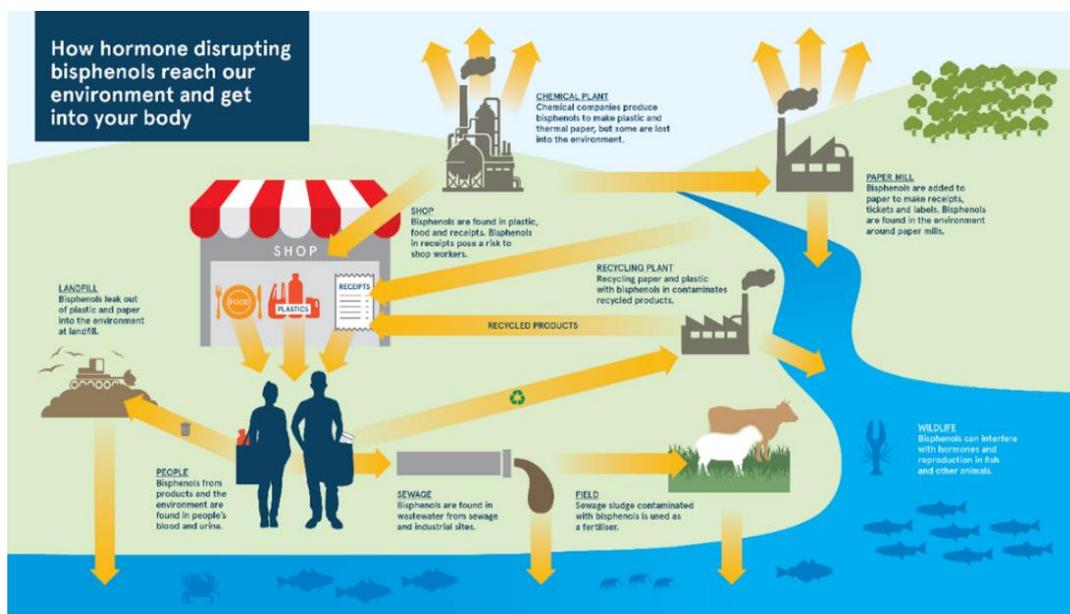
Fidra is asking the Scottish Government to include legislation in the Circular Economy Bill to ban all bisphenols in thermal paper to prevent pollution and enable the safe use and recycling of receipts and tickets.

Key Points:

- Bisphenols are a group of chemicals widely used in thermal paper receipts, tickets, labels.
- Bisphenols are a health and environmental concern, associated with fertility issues, cancer, and obesity in humans and reproductive issues in wildlife.
- The presence of bisphenols in products, and subsequently recycled materials, undermines the circular economy, putting people and the environment at unnecessary risk.
- In the EU, one bisphenol (BPA) has already been banned in receipts due to the risks the chemical poses to the unborn children of cashiers. However other bisphenols that are potentially just as harmful, can be used instead.
- All bisphenols share a similar structure and are likely to have similar impacts on our health and environment. Switzerland has banned both BPA and BPS in receipts.
- Many retailers have already stopped using all bisphenols in receipts and have expressed support for a group-based approach to legislation.
- Banning all bisphenols in thermal paper enables safer use and recycling of receipts, reduces risks, and levels the playing field for retailers.

Pollution & health risks from bisphenols in everyday items including recycled products

Bisphenols are a group of chemicals still being widely used despite evidence of health and environmental concerns. Bisphenol A, (BPA) is classified as **toxic to reproduction** by the European Chemicals Agency (ECHA) and is an **endocrine disruptor**ⁱ, meaning it can interfere with hormones in humans and wildlife. Bisphenols are found in thermal paper often used for receipts, tickets, and labels. As result of their use and disposal, bisphenols are ubiquitous in our environment, being found in the airⁱⁱ, on beachesⁱⁱⁱ and have been detected in the body of almost every individual ever tested^{iv}. Bisphenols have been associated with breast cancer^v, obesity^{vi}, and fertility issues^{vii} in humans and impact reproduction success in wildlife^{viii}. Children, infants and unborn babies are at particular risk^{ix}. In an effort, to limit this risk, many countries have restricted BPA in certain products^x. However, other bisphenols suspected of having similar or even greater risks, are now being used in BPA's place^{xi}. People therefore continue to be exposed through direct contact with products, such as receipts. This exposure can continue when bisphenol containing products are recycled into new items. **Due to the use of contaminated recycled materials, bisphenols are appearing in pizza boxes^{xii}, toilet paper^{xiii} and sewage sludge used as fertilizer^{xiv}, undermining the circular economy.** Current legislation in Scotland is insufficient to protect people and wildlife from bisphenols in products, recycled material, and our contaminated environment.



Current legislation & commitments to end the use of endocrine disruptors

BPA was banned by the EU from use in receipts in 2020 due to the health risks posed to unborn children of cashiers, whose regular skin contact with receipts led to high BPA levels in their bodies. However, other bisphenols with similar impacts can still be used, resulting in continued exposure to endocrine disruptors. An ECHA survey estimated that by 2022, 61% of all thermal paper would contain Bisphenol S (BPS) as a replacement to BPA^{xv}, despite BPS being a suspected reproductive toxicant and endocrine disruptor^{xvi}. BPB, another common alternative, was identified as an endocrine disruptor by the French authority, ANSES, in 2019^{xvii} and is to be considered for classification as a Substance of Very High Concern by UK REACH^{xviii}. The 2020 EU Chemicals Strategy for Sustainability highlights the need for urgent action to address endocrine disruptors, like bisphenols, stating that the Commission will *ensure that endocrine disruptors are banned in consumer products as soon as they are identified, allowing their use only where it is proven to be essential for society*^{xix}. The draft UK Common Framework on Chemicals & Pesticides indicated that devolved administrations could restrict chemicals of concern. There is now an opportunity for Scotland to remain aligned with EU ambitions to ban endocrine disruptors in consumer products by banning all bisphenols in receipts.

The solution

Fidra recommends the Scottish Government includes legislation in the Circular Economy Bill to ban all bisphenols in thermal paper to prevent pollution and enable the safe use and recycling of receipts and tickets. This will ensure one harmful chemical is not being replaced with another and removes the risk of contaminating recycled products with bisphenols. In line with the precautionary principle, there is sufficient evidence around the health and environmental impacts of bisphenols in thermal paper for restrictions to be applied to the entire chemical group. Fidra has found that many retailers are already using bisphenol-free alternatives and in a recent survey conducted by Fidra, **leading retailers agreed that they would be 'in favour of legislation to ban all bisphenols from till receipts', identifying human health, environmental protection and economic savings as some of the main benefits**^{xx}.

Alternatives to bisphenols in receipts

Fidra have been working with major retailers on limiting the environmental impact of their receipts, encouraging no receipt options, digital receipts, and bisphenol-free alternatives. As of September 2021, 14 high street retailers informed Fidra that they are now using bisphenol-free thermal paper for receipts, with two others phasing in bisphenol-free stock^{xxi}.

Impacts of banning bisphenols in receipts

Using bisphenol-free paper minimises sources of bisphenol exposure and pollution, as well as preventing bisphenols from contaminating recycled products. Leading retailers have demonstrated that alternatives are available, including using bisphenol-free thermal paper and offering digital or 'no receipt' options, which further reduce environmental impacts and often off-set any additional costs of changing receipt suppliers. To support retailers taking voluntary action, legislation will create a level playing field and reduce the burden on businesses to keep up with ever changing legislation, a problem often encountered with one-by-one chemical restrictions. **A ban on all bisphenols in thermal paper reduces risks to human health and the environment, is supported by retailers and would build trust in the safety of recycled products, key to the success of the circular economy.**

Conclusions and Recommendations

By using bisphenol-free options for receipts, retailers have shown that a ban on bisphenols in thermal paper is practical and desirable. With growing evidence around the health and environmental risks associated with bisphenols, there is an urgent need to protect people and wildlife, and ensure the safety of recycled products. Not only would a ban eliminate this key source of bisphenol pollution, it would also create a level playing field for retailers and minimise the legislation they need to manage compared to one-by-one chemical restrictions. It would encourage investment in innovative solutions and provide opportunities to use recycled materials safely, helping Scotland take another step towards a Green Recovery. Like the ban on plastic cotton buds, introducing legislation that changes the composition of everyday items can prevent pollution, avoid unnecessary risks, and ensure Scotland continues to be world leading in building a circular economy.

ⁱ ECHA. Accessed June 2021: <https://echa.europa.eu/hot-topics/bisphenol-a>

ⁱⁱ Ubiquity of bisphenol A in the atmosphere. DOI: [10.1016/j.envpol.2010.06.040](https://doi.org/10.1016/j.envpol.2010.06.040)

ⁱⁱⁱ Sandy beaches as hotspots of bisphenol A. DOI: [10.1016/j.envres.2020.110175](https://doi.org/10.1016/j.envres.2020.110175)

^{iv} Concentration of bisphenol A in thermal paper. DOI: [10.1080/17518253.2010.502908](https://doi.org/10.1080/17518253.2010.502908)

^v Bisphenol S induced epigenetic and transcriptional changes in human breast cancer cell line MCF-7. DOI: [10.1016/j.envpol.2018.12.084](https://doi.org/10.1016/j.envpol.2018.12.084)

^{vi} Urinary Bisphenols and Obesity Prevalence Among U.S. Children and Adolescents. DOI: [10.1210/bs.2019-00201](https://doi.org/10.1210/bs.2019-00201)

^{vii} Bisphenol A: an emerging threat to female fertility. DOI: <https://doi.org/10.1186/s12958-019-0558-8>

^{viii} Bisphenol A exposure, effects, and policy: A wildlife perspective. DOI: [10.1016/j.jenvman.2012.03.021](https://doi.org/10.1016/j.jenvman.2012.03.021)

^{ix} Early Life Metabolism of Bisphenol A: A Systematic Review of the Literature. DOI: [10.1007/s40572-013-0003-7](https://doi.org/10.1007/s40572-013-0003-7)

^x SGS "BPA bans and restrictions in food contact materials." Accessed June 2021: <https://www.sgs.com/en/news/2018/10/bpa-bans-and-restrictions-in-food-contact-materials>

^{xi} The use of bisphenol A and its alternatives in thermal paper in the EU during 2014 -2022. DOI: [10.2823/592282](https://doi.org/10.2823/592282)

^{xii} Danish Consumer Council "Test: Unwanted chemicals found in pizza boxes." Accessed June 2021 <https://kemi.taenk.dk/bliv-groennere/test-unwanted-chemicals-found-pizza-boxes>

^{xiii} Widespread occurrence of bisphenol A in paper and paper products: implications for human exposure. DOI: [10.1021/es202507f](https://doi.org/10.1021/es202507f)

^{xiv} A study on temporal trends and estimates of fate of Bisphenol A in agricultural soils after sewage sludge amendment. DOI: [10.1016/j.scitotenv.2015.01.053](https://doi.org/10.1016/j.scitotenv.2015.01.053)

^{xv} The use of bisphenol A and its alternatives in thermal paper in the EU during 2014 -2022. DOI: [10.2823/592282](https://doi.org/10.2823/592282)

^{xvi} ECHA. Accessed September 2021:

<https://echa.europa.eu/brief-profile/-/briefprofile/100.001.137>

^{xvii} Evidence for Bisphenol B Endocrine Properties: Scientific and Regulatory Perspectives. DOI: <https://doi.org/10.1289/EHP5200>

^{xviii} The Agency for UK REACH Work programme 2021/22. Accessed July 2021:

<https://www.hse.gov.uk/reach/resources/work-programme-2021-22.pdf>

^{xix} Chemicals Strategy for Sustainability Towards a Toxic-Free Environment, 2020. Accessed September 2021: <https://ec.europa.eu/environment/pdf/chemicals/2020/10/Strategy.pdf>

^{xx} Fidra Retailer Survey (pre-publication of results) <https://www.surveymonkey.co.uk/r/ZFRDNR>

^{xxi} Fidra. Accessed September 2021: www.fidra.org.uk/projects/bisphenols/