

The use of bisphenol A and its alternatives in thermal paper in the EU during 2014 - 2022

June 2020

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Table of contents

1. BACKGROUND	5
2. INTRODUCTION	5
3. OVERVIEW OF DEVELOPMENTS IN 2019	6
3.1 European Thermal Paper Association.....	6
3.2 Non-ETPA producers.....	6
3.3 Overall market.....	6
4. THERMAL PAPER MANUFACTURED IN AND PLACED ON THE EU MARKET (ETPA MEMBERS)	7
5. TOTAL AMOUNT OF THERMAL PAPER PLACED ON THE MARKET IN THE EU, INCLUDING IMPORTS	9
6. FORECAST FOR 2020-22	12
7. CONCLUSIONS	13
APPENDICES	15
APPENDIX 1. DATA RECEIVED FROM NON-ETPA MANUFACTURERS CONTACTED DIRECTLY AND HANSOL PAPER	15
APPENDIX 2. THERMAL PAPER IMPORTED INTO THE EU, 2014-2019 (EUROSTAT)...	17
APPENDIX 3. REGULATORY STATUS OF MAJOR ALTERNATIVES TO BPA	18

Table of figures

Figure 1: Thermal paper manufactured in and placed on the EU market per developer type (%; tonnes), 2014-2019, total.	9
Figure 2: Thermal paper placed on the EU market per developer type (%; tonnes), 2014-2019, total. ...	11

List of tables

Table 1: Thermal paper manufactured in and placed on the EU market by ETPA members in 2014-2019 (tonnes).....	7
Table 2: Developer used in thermal paper placed on the EU market by ETPA members in 2014-2019 (tonnes).....	8
Table 3: Share of thermal paper placed on the EU market by ETPA members in 2014-2019.....	8
Table 4: Share of developers used in thermal paper in the EU by ETPA members in 2014-2019.....	8
Table 5: Thermal paper placed on the EU market in 2014-2019 (tonnes) - Total.....	10
Table 6: Developer used in thermal papers placed on the EU market in 2014-2019 (tonnes) - Total.....	10
Table 7: Share of thermal paper placed on the EU market in 2014-2019 - Total.....	11
Table 8: Share of developer used in thermal paper placed on the EU market in 2014-2019 - Total.....	11

Table 9: Thermal paper projected to be placed on the EU market from 2020 to 2022 (assumption: 100 % switch to Bisphenol S).....	12
Table 10: Thermal paper projected to be placed on the EU market from 2020 to 2022 (assumption: 75 % switch to Bisphenol S).....	12
Table 11: Thermal paper consumed in the EU market in 2014, 2019 and 2022 (projected); tonnes.....	13
Table 12: Thermal paper manufactured in and placed on the EU market by non-ETPA manufacturers in 2014-2019 (tonnes).....	15
Table 13: Developer used in the papers placed on the EU market by non-ETPA manufacturers in 2014-2019 (tonnes).....	16
Table 14: Share of thermal paper by developer in the EU by non-ETPA manufacturers in 2014-2019	16
Table 15: Share of developers used in thermal paper in the EU by non-ETPA manufacturers in 2014-2019	16
Table 16: Imports of thermal paper into the EU 2014-19 (tonnes)	17

MAIN DEVELOPMENTS IN 2014-2022

- In 2019, bisphenol S (BPS) took over the status of bisphenol A (BPA) as the main developer used in thermal paper: its annual use is projected to increase approximately fivefold between 2014 and 2022, from 65 to 307 kilotonnes.
- In 2019, the use of BPS-based thermal paper increased by 80 % relative to the previous year, amounting to 187 kilotonnes, while the use of BPA-based thermal paper reduced by 43 % to 136 kilotonnes.
- The volume of thermal paper containing *other developers* placed on the EU market stood at 154 kilotonnes in 2019, an increase of 33 % compared with 2014.
- In 2022, the volume of BPS-based thermal paper placed on the EU market is estimated to be 307 kilotonnes (61 % of total) while that of other developers is expected to stand at 199 kilotonnes (39 %).

1. Background

Bisphenol A (BPA) is classified¹ under the [CLP Regulation](#) as a substance that may damage fertility, may cause serious eye damage, may cause skin allergies and respiratory irritation. It has also been identified as an endocrine disruptor² for human health and for the environment. Following France's 2014 restriction proposal, which identified a risk for workers (primarily cashiers), the Commission decided in 2016 to restrict BPA in thermal paper in concentrations of 0.02 % or more weight by weight.

In 2016, ECHA received a [request from the European Commission](#) to monitor developments in the thermal paper market with respect to the use of BPA and other alternative developers up to 2 January 2020, the date of entry into force of the restriction. The first report was published on 15 December 2017 and was followed by three updates, of which this report is the latest and last. Furthermore, there is public interest in the topic, as evidenced in the recent report by CHEM Trust³.

2. Introduction

This is the fourth and final report⁴ on the use of BPA, bisphenol S (BPS) and other developers in thermal paper in the EU. ECHA has been issuing annual updates following the publication of the [Commission Regulation \(EU\) 2016/2235](#) concerning the restriction of BPA in thermal paper. This report covers the period from 2014 to 2019, thereby encompassing the entire time span from the date that BPA was added to the REACH restricted substances list (Annex XVII) on 12 December 2016 right up to when the restriction came into effect on 2 January 2020.

There are two main objectives for this report. On the one hand, the main focus will be centred on analysing the historical data from 2014-2019 to highlight the extent to which industry has

¹ [Commission Regulation \(EU\) 2016/1179](#) of 19 July 2016.

² BPA in ECHA's [endocrine disruptor assessment list](#).

³ "Why a group restriction of the bisphenols is long overdue" May 12, 2020 available at: https://chemtrust.org/bisphenol_group/

⁴ You can find previous reports here: [2017 Report](#), [2018 Report](#), and [2019 Report](#).

substituted away from BPA in favour of other alternatives, which were already identified in the French restriction dossier⁵. On the other hand, additional attention will be afforded to forecasting industry trends following the restriction coming into effect.

In addition, bisphenols are currently being assessed as part of ECHA's work on groups⁶ of similar substances rather than as individual substances. As part of this work, other bisphenol substances than those already mentioned, (and covered in [Appendix III](#)), have been implicated as being used in thermal paper inside or outside the EU.

3. Overview of developments in 2019

3.1 European Thermal Paper Association

Members of the European Thermal Paper Association (ETPA) have about a 65 % market share in the EU thermal paper market. Having experienced a steady two-year growth from 2016 to 2018, ETPA members reported a decrease of 8 % (from 332 to 307 kilotonnes) in the total volume of thermal paper placed on the EU market in 2019.

ETPA attributed the decrease in the overall demand for thermal paper in the EU in 2019 to the oversaturation of the market in 2018, the price/cost increases in the entire value chain due to shortages of ODB-2⁷, and the restriction on the use of BPA in thermal paper coming into force in early 2020.

The total volume of BPA-based thermal paper placed on the EU market declined by 57 % in 2019, from 184 kilotonnes to 78 kilotonnes. This reduction was almost entirely offset by an increase in BPS-based thermal paper. The amount of BPS-based thermal paper placed on the EU market grew by 153 % from roughly 52 kilotonnes in 2018 to more than 131 kilotonnes in 2019. The total volume of thermal paper based on other developers saw a small increase (2 %) from 96 kilotonnes to 98 kilotonnes in the same period.

3.2 Non-ETPA producers

Non-ETPA manufacturers include European manufacturers who are not part of ETPA as well as non-European manufacturers who import thermal paper into the EU either directly or through a designated representative, importer or distributor. These producers occupy roughly 35 % of the share of the EU thermal paper market.

Information obtained from non-ETPA manufacturers suggests that there has been a 16 % decrease in the volume of BPA-based thermal paper placed on the EU market in 2019, accompanied by an increase of 44 % and 5 % in the tonnages of BPS-based and other developer-based thermal paper, respectively.

3.3 Overall market

The overall consumption of thermal paper in the EU has witnessed a decrease of roughly 3 % from 2018 to 2019, totalling 477 kilotonnes. The overall share of BPA-based thermal paper in

⁵ The French competent authority – ANSES – was the [dossier](#) submitter.

⁶ <https://echa.europa.eu/-/grouping-of-chemicals-speeds-up-regulatory-action>

⁷ ODB-2 is one of the most common dyes (colourants) used in the production of thermal paper.

the EU market dropped from 48 % to 29 % in the same period, whereas the share of thermal paper based on BPS almost doubled from 21 % to 39 %, and the share of thermal paper based on other developers increased slightly from 31 % to 32 %.

4. Thermal paper manufactured in and placed on the EU market (ETPA members)

ETPA members placed 78 kilotonnes of BPA-based thermal paper on the EU market in 2019, constituting a drastic decrease of 57 % from 184 kilotonnes in the previous year. The drop in volumes of BPA-based thermal paper was almost entirely offset by an increase in the use of BPS-based thermal paper, thereby making BPS the most widely used colour developer for the manufacture of thermal paper for the first time in the EU's history. Drawing on the figures provided by ETPA, one can observe that the overall share of BPA-based thermal paper totalled 26 % in 2019, trailing behind the shares of both BPS and other developers, which stood at 43 % and 32 %, respectively.

Key findings

- BPS-based thermal paper production of ETPA manufacturers increased by 80 kilotonnes (or 153 %) in 2019 compared with 2018.
- There was a slight increase in the total volume of thermal paper containing other developers placed on the EU market in the same period.
- In 2019, ETPA manufacturers placed 25 kilotonnes (or 8 %) less thermal paper on the EU market than they did in 2018.
- By the end of 2019, 43 % of thermal paper manufactured by ETPA members contained BPS. This number stood at 29 % and 32 % for BPA and other developers, respectively.

Table 1: Thermal paper manufactured in and placed on the EU market by ETPA members in 2014-2019 (tonnes)

Developer	2014	2015	2016	2017	2018	2019	% growth from 2018 to 2019
Bisphenol A	208 466	208 652	191 025	204 378	184 117	78 404	-57 %
Bisphenol S	11 682	11 106	15 035	34 010	51 831	131 028	153 %
Other developers	73 938	89 865	93 688	89 860	96 319	97 869	2 %
Total	294 086	309 622	299 748	328 248	332 268	307 300	-8 %

Source: ETPA

Table 2: Developer used in thermal paper placed on the EU market by ETPA members in 2014-2019 (tonnes)

Developer	2014	2015	2016	2017	2018	2019	% growth from 2018 to 2019
Bisphenol A	2 799	2 784	2 606	2 776	2 516	956	-62 %
Bisphenol S	150	125	200	397	678	1 626	140 %
Other developers	806	1 029	1 065	1 022	1 132	1 119	-1 %
Total	3 755	3 938	3 871	4 195	4 327	3701	-14 %

Source: ETPA

Table 3: Share of thermal paper placed on the EU market by ETPA members in 2014-2019⁸

Developer	2014	2015	2016	2017	2018	2019
Bisphenol A	71 %	67 %	64 %	62 %	55 %	26 %
Bisphenol S	4 %	4 %	5 %	10 %	16 %	43 %
Other developers	25 %	29 %	31 %	27 %	29 %	32 %
Total	100 %	100 %	100 %	100 %	100 %	100 %

Source: ETPA

Table 4: Share of developers used in thermal paper in the EU by ETPA members in 2014-2019

Developer	2014	2015	2016	2017	2018	2019
Bisphenol A	75 %	71 %	67 %	66 %	58 %	26 %
Bisphenol S	4 %	3 %	5 %	9 %	16 %	44 %
Other developers	21 %	26 %	28 %	24 %	26 %	30 %
Total	100 %	100 %	100 %	100 %	100 %	100 %

Source: ETPA

⁸ Percentages in this table as well as in others may not total 100 due to rounding.

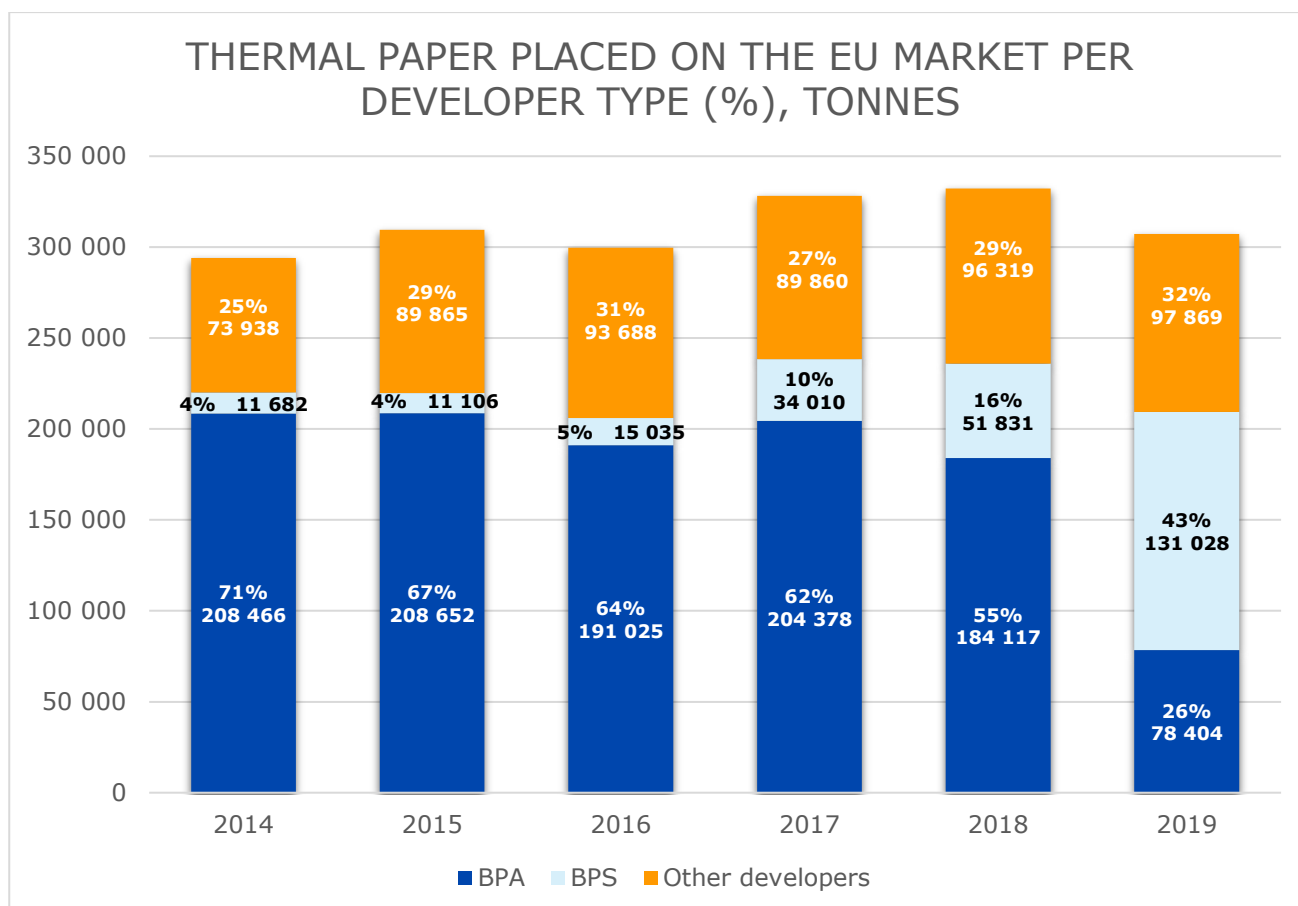


Figure 1: Thermal paper manufactured in and placed on the EU market per developer type (%; tonnes), 2014-2019, total.

Source: ETPA

5. Total amount of thermal paper placed on the market in the EU, including imports

This section sums up information received from ETPA, three non-ETPA European manufacturers, four other non-EU producers, as well as statistics from Eurostat⁹ on the imported volumes from major thermal paper markets into the EU.

Only ETPA and the European manufacturers who are not part of ETPA provided data on both the actual volumes of thermal paper placed on the EU market and the volumes of developers used in those papers. From the other manufacturers, ECHA received information only on the volumes of thermal paper, occasionally accompanied with information related to the identity of the developer substance, but not the actual quantity of the substance used. In such cases, ECHA had to rely on market intelligence and secondary data sources to make the most reliable and realistic estimates.

The total volume of thermal paper placed on the EU market in 2019 decreased by 3 % to

⁹ Eurostat data was collected for imports of thermal paper into the EU from five major countries: the US, India, China, South Korea and Japan. For the US, South Korea and Japan, the share of developers used was assumed to be 90 % for BPS and 10 % for other developers (for the entire analysis period). For China and India, the share of BPA was estimated to be 90 %, whereas that of BPS was set at 10 % (on the basis of consultations with European manufacturers, distributors, and associations). Some numbers contained in the current graphs may differ from those displayed in previous reports due to retrospective changes made in the historical data obtained from Eurostat.

about 477 kilotonnes. The volume of BPS-based thermal paper increased by over 80 kilotonnes (80 %), whereas that of other developers, including non-bisphenol as well as non-phenol alternatives, increased by roughly 3 kilotonnes (2 %) from 2018 to 2019.

BPA-based thermal paper saw a dramatic decrease by slightly over 100 kilotonnes (-43 %). However, the overall share of BPA-based thermal paper placed on the EU market in 2019 was still 29 %, compared with 39 % for BPS and 32 % for other developers.

Key findings

- In 2019, the reduction of 100 kilotonnes of BPA-based thermal paper was offset by almost a proportionate increase in BPS-based thermal paper.
- There has been a 3 % decrease in the total volume of thermal paper placed on the EU market in 2019.

Tables 5, 6, 7 and 8 incorporate data obtained from ETPA, directly contacted non-ETPA manufacturers (excluding Appvion) and Eurostat figures.

Table 5: Thermal paper placed on the EU market in 2014-2019 (tonnes) - Total

Developer	2014	2015	2016	2017	2018	2019	% growth from 2018 to 2019
Bisphenol A	247 198	250 486	236 662	254 200	237 364	136 125	-43 %
Bisphenol S	64 499	62 251	74 829	90 652	103 959	187 064	80 %
Other developers	115 211	134 279	140 831	144 842	150 083	153 648	2 %
Total	426 908	447 015	452 322	489 694	491 405	476 837	-3 %

Sources: ETPA, non-ETPA manufacturers and Eurostat.

Table 6: Developer used in thermal papers placed on the EU market in 2014-2019 (tonnes) - Total

Developer	2014	2015	2016	2017	2018	2019	% growth from 2018 to 2019
Bisphenol A	3 368	3 401	3 281	3 513	3 304	1 810	-45 %
Bisphenol S	935	887	1 085	1 236	1 476	2 454	66 %
Other developers	1 460	1 733	1 812	1 768	1 943	1 963	1 %
Total	5 763	6 021	6 178	6 517	6 723	6 226	-7 %

Sources: ETPA, non-ETPA manufacturers and Eurostat.

Table 7: Share of thermal paper placed on the EU market in 2014-2019 - Total

Developer	2014	2015	2016	2017	2018	2019
Bisphenol A	58 %	56 %	52 %	52 %	48 %	29 %
Bisphenol S	15 %	14 %	17 %	19 %	21 %	39 %
Other developers	27 %	30 %	31 %	30 %	31 %	32 %
Total	100 %	100 %	100 %	100 %	100 %	100 %

Sources: ETPA, non-ETPA manufacturers and Eurostat.

Table 8: Share of developer used in thermal paper placed on the EU market in 2014-2019 - Total

Developer	2014	2015	2016	2017	2018	2019
Bisphenol A	58 %	56 %	53 %	54 %	49 %	29 %
Bisphenol S	16 %	15 %	18 %	19 %	22 %	39 %
Other developers	25 %	29 %	29 %	27 %	29 %	32 %
Total	100 %	100 %	100 %	100 %	100 %	100 %

Sources: ETPA, non-ETPA manufacturers and Eurostat.

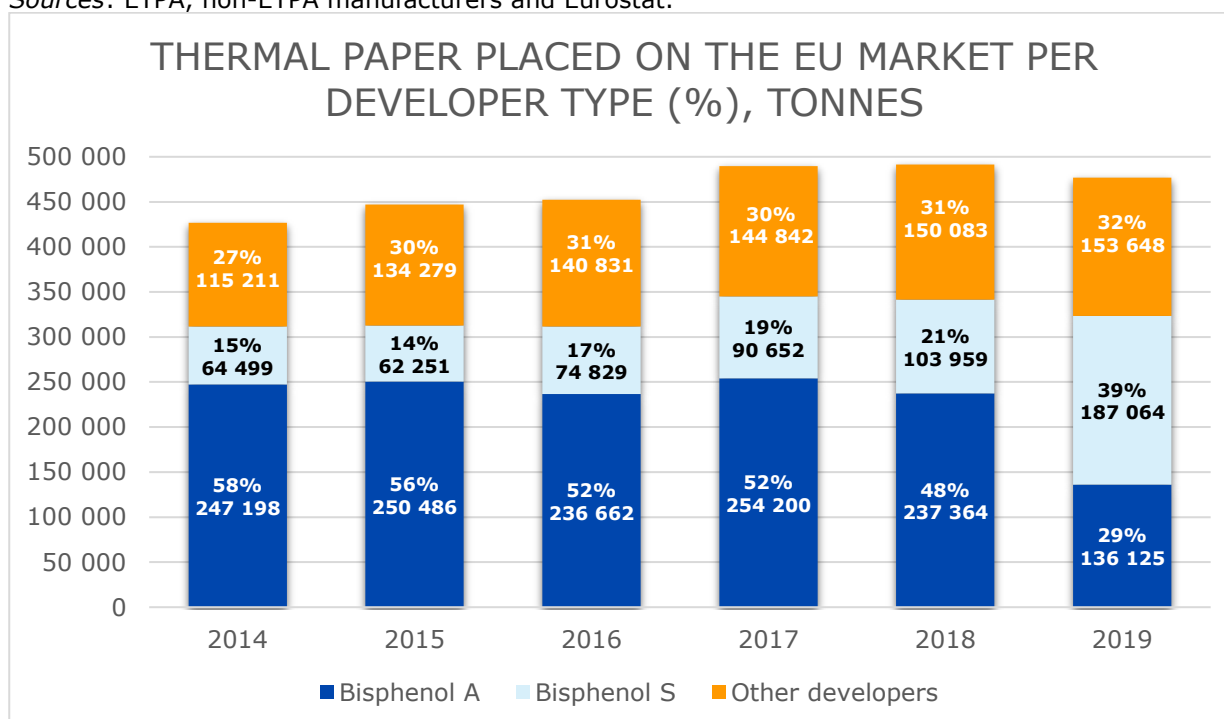


Figure 2: Thermal paper placed on the EU market per developer type (%; tonnes), 2014-2019, total.

Sources: ETPA, non-ETPA manufacturers and Eurostat.

6. Forecast for 2020-22

This section contains a projection for the European thermal paper market covering the period from 2020 to 2022. Two alternative scenarios are considered to predict developments in the usage of various developers in thermal paper in the aftermath of the restriction on the placement of BPA-based thermal paper on the EU market coming into effect on 2 January 2020. It has been assumed that the EU thermal paper market will continue to grow at an annual rate of 2 % from 2020 to 2022. This is consistent with the past trend (2014-19) of a 2 % average increase in the consumption of thermal paper. Since it cannot be known with certainty which alternatives manufacturers will switch to after the restriction date, two scenarios have been considered:

Scenario 1 - All of the BPA-based thermal paper will switch to BPS-based thermal paper.

Scenario 2 - 75 % of the BPA-based thermal paper will switch to BPS-based thermal paper, and the remaining 25 % to other alternative developers.

On the basis of consultation with ETPA, Scenario 2 has been established as the more realistic and probable scenario.

Tables 9 and 10 give projections based on these scenarios.

Table 9: Thermal paper projected to be placed on the EU market from 2020 to 2022 (assumption: 100 % switch to Bisphenol S)

Developer	2019	2020	2021	2022	Share in 2020-2022
Bisphenol A	136 125	0	0	0	0 %
Bisphenol S	187 064	329 653	336 246	342 971	68 %
Other developers	153 648	156 721	159 855	163 052	32 %
TOTAL	476 837	486 374	496 101	506 023	100 %

Source: ECHA's estimations

Table 10: Thermal paper projected to be placed on the EU market from 2020 to 2022 (assumption: 75 % switch to Bisphenol S)

Developer	2019	2020	2021	2022	Share in 2020-2022
Bisphenol A	136 125	0	0	0	0 %
Bisphenol S	187 064	294 941	300 840	306 857	61 %
Other developers	153 648	191 433	195 261	199 167	39 %
TOTAL	476 837	486 374	496 101	506 023	100 %

Source: ECHA's estimations

In summary, if BPA-based thermal paper were replaced wholly by BPS, there would be a total

of 330 kilotonnes of BPS-based thermal paper placed on the EU market in 2020 and over 342 kilotonnes in 2022. However, if only 75 % of BPA-based thermal paper was replaced by BPS, that would lead to the placement of 295 and 307 kilotonnes of BPS-based thermal paper on the EU market in 2020 and 2022, respectively. In regard to other developers, they would represent a 32 % share of the total market in 2020 if there was a total switch from BPA to BPS (Scenario 1), and their share would be 39 % if there was only a partial switch (Scenario 2).

7. Conclusions

BPS replaced BPA as the most widely used developer in the manufacture of thermal paper in 2019. BPA, though still placed in considerable quantities on the EU market in 2019 (~ 136 kilotonnes), was also overtaken by other developers, thereby losing its status as the primary developer to both BPS and other alternatives.

Given the restriction on BPA-containing thermal paper, effective from 2 January 2020, no thermal paper containing BPA as a developer in concentrations of 0.02 % or more weight by weight can be placed on the EU market. Therefore, manufacturers of thermal paper that have relied on BPA need to switch to other developers.

ECHA consulted ETPA on the two scenarios to replace BPA. ETPA stated that Scenario 2 was most likely, implying that 75 % of the BPA-based thermal paper would switch to BPS given the latter's cost-competitiveness and availability. The remaining 25 % would gradually switch to other developers gaining a foothold in the EU. Table 11 summarises the past and projected consumption of thermal paper based on Scenario 2 (i.e. that BPA would be mostly (75 %) replaced by BPS) and that thermal paper consumption would continue to grow by about 2 % each year.

Table 11: Thermal paper consumed in the EU market in 2014, 2019 and 2022 (projected); tonnes

Developer	2014	2019	2022*	Growth 2014-22	Share in 2022
Bisphenol A	247 198	136 125	0	-100 %	0 %
Bisphenol S	64 499	187 064	306 857	376 %	61 %
Other developers	115 211	153 648	199 167	42 %	39 %
Total	426 908	476 837	506 023	19 %	100 %

* projected (most probable scenario – a 75 % switch from BPA to BPS)

Sources: ETPA, non-ETPA manufacturer, Eurostat and ECHA's estimations

In 2014, when France made the proposal to restrict BPA in thermal paper, the volume of BPA-based thermal paper placed on the EU market amounted to 247 kilotonnes, whereas that of BPS-based thermal paper stood at 64 kilotonnes. It is projected that following the restriction date on 2 January 2020, about 75 % of the BPA-based thermal paper will shift to BPS-based thermal paper.

The share of other developers is also projected to increase for the 2014-2022 period. In this scenario (see Table 11), the growth of BPS-based thermal paper from 2014 to 2022 would be 376 %, while in the alternative scenario (100 % replacement), the growth would be 432 %.

It is estimated that in 2022 the volume of BPS-based thermal paper placed on the EU market

will be 307 kilotonnes (i.e. 61 % of the total share), while that of other developers would stand at 199 kilotonnes (i.e. 39 %). The restriction of BPA in thermal paper has induced substitution to both BPS and other developers, though more to the former than to the latter. The main conclusion of ECHA's final report is that there is almost a fivefold increase in the use of BPS as the developer of thermal paper in the EU from 2014 to 2022.

Appendices

Appendix 1. Data received from non-ETPA manufacturers contacted directly and Hansol Paper

ECHA contacted six thermal paper manufacturers¹⁰ in 2019, of which three are based in the EU and three outside. Of the contacted manufacturers, all but one agreed to share the information.

Chenming Paper refused to submit the latest information on the grounds that it would be in violation of their new company policy on sharing such data publicly. To ensure consistency in reporting the data, ECHA has assumed that Chenming Paper's exports to the European Union in 2019 were identical with those in 2018 (i.e. 600 tonnes).

Though Hansol Paper was no longer contacted directly in 2019 given that they declined to collaborate in 2017, estimates of their exports to the EU could be established through Eurostat data.

All of the consulted Asian manufacturers export either BPA-based or BPS-based thermal paper, with the exception of Hansol Paper, which also supplies thermal paper containing other developers (e.g. D-8).

The three EU manufacturers, on the other hand, supply thermal papers predominantly containing other developers, Ricoh Industrie France SAS being the largest of the three placing more than 50 kilotonnes of thermal paper containing other developers on the EU market.

Tables 12, 13, 14 and 15 summarise information gathered directly from six non-ETPA manufacturers as well as the Eurostat data on Hansol Paper's imported volumes of thermal paper into the EU¹¹.

Table 12: Thermal paper manufactured in and placed on the EU market by non-ETPA manufacturers in 2014-2019 (tonnes)

Developer	2014	2015	2016	2017	2018	2019	% growth from 2018 to 2019
Bisphenol A	1 180	1 217	13 157	12 550	14 476	12 166	-16 %
Bisphenol S	14 563	13 622	20 414	18 314	15 368	22 097	44 %
Other developers	37 487	40 746	43 321	51 329	50 326	52 714	5 %
Total	53 230	55 585	76 892	82 193	80 170	86 977	8 %

Source: Non-ETPA thermal paper manufacturers and Hansol Paper (Eurostat)

¹⁰ **China:** GHS Gold HuaSheng Paper Co. Ltd; Chenming Paper; Guandong Guanhao High-Tech Co. Ltd Inc.; **EU:** Ricoh Industrie SAS (France), Blumberg GmbH & Co KG (Germany), Smith and McLaurin Ltd (UK).

¹¹ The ratio of developers used in thermal paper exported by Hansol to the EU was assumed to be 90 % to 10 % for BPS and other developers, respectively. This ratio was established on the basis of consultations with European and Asian thermal paper manufacturers, distributors and associations.

Table 13: Developer used in the papers placed on the EU market by non-ETPA manufacturers in 2014-2019 (tonnes)

Developer	2014	2015	2016	2017	2018	2019	% growth from 2018 to 2019
Bisphenol A	14	16	193	182	211	177	-16 %
Bisphenol S	219	206	302	272	254	326	28 %
Other developers	598	650	690	692	760	798	5 %
Total	830	872	1 185	1 146	1 225	1 300	6 %

Source: Non-ETPA thermal paper manufacturers and Hansol Paper (Eurostat)

Table 14: Share of thermal paper by developer in the EU by non-ETPA manufacturers in 2014-2019

Developer	2014	2015	2016	2017	2018	2019
Bisphenol A	2 %	2 %	17 %	15 %	18 %	14 %
Bisphenol S	27 %	25 %	27 %	22 %	19 %	25 %
Other developers	70 %	73 %	56 %	62 %	63 %	61 %
Total	100 %	100 %	100 %	100 %	100 %	100 %

Source: Non-ETPA thermal paper manufacturers and Hansol Paper (Eurostat)

Table 15: Share of developers used in thermal paper in the EU by non-ETPA manufacturers in 2014-2019

Developer	2014	2015	2016	2017	2018	2019
Bisphenol A	2 %	2 %	16 %	16 %	17 %	14 %
Bisphenol S	26 %	24 %	25 %	24 %	21 %	25 %
Other developers	72 %	75 %	58 %	60 %	62 %	61 %
Total	100 %	100 %	100 %	100 %	100 %	100 %

Source: Non-ETPA thermal paper manufacturers and Hansol Paper (Eurostat)

Appendix 2. Thermal paper imported into the EU, 2014-2019 (EUROSTAT)¹²

The imports of thermal paper into the EU from the five largest exporting countries saw an increase of 8 % in 2019, amounting to about 119 kilotonnes (i.e. a quarter of the total thermal paper market). China, the USA, and South Korea remain the largest thermal paper exporters to the EU, followed by India and Japan. In comparison with China, which has experienced a steady annual growth over the last six years, the USA has seen a gradual decline in its thermal paper exports to the EU from 2016 onwards. Imports from South Korea have been fluctuating in the same six-year period, reaching its lowest point in 2015 (~ 14 900 tonnes) and its peak in 2019 (~ 24 300 tonnes).

Table 16: Imports of thermal paper into the EU 2014-19 (tonnes)

Country	2014	2015	2016	2017	2018	2019	% change from 2018 to 2019
USA	34 670	34 224	36 009	33 740	30 074	27 742	-8 %
Japan	3 199	2 455	2 210	2 789	4 304	2 913	-32 %
China	34 505	36 906	40 060	46 499	49 741	53 182	7 %
India	7 220	8 223	9 760	8 025	8 449	10 324	22 %
South Korea	15 959	14 891	22 527	20 282	17 011	24 307	43 %
TOTAL	95 553	96 699	110 566	111 335	109 579	118 468	8 %

Source: Eurostat

¹² CN codes 48119000, 48099000, 48239085, and 48169000.

Appendix 3. Regulatory status of major alternatives to BPA

Bisphenol S (EC 201-250-5; CAS 80-09-1)

Bisphenol S was included in the [Community rolling action plan \(CoRAP\)](#) in 2014 as a suspected endocrine disruptor, with some indications for possible effects on reproduction. The evaluating Member State – Belgium – requested various tests from registrants to clarify the endocrine-disrupting nature of the substance. The test results are currently under assessment by Belgian authorities, ECHA and EFSA. Furthermore, in 2019 Belgium submitted a proposal to classify the substance as Reprotoxic Category 1B. The opinion of RAC is expected to be adopted in spring 2021.

Pergafast 201 (EC 432-520-2; CAS 5232938-43-1)

Pergafast 201 is a phenol-free substance, which has been included in the [CoRAP](#) as a potential endocrine disruptor, with some indications for possible effects on reproduction. Belgium will start evaluating the substance in 2022. According to the harmonised classification and labelling (ATP01), this substance is toxic to aquatic life with long-lasting effects. There is currently one active REACH registration for Pergafast 201.

D-8 (EC 405-520-5; CAS 95235-30-6)

D-8 is a mono-constituent bisphenol substance. It has been included in the [CoRAP](#) on account of its suspected endocrine-disrupting properties. Belgium is expected to start substance evaluation in 2021. According to the harmonised classification and labelling (CLP00), this substance is toxic to aquatic life with long-lasting effects. There are currently eight active REACH registrations for D-8.

D-90 (EC 427-620-8; CAS -)

D-90 is a multi-constituent bisphenol compound, for which there is neither harmonised classification nor self-classification. There are two active REACH registrations for D-90 in the tonnage band of 100 to 1 000 tonnes per year. Currently, no regulatory risk management appears to apply to the substance in the EU and no regulatory action is ongoing.

TG-SA (EC 411-570-9; CAS 41481-66-7)

TG-SA is a mono-constituent bisphenol substance. It has harmonised classification according to the CLP Regulation as H317: Skin Sensitiser 1 and H411: Aquatic Chronic 2. There is currently one active REACH registration for the substance in the 10 to 100 tonnage band. Currently, no regulatory risk management appears to apply to TG-SA in the EU and no regulatory action is ongoing.

Urea Urethane compound (EC -; CAS 321860-75-7)

Urea Urethane compound is a phenol-free substance, for which currently there is no hazard classification in the EU. According to the [US EPA report](#) (2014), the persistence of the substance is assessed to be of very high concern given its minimal or no biodegradation potential under aerobic conditions. There exists no REACH registration for this substance. Currently, no regulatory risk management appears to apply to the substance in the EU and no regulatory action is ongoing.

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