Supply chain substitution workshop on **alternatives to bisphenol A** in thermal paper

Brussels, Belgium, 26 March 2019

Workshop report

Belgian REACH competent authority (FPS health, food chain safety and environment)

Introduction

The Belgian public authorities (Federal Public Service (FPS) Economy and FPS Health, food chain safety and environment), together with the European Chemical Agency (ECHA) organized on **26 March 2019** an European event **dedicated to the substitution of Bisphenol A (BPA) in thermal papers**.

In December 2016, the European Commission decided to restrict the use of BPA in thermal paper in the European Union. The ban will take effect in 2020. As a result of this restriction, manufacturers of thermal paper will need to replace BPA. However, several alternatives are under regulatory scrutiny for potential human health and/or environmental concern (e.g. Bisphenol S, D-8, Pergafast®201).

The workshop aimed at gathering stakeholders across the thermal paper supply chain to:

- Present and discuss available alternatives to BPA in thermal paper, their health and environmental toxicity profiles, their regulatory status, technical performance and the need for manufacturing adaptations in the end product;
- Discuss emerging alternatives and associated testing needs;
- Exchange on challenges as well as needs and opportunities for multi-sectoral collaboration to scale up the adoption of sustainable alternatives;
- Identify concrete collaborative next steps to advance the development and adoption of sustainable alternatives.

Participants of the workshop :

55 participants were present: producers of chemicals alternatives to BPA in thermal paper, but also thermal paper manufacturers, converters[1], users of thermal papers (e.g. retailers), research institutions in the field, regulatory bodies, representatives of NGO, trade union, industry associations and other stakeholders interested in the topic.

Presentations of the day :

Different providers of alternatives to Bisphenol A in thermal papers presented their substances/technologies. The Belgian REACH competent authority highlighted in the introduction that they (will) evaluate some of them under REACH (CoRAP). A converter of thermal paper also prepared slides (unfortunately those slides could not be presented during the workshop itself). The experience of the retailer Coop Denmark was very instructive on how a retailer was able to ban bisphenol A for their cashier paper already in January. One trade union organization presented a trade union's action taken to push for a shift to thermal paper without bisphenol A. Authorities from the Netherlands and from Germany performed research on alternatives to Bisphenol A and presented their projects. Finally, the INERIS certification was presented. This certification ensures the thermal paper's user that none of the 15 identified phenolic compounds are present in the product and creates a trust chain. The European Chemical Agency (ECHA) concluded the day with some highlights.

Outcome of the break-out group discussions:

In the afternoon, participants were divided into small groups to discuss 6 questions. The outcome of the discussions has been summarized here below:

1. *What **additional knowledge or information** does each type of stakeholder need to advance the adoption of safer and more sustainable thermal papers?*
2. *Who are the **key stakeholders** within the supply chain able **to drive the shift of the market** to safer and more sustainable thermal papers?*
3. *What are the **drivers for substitution** to more sustainable thermal papers?*
4. *What are the **next steps** to be undertaken by each type of stakeholder to move to safer and more sustainable thermal papers? Is there a **need for collaboration**?*
5. *How about the **use of new technologies** (e.g. electronic receipts) in replacing thermal papers? What are the areas of potential applications, the opportunities and challenges linked to those?*
6. *What are the **barriers for adoption of safer alternatives**?*

[1] "Converters » are considered here as companies purchasing large thermal paper rolls from thermal paper manufacturers and converting them in smaller thermal paper-based products (e.g. purchase receipt rolls, labels, etc.) fulfilling the need of their clients.

1. **Knowledge and information:**

Different views appeared on this question. Some actors felt that all relevant information is available to safely substitute BPA, most actors however indicate that crucial information is still missing. The following may still be needed:

- A clear and preferably stable **definition on what is meant with safe and sustainable**. What criteria should we look at to indicate that an alternative is safe and sustainable? With respect to 'safe', actors seem to have some ideas based on regulatory requirements, for 'sustainable' it is somewhat more vague. Authorities would be the main actor to clarify these terms.
- **Better information on hazard and risk on the alternatives** to be able to select the right alternative and to ensure safe use. It may also be helpful according to some actors if authorities indicate what alternatives are 'safe' and push these to stimulate safe substitution. There are some challenges indicated in this respect.
    - As a general principle, industry is responsible for the substitution. The role of government in substitution is about informing, warning, enforcing and supporting when necessary/relevant.
    - REACH system with tonnage bands may hamper the generation of relevant hazard information on alternatives. When developing an alternative, it is often manufactured at low tonnages and consequently limited hazard testing is required by the REACH regulation for low tonnage band. Based on this limited testing there may not (yet) be an indication for a concern. While increasing production, a registrant could move to a higher tonnage band resulting in an increase in hazard information generation. This additional information could indicate risk issues that were not identified earlier. This can entail high business risk in developing (regrettable) alternatives.
    - Consequently, there is a need for improved cheap and reliable screening tests for alternatives.
    - Specifically for endocrine disruptors, there is a need for explicit criteria (in the context of REACH) and consequent testing requirements.
    - How to compare various hazard effects of BPA and its alternatives is also perceived as an essential issue.
- **Need for information on costs and technical performance of alternatives**. Users need clear information on the added value of alternatives e.g. to motivate the adoption of safer alternatives despite the higher price. The higher price of alternatives appears to be an issue when marketing them.
- **Better supply chain communication** to make sure all actors in the supply chain know how to handle the substance/product safely. The possibility to improve communication by the suppliers of the substances used in thermal paper and by the suppliers of thermal papers was mentioned.

- **Sufficient availability of safe alternatives on the market**. Avoid the situation of there being a single supplier on the market. Patents represent a constraint in this respect. This point may be a bit outside information/knowledge but still very relevant for effective substitution possibility for the downstream supply chain actors.

2. **Key stakeholders in the supply chain driving change**

A key stakeholder in driving change for use of more sustainable thermal paper solutions is the **retailer** as the final business user (in essence, it could be any industrial/commercial end-user of thermal paper, i.e. banks, gas stations, restaurants, bus, etc.). The retailer is close to the consumers and, by its position, is able to exercise a fair amount of influence also on the supply chain.

The **manufacturers of thermal papers and chemicals** have been identified as enablers of change which, through availability of non-BPA solutions, are in a position to introduce change. The extent of the change will of course depend on the availability of non-BPA solutions.

Other stakeholders such as **converters** can also play a role, but is considered as less important than the three afore mentioned players. This applies also to **research organizations** which are in a position to provide knowledge and expertise to the supply chain.

Finally, employees through their **trade unions** (ETUC as an example of an umbrella organization or vice-versa) can also play a role in change for more sustainable solutions and can also be considered as part of the supply chain.

3. **Drivers for substitution for more sustainable thermal papers**

The drivers for substitution depend on the type of stakeholder:

- ***Users of thermal papers*** : Users of thermal papers choose to use more sustainable thermal papers principally for their **public image**. They have also the **pressure of NGOs and trade unions** which are aware of BPA hazards (and the ones of its alternatives). They would like to show their dedication to workers' health by using safe products for protecting their employees

- ***Thermal papers converter (transformers)*** : As thermal papers converters provide thermal papers to the retailers, they have to **respond to their consumers' needs** and have to provide them with more sustainable thermal papers. Converters do not have the lead on substitution since they essentially look for products on the market which can respond to the users' demand. They can nevertheless apply a pressure on manufacturers of thermal papers for proposing safer products and make them adopting alternatives even if it is not (yet) obligatory.

- ***For thermal papers manufacturers*** : two main drivers for substitution :

- Manufacturers of thermal papers are forced to substitute by the **regulatory framework**, they have no other choice than complying with the regulations in place.
- When there is no regulatory framework, substitution is driven by the **demand of retailers**. Manufacturers of thermal papers develop new products to respond to the demand of retailers. Most of the time the new products are more expensive, therefore the choice to adopt them or not is the retailers/users' decision, based on additional criteria such as public image or pressure from trade unions/NGOs.

- ***Chemicals manufacturers*** : They follow the **market** and the **regulatory framework**. They can also propose alternatives to thermal paper manufacturers and help them to substitute.

In other words, besides legislative measures, the substitution is driven by the end of the supply chain, from the thermal paper users up to the chemicals manufacturers. The need to use more sustainable products comes from users and the rest of the supply chain follows up.

4. Next steps? Need for collaboration?

Collaboration in the supply chain is a must to better understand several issues such as: what is needed by users, which alternatives are available from providers, what alternatives to BPA are considered safe and not safe? Initiatives like **ChemSec market place** or the **INERIS certification of phenol free thermal papers** are considered good tools in this regard.

The REACH restriction on BPA in thermal paper still raises many questions, e.g. what is meant by "BPA shall not be placed on the market" ? (e.g. is the use of stocks of BPA thermal paper allowed after January 2020? Is it still allowed to manufacture BPA thermal paper for export? etc.) ECHA and/or enforcement authorities should develop **Q&A on the BPA restriction to clarify duties of each actor** in the supply chain[2].

Authorities/policy makers should promote **Sustainable/Green Chemistry** and fund research to avoid regrettable substitution. Assessment programmes of alternatives should continue and be better coordinated at EU level. Instead of assessing substances "one by one", the assessment should use a "**grouping approach**" (e.g. assess all relevant phenols at once).

Coherency is needed between different pieces of EU legislation (e.g. REACH/ Food Contact Materials) in order to avoid "grey zones" and situations where some uses are restricted in REACH but are still possible under other legislations. BPA is restricted in thermal papers but what about (food contact) "films"?

[2] Preparing Q&As for every restriction is a good idea in general.

5. New technologies in replacing thermal papers (e.g. electronic receipts)

Feasibility: It is feasible as such alternatives are already in place in some countries

Scope of application: it is possible for point of sale receipts, public transport tickets, boarding pass, parking tickets, cinema tickets, etc. However, it seems more difficult for labelling (e.g. Post, Food…)

Advantages: There is no more cashier exposure to chemicals substances. There is a decrease in paper use.

Possible issues:

- Customers' personal data has to be protected.
- The delivery of sales receipts, tickets has to be possible to the whole population and not only for the ones having a smartphone or an email address.
- The new technologies have to be available not only for big retailers, but also for smaller businesses like small shops or restaurants.
- Some countries have legal obligation of printed receipts (e.g. Italy).
- It should be avoided that printing is shifted to the consumers (if they need/want a printed receipt). It could possibly be time-consuming for the consumers.
- Changing the tools has a cost which needs to be taken up somewhere in the supply chain.
- Electronic data storing has an environmental cost (that could be reduced if the unsaved tickets are deleted automatically after a certain period).
- It can also have an impact on employment.

The feasibility depends on the acceptance degree of the customers (how much do I agree to do myself, how much data am I ready to share). The perception of such alternatives will probably evolve with time (it will probably become a more obvious behaviour for the next generation of customers).
If some thermal paper uses are replaced by other technologies, it can help to reduce the exposure to hazardous substances. One easy way to reduce the exposure to these substances is to ask the customer if he/she wants the receipt, and if not, receipt should not be printed at all to avoid cashier exposure.

Some other paper-based alternative options have also been discussed, but were not considered relevant:

- Re-writable paper was not considered relevant due to legal problem (how can we be sure that the receipt has not been re-written?)
- non-thermal papers were not considered relevant as alternative options, due to printing time, cost and ink toxicity issues.

6. barriers for adoption of safer alternatives

Three main barriers have been identified during the discussion:

- Lack of demand from users (e.g. retailers) due to the higher price of thermal papers using alternatives. Despite the relatively small increase in price per unit of thermal paper, due to the high quantities purchased by big users the total additional cost is high. Most users are not ready to accept this additional cost, unless there is a legal requirement not to use a certain substance or unless there is a strong push by actors like trade unions, NGOs or media (affecting public image).

- Lack of regulatory certainty regarding the alternatives: several of them are under regulatory scrutiny, what will happen to them? (e.g. SVHC listing? restriction of use?). This is linked with the lack of knowledge on the hazard profile (human health and environment) for the alternatives. What is a safer, more sustainable alternative? Lack of clear direction on where to go.

- Lack of knowledge and understanding of the issue by the users of thermal paper (especially SMEs): not aware of the regulation, not understanding the reasons of concern and the need for change.

The above-mentioned barriers lead to a general inertia of the market in adopting safer alternatives. Other barriers were also mentioned:

- Lack of communication and understanding within the supply chain: what is the concern? what are the solutions? who can provide them? Unclear who does what.
- Switching to alternatives might lead to accepting compromises on the technical performance/quality of the new thermal paper.
- Two main types of alternatives: chemical and technological (e.g. electronic receipts). These are two very different approaches for which users and suppliers have still to come together and explore possibilities for solutions.
- Some users of alternatives holding a patent not allowing others to adopt the alternatives.
- The REACH registration costs for high tonnage substances are a barrier for supply of alternative substances.
- Lack of “green mindset” of the thermal paper users, not willing to switch to safer alternatives due to the higher costs.
- Possible additional barrier: lack of enforcement of regulations in place
- Users not willing to switch to the alternatives if the rest of the market does not switch as well.

Disclaimer: The summary of the discussions does not necessarily represent the opinions of each participant or of the organizers.

Concluding remarks from the organizers:

The dialogue between the different actors of the supply chain of thermal papers and with representatives of different authorities has started. This dialogue allowed to highlight important issues, not always obvious for all actors. The Belgian REACH competent authority (Federal Public Service Health, food chain safety and environment) and the Federal Public Service Economy have committed themselves to work on sustainable substitution. The dialogue between the different actors is a crucial element, but actions are also important. The Belgian authorities will work on the subject in the coming years (evaluation of some alternatives to Bisphenol A, communication…), together with ECHA and other authorities.