DG ENVIRONMENT

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Director-General DG ENV

Meeting with Cefic [redacted] on chemical recycling and mass balance in the framework of SUPD/PPWD

(BU 5 / Room to be defined, 07/09/2021, 11:30)

BRIEFING NOTE

Scene setter / Context:
You will meet Cefic [redacted]. It is likely that their overarching objective is to convince you that industry urgently needs positive policy signals to gain investment security related to the further development and deployment of chemical recycling of plastics.

They likely will argue that chemical recycling can support ambitious recycling and recycled content targets but that for it to work economically, industry must be allowed to assign recycled content to any output of chemical recycling facilities they deem suitable (so called "mass balance approach with free allocation").

However, it remains unclear how it can be ensured that in line with the recycling definition in Article 8 of the Waste Framework Directive (WFD) plastic waste used for internal energy consumption or generating fuel products is not considered recycling.

This is relevant for the recycled content targets of the SUP Directive but also the recycling and recycled content targets in the PPWD and for the calculation of the own resource based on the non-recycled plastic packaging waste in MSs.

Overall, while the role of mechanical plastic recycling is relatively clear, many questions remain open upon chemical recycling (CR), e.g. related to its environmental profile and the conditions under which it can contribute to the achievement of current and future recycling and recycled content targets.

***Chemicals strategy for sustainability**: Although supportive of the European Green Deal objectives related to a circular economy and climate neutrality**, CEFIC has been critical of the Green Deal's zero pollution ambition for a toxic-free environment**. It has criticised the Chemicals Strategy for sustainability for its regulatory agenda**,** strengthening chemicals legislation to protect from hazardous chemicals. Their position is that Europe's chemical industry will be key to build the solutions needed for climate neutrality (e.g. for insulation panels, wind turbines, electric batteries), for which certain toxic chemicals are needed, and*

that the chemicals industry needs support in order to decarbonise its own production processes. CEFIC is very supportive of the concept of 'Safe and sustainable-by-design' (chemicals and materials), for which the Commission (ENV-RTD co-leading) will present criteria in 2022. CEFIC has called for a ***sectoral Green Deal for chemicals*** *to help fulfil the enabling role of Europe's chemical industry.*

CEFIC, [redacted] *is a member on the High Level Roundtable which had its first meeting on 5 May. The second meeting is planned for 25 November with topic "enforcement".*

Name of main contact person: [redacted]
Telephone number:
Directorate/Unit: ENV/B.3 and B2

Participants

Lines to take

Chemical recycling

- While **chemical recycling (CR) of plastics** is showing **promising signs** for the future, its current level of development makes it **difficult to grasp completely the consequence** of its deployment.

- CR has the potential to **contribute to ambitious recycling and recycled content targets** by delivering **high quality output similar to virgin polymers**.

- The Commission is fully aware that for further developing and deploying CR at scale, **important investment decisions** are upcoming.

- CR could constitute a good complement to mechanical recycling in some areas. However, **materials, which are or could be perfectly well recycled via mechanical recycling technologies that are producing less environmental burdens, should not be diverted towards chemical recycling**.

- I agree with industry that **we need to develop clear methodology / calculation rules** on how to calculate CR outputs and related environmental burdens or savings. The first step in this direction will be taken with an implementing decision in the context of the Single Use Plastics (SUP) Directive in early 2022.

- It will be equally important to set up **clear rules on how to verify** such output. **Transparency and traceability** are key concepts to **create the necessary trust and support**.

- In the context of the definition of Article 8 of the Waste Framework Directive (WFD), **plastic waste input used for internal energy consumption or generating fuel products cannot be considered as recycling**.

- We also need to clarify the **environmental impacts of CR** via Life Cycle Assessment (LCA) or Product Environmental Footprint (PEF) to **make sure that chemical recycling does not lead to more energy use, GHG emissions and higher other environmental impacts** than other waste management options and the production of plastic from virgin resources.

- Building on the potential advantages mentioned before, and inspired by the discussions around the Taxonomy[1], currently our thinking is evolving based on the following lines:
  - Despite being a potentially energy-intensive process, **CR has the potential to complement mechanical recycling** in particular **to deal with difficult to recycle and contaminated plastics streams**.
  - The Commission believes that CR can contribute to the circular economy only **where mechanical recycling is not technically feasible in an economically viable manner**, and the **life-cycle GHG emissions** of the chemical recycling processes, excluding any calculated credits from the production of fuels, are **lower than the life-cycle GHG emissions of the incineration with energy recovery** of the equivalent plastic **and of the production of plastic from virgin resources**.
  - While **some kind of mass balance accounting will be needed** to take into account CR in a balanced manner, the **exact calculation and verification rules are still to be determined**. **Transparency and traceability, e.g. via a third party certification scheme, will be key.**

Chemicals Strategy for Sustainability

- The vision of the Chemicals Strategy for Sustainability is to move towards a toxic-free environment, where chemicals are produced and used in a way that maximises their contribution to society; achieving the green and digital transitions, while avoiding harm to people and the planet.

- The European Green Deal defines three pillars for a sustainable economy and society: zero pollution for a toxic-free environment, climate neutrality, and circularity. The way chemicals are produced and used is key to all three goals.

- These are the three pillars that drive the vision and objectives of the Chemicals Strategy, and the basis for the need to phase out as far as possible the most harmful chemicals and to produce and use all chemicals more safely and more sustainably.

- We need to reduce the impact of chemical production on climate, and at the same time we need innovative chemical solutions for achieving climate neutrality;

- We need safer chemicals in materials and products to enable clean circularity and safe recycling. Reaching these goals requires a fundamental transition of our production and consumption system towards chemicals and materials that are safe and sustainable through their entire lifecycle, from design to end of life.

- The concept of 'safe and sustainable-by-design' lies at the very heart of this multiple transition, as it aims to ensure that chemicals, materials and products are

[1] Regulation (EU) 2020/852

designed, produced and used in a way that does not harm people and the environment.

- We will work with stakeholders and experts in the coming months and present criteria for this concept next year. Those will help us steer policies, funding and investments for safer and more sustainable chemicals.

- We are convinced that the transition we are aiming for in the CSS is fundamental to making the EU industry the global leader in safe and sustainable chemicals and regaining global market share.

- It is clear industry needs to do more to achieve the sustainability objectives that we have set ourselves to meet for the EU and the world. Is chemical recycling really contributing to our sustainability objectives?.

(general:)

- The Chemicals Strategy is our offer to industry to collaborate and provide the necessary help to industry to get there. The Strategy puts in place regulatory and non-regulatory measures to promote and support this transition, including by mobilising funding and investments for development, commercialisation and uptake of safe and sustainable chemicals and materials.
- Several instruments devote ample funding also to greening production processes; the Innovation Fund, in particular, promotes the transition to climate neutrality, circularity and sustainability with a total amount of EUR 10 billion until 2030.
- We will cooperate closely with industry and all other key stakeholders, as the transition needs a joint effort from all.
- We appreciate your interest in being involved in the high-level roundtable that we have set up, as this will allow us to monitor progress together, to share best practices and to exploit synergies.

Defensives points/Q&A

Question: If a large portion of plastic waste input into chemical recycling at the end would not count towards recycling and recycled content targets, why should industry risk investing in building large chemical recycling facilities in the first place? It would not be economically viable to do so.

Answer: Also chemical recycling needs to comply with the relevant recycling definitions of the Waste Framework Directive (WFD). Article 3(17) of the WFD clearly defines recycling as not including *"energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations"*. In the framework of the revision of the WFD, the Commission will consider whether a definition of chemical recycling is

necessary. We also need to ensure that we keep a level playing field between the different recycling technologies.

Question: Industry knows best its processes. Why should industry not be allowed to assign the plastic waste input to those output streams of a chemical recycling facility that make most sense using a "mass balance approach with free allocation"?

Answer: The recycled content in plastic products cannot be measured. The flow of the plastic waste input cannot be traced throughout a complex and large CR plant. Therefore, we need to create the trust and confidence in that what is counted as recycling and recycled content actually has been recycled and not used as energy source during the process or to generate output that ends up as fuel product.

Chemicals Strategy for Sustainability:

Why did the Commission not carry out an impact assessment on the overall impact of the Chemicals Strategy before its adoption? (as CEFIC had asked for).

The Chemicals Strategy is based on extensive evaluations of the EU chemicals policy, including a Fitness Check of all chemicals legislation, which looked into the interlinkages and coherence of the interface between over 40 pieces of chemicals legislation that regulate the way chemicals are assessed and managed. Those evaluations identified the gaps, weaknesses, and overlaps of the EU legal framework on chemicals, and the Chemicals Strategy announces actions to fill those gaps as well as the challenges chemicals policy needs to tackle.

Any legal proposals announced in the Strategy will be subject to impact assessments as per the Commission's Better Regulation principles and guidelines.

How do you intend to develop the criteria for Safe- and sustainable-by-design?

We are currently putting in place the framework for developing further the concept of safe and sustainable chemicals, closely in line with the ongoing work under the Circular Economy Action Plan, in particular the upcoming initiative on sustainable products.

We are building on all the existing relevant concepts and initiatives, in particular those related to green and sustainable chemistry promoted in the EU as well as internationally.

The involvement of stakeholders will be key in developing implementable criteria, and this is why we intend to establish an inclusive EU network of experts and stakeholders to enable multidisciplinary design processes.

A first stakeholder workshop (attended online by more than 500 participants) was organised on 19 March, and another will follow in the coming months, to present the state of our reflections on the methodology for the criteria. The final criteria will be presented at the end of next year and will help us to track progress on the Strategy's objectives, but and most importantly they will support industry and authorities on driving future funding and investments.

The chemical industry wants to work constructively towards realising the EU's Green Deal objectives, but is very worried about the cumulative impact of the multitude of policy initiatives, which are not all coordinated.

The measures that we established in the CSS were based on extensive evaluations and consultations of our legal framework on chemicals.

However, we know it is important to guarantee coherence and synergies during the implementation of the Strategy and its various actions, and the High Level Roundtable that CEFIC is also a member of will help us to regularly discuss this with stakeholders.

I can also reassure you that the Commission as a whole is highly committed to achieving the goals of the Strategy across policy areas, and that internal coordination is fully in place to ensure coherence and alignment of the upcoming initiatives announced under various Commission strategies.

There are a lot of good ideas in the R&I area, but they do not seem to be integrated in the Commission's policy agenda.

To the contrary, the European Framework Programmes for Research and Innovation have been supporting and will continue to support the implementation of the European Commission's policy agenda and the delivery on its priorities, including the Chemicals Strategy.

Some directly relevant examples include initiatives such as the public-private Research and Innovation partnership on the Assessment of Risk of Chemicals (PARC), the European Cluster to Improve Identification of Endocrine Disruptors or the European Human Exposome Network that looks at how various sources of pollution impact human health and will develop a toolbox for evidence-based decision making.

Most importantly, the EU's Research and Innovation programmes fully support the transition to **Safe- and Sustainable-by-Design** chemicals, materials and products. We will start by defining **criteria for Safe- and Sustainable-by-Design**, and we will create an **EU-wide support network** to promote the development and uptake of safer chemicals and materials.

We will **mobilise our financial incentives** - including **cohesion funds and recovery instruments** - to support industry in this transition and to reward frontrunners. Those will support in particular research and development in **advanced materials**, **low-carbon and low environmental impact production processes**, innovative business models, the re-skilling and up-skilling of the workforce and digital technologies (e.g internet of things, big data, smart sensors).

Horizon Europe, the future Framework Programme for Research and Innovation, will support the implementation of the European Commission's priorities more strongly than previous framework programmes. A Horizon Europe Commission team has paid **special attention to co-design and co-creation with all relevant stakeholders**, strengthening common ownership of the research and innovation policy.

This vision is fully reflected in the **Research and Innovation Strategic Plan 2020-2024** that focuses on the contribution the R&I activities to the Commission's headline ambitions.

Background information (max. 2-3 pages)

The European Coalition for CR, founded by CEFIC and PlasticsEurope[2], defines CR as*: "converting polymeric waste by changing its chemical structure to produce substances that are used as products or as raw materials for the manufacturing of products. Products exclude those used as fuels or means to generate energy".*

There are different technologies, which fall under CR, but there is no general classification system for CR. The following CR technologies can be listed from lowest to highest degree of changing the chemical structure of the ingoing plastic waste (which often correlates with energy consumption): solvent-based purification, depolymerisation (e.g. solvolysis, enzymolysis), pyrolysis and gasification.

While a comprehensive and robust analysis of the life cycle impacts of the different CR processes is lacking, some evidence points to advantages compared to the combination of plastic waste incineration and virgin production of new plastics as well as to still predominant down-cycling practices. In many cases, output from mechanical plastic recycling does not replace virgin plastic input (because of quality issues), however, the high quality output of chemical recycling can achieve this.

Many experts agree that the ambitious circular economy policy targets mainly regarding recycling but also ambitious recycled content targets cannot be reached with mechanical recycling only, as the quality of the plastic waste and the resulting recycled plastic is insufficient.

CR could be a necessary complement, in particular for 'difficult to recycle' plastics and in applications where mechanical recycling is currently not reaching sufficient levels of quality, such as for food contact materials.

However, sustainability issues (mainly its high-energy intensity and GHG emissions) need to be resolved.

New forms of chemical recycling can also lead to other products than feedstock for new plastic: it can transform waste of high calorific value into hydrogen and industry grade CO2 to be used in agriculture as well as the generation of synthetic fuels.

Industry is working intensively on research and development on CR, involving many plastic producing companies. These companies see the Commission's initiatives on plastics as an opportunity to develop these technologies further. They argue they need investment security to continue.

There is a risk of negative impacts on the mechanical recycling industry. Once investments in large scale CR facilities are done, the incentive to buy up large amounts of plastic waste to feed the plant might divert valuable input material away from mechanical recycling. Also, as CR can treat some currently mechanically unrecyclable plastic, there is a risk to slow innovation in better design for recyclability.

Article 3(17) of the Waste Framework Directive defines recycling as *"any recovery operation by which waste materials are reprocessed into products, materials or*

[2] http://www.coalition-chemical-recycling.eu/

substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations".

The JRC is looking into the need to amend the definition of recycling in the Waste Framework Directive (WFD) and the related calculation rules (by 2022), which could lead to proposals for the revision of the WFD in 2023. JRC is running a study on this with wide stakeholder involvement.

The EC is preparing a position on this complex issue based on Life Cycle Assessment impacts of this solution and robust traceability measurement of the inputs and outputs of this process. Also, the results of pilot projects still need to be expanded to provide a more representative picture of the possibilities of this technology. We will continue supporting innovation through research programmes, including Horizon 2020 and Horizon Europe, including Life Cycle Assessment.

Implementing Decision (EU) 2019/665 describes a framework for mass balance calculations in the context of the PPWD but no clear calculation and verification rules: *"Where packaging waste materials enter recovery operations whereby those materials are not principally used either as a fuel or other means to generate energy, or for material recovery, but result in output that includes recycled materials, fuels or backfilling materials in significant proportions, the amount of recycled waste shall be determined by a mass balance approach which results in taking account only of waste materials that are subject to recycling."*

Major (existing and upcoming) policies will be impacted by decisions on the role of CR:

- 2022: The SUP Directive is the first EU level legislation mandating a minimum recycled plastic content, in this case for PET SUP beverage bottles 25% as of 2025 and for all SUP beverage bottles 30% as of 2030.
- 2022: The revision of the PPWD will foresee recycled content targets at least for some plastic packaging. Existing plastic recycling targets (50% by 2025, 55% by 2030) will be affected as well.
- The CEAP 2.0 mandates the Commission to suggest further recycled content targets for plastics in the areas of vehicles and building/construction.
- The plastic-based Own Resource contribution of Member States to the EU budget (€0.80 per kilogram of plastic packaging waste that is not recycled).

BACKGROUND CHEMICALS STRATEGY FOR SUSTAINABILITY

Chemicals Strategy implementation – planning and timing

The Chemicals Strategy was released together with a detailed annex defining the main actions announced in the Strategy, including their tentative timing and the pieces of legislation concerned by each action.

CEFIC is very keen on **swift implementation of the innovation and enforcement actions**, while they believe that the regulatory actions announced will have a strong impact on the competitiveness of industry.

The most important deliverables for 2021 and 2022 will be a balance of regulatory and non-regulatory (supporting) actions, in particular:

Launch of the **High Level Roundtable**: first meeting took place on 5 May, second meeting scheduled for 25 November (topic: enforcement) [redacted]

Opening of the **consultations for REACH and Classification, Labelling and Packaging (CLP) revisions**: Summer 2021 (CLP proposal expected by end 2021 and REACH proposal expected by end 2022).

Launch of the '**One substance, one assessment'** process (to simplify assessment and regulatory processes on chemicals): Q1 2021.

Definition of '**Safe and sustainable by design'**, establishment of an EU-wide support network and of key performance indicators to measure the industrial transition: 2021-2022.

Financial support for the development, commercialisation, deployment and uptake of safe and sustainable-by-design substances, materials (integrated in **Horizon Europe**, **smart specialisation and cohesion funds**, **LIFE** programme, **national recovery plans**): as of 2021.

Actions to step up **enforcement and surveillance**, including proposals to set uniform conditions and frequency of checks for certain products (under the **Market Surveillance Regulation**) and set up of an audit capacity on national enforcement systems (under REACH): 2021-22.

Develop a **Research and Innovation agenda for chemicals**: 2022.

Annexes: Letter from Cefic; CVs

Annex I: Letter from Cefic

Brussels, 29th July 2021
Dear [redacted], Dear [redacted]
Further to our meeting on the 27th of May 2021 on the topic of mass balance and Recycled Content calculations for the 2025 and 2030 targets as set by the Single-Use Plastics Directive, **where we conveyed our position against the polymer-only model**, we are now writing to complement our feedback and further engage on your request for input on the proposals made in the paper drafted by Eunomia and presented in the workshop on the 29th of April 2021.

Cefic supports the objective of a climate-neutral European economy by 2050 and the transition to a circular economy will be fundamental to achieving this, as well as the broader goals of the European Green Deal. Chemical recycling of plastic waste has an enormous potential to contribute to this transition. **The industry is undertaking efforts and is investing to replace an ever-increasing part of feedstock with waste-based secondary raw materials**. To stimulate this change of feedstock, legislation must undergo the paradigm shift from a waste orientation to a resource orientation.

In the recent weeks, we have studied, together with our members, the 'Recycled Content in Plastic Beverage Bottles – Workshop Briefing Paper' shared by Eunomia in April 2021. **We appreciate the recognition of the contributions non-mechanical recycling can make, the considerations of chain of custody approaches, and the role of a credit-transfer** in achieving the 2025 and 2030 targets.

Mass balance methodology can accelerate feedstock transition and enables rapid innovation of processes and business models, provided it is reinforced by a solid legislative framework. In our assessment, we consider the free attribution model as proposed by Eunomia to be the closest to our mass balance position, based on the societal contributions it can make and its potential to quickly increase the recycled content in our economy. Based on this model, Plastics Europe recently announced investments in the scale-up of chemical recycling planned by member companies amounting to €7.2 billion by 2030. [2]

We stress our commitment to be more circular and thus to produce recycled feedstock and to speed up the transition of a circular economy for plastics by using our existing fully integrated production facilities. This matters when considering the overall sustainability impact. If needed, to align a mass balance model with the presented reading of the current recycling definition as per the Waste Framework Directive, **we can support the direction of Eunomia's proposal for the 'fuel exempt' model**. **We propose to refine this model to 'fuel *use* exempt'.**

Our suggestion is driven by the understanding that the recycling step is corrected for (1) system/process losses, (2) fuel generated and used by the process (auto-consumption), and (3) substances generated and used as fuels. We believe the above supports the objective of closing the economic material circle.

We thank you for considering our input on this important topic and we would welcome an opportunity to further discuss, clarify and elaborate on our proposal. Would it be possible to have a meeting at your earliest convenience so we can have your feedback and learn about the next steps and the possibilities to contribute to your ongoing work? If we may, we will contact you to explore mutually convenient dates. Looking ahead, we affirm our will to work together with you for a circular economy and a resource-oriented legal framework, enabling the transitions to 2050.

Yours sincerely, [redacted]

Annex II: CVs