Fitness check of the EU legislation with regard to endocrine disruptors – Stakeholder survey

Overview of responses submitted by the Health and Environment Alliance (HEAL)

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The Health and Environment Alliance (HEAL) welcomes the possibility to contribute to the stakeholder survey of the fitness check of EU legislation with regard to endocrine disrupting chemicals (EDCs). EDCs are synthetic chemicals that interfere with the natural hormones in our bodies. Decades of peer-reviewed research has linked exposure to EDCs to a number of health impacts, including cancer, obesity and diabetes, infertility and other fertility disorders, asthma, thyroid disorders, lower IQ, hyperactivity and ADHD, and early puberty.

HORIZONTAL APPROACH TO THE IDENTIFICATION OF ENDOCRINE DISRUPTORS

Question: To what extent does the absence of harmonised criteria pose a problem to a coherent approach for the identification of endocrine disruptors?

Answer: It is an important problem, leading to incoherent identification of endocrine disruptors across sectors.

Identification is a fundamental step to understand and minimize human exposure to EDCs, but the lack of provisions to do so across sectors and regulations leads to important protection gaps. Currently, EDC identification is foreseen in the REACH, biocides and pesticides regulations, whereas people are being exposed daily via numerous channels. Well-known identification gaps include cosmetics, toys, or food contact materials. Existing identification provisions differ between REACH and biocides/pesticides and are implemented by different bodies.

In HEAL's view, identification should be based on the hazard profile of the substance, in line with the latest scientific knowledge and the different levels of evidence. Because of EDCs specificities (low-dose effects, non-monotonic dose response, varying windows of human vulnerability, possible delays between exposure and effects, cocktail effect) every effort should be made to facilitate identification of EDCs across sectors.

Question: Do you think that the lack of a hazard category covering endocrine disrupting properties in the CLP Regulation and/or GHS poses a problem for the coherent identification of endocrine disruptors?

Answer: No.

Question: Do you think that the lack of a hazard category covering endocrine disrupting properties in the CLP Regulation and/or GHS poses a problem for the coherent risk management of endocrine disruptors?

Answer: No. Hazard identification is the first step to adequate risk management of chemicals, to inform consumers, workers, companies about their intrinsic properties and develop adequate regulatory measures.

In this regard, creating a specific hazard category in the CLP regulation is one possible way forward to improve ED risk management. It would help recognize that EDC hazard is at least equivalent to that of CMRs and, if pursued, it should include EDC characterization according to the level of scientific knowledge (known, presumed, suspected). However, a CLP hazard category alone without improvements to current risk management will not improve the level of human health and environmental protection (hazard categorization and better risk management are both necessary).

Improved ED identification can happen without a CLP category and should not be blocked by its absence. A GHS category is less urgent than upgrades of the EU regulatory framework.

Question: Do you think that a category of suspected endocrine disruptor should be introduced?

Answer: Yes. Including a category of suspected EDCs is necessary to reflect the varying levels of evidence available and the current limitations in test methods.

The WHO 2012 report includes a reference to 'potential' EDCs that might be helpful in doing so. Because of the ubiquitous presence of EDCs and the high health care costs and lost earnings linked to exposure (at least 163 billion EUR/year in Europe), it can also help risk managers prioritizing chemicals to be assessed.

Categorisation as suspected EDCs should result in a ban with possible derogations (in cases where essential uses can be

demonstrated and no suitable alternatives exist) and adequate information being communicated to the supply chain, workers, and consumers. The fact that several Member States (e.g. Denmark, France) are taking initiatives to identify suspected EDCs is another illustration of the importance to do so at European level.

RATIONALE AND CONSEQUENCES OF DIFFERENT REGULATORY APPROACHES

Question: Are you aware of any inconsistencies in the way chemicals are identified and controlled with regard to endocrine disrupting properties across regulated areas in the EU?

Answer: Yes. Identification and risk management inconsistencies of EDCs are a reality and hinder adequate protection of people's health. Examples include:

- ED identifications under REACH without automatic consequences in other regulations, e.g. BPA is still tolerated in food contact materials. EFSA is performing additional risk assessments, which is totally unnecessary considering the evidence of harm at low doses. REACH identification should at minimum trigger automatic bans in consumer products.
- Regulatory management flowing from identification varies across laws when it exists: de facto ban for pesticides; ban or substitution for biocides; authorisation process under REACH.
- Windows of vulnerability are not clearly defined and assessed in risk assessments involving EDCs.
- Substances are assessed individually whereas we are daily exposed to a mixture of chemicals. The cocktail effect is not taken into account in individual or across regulations. Analogs to known EDCs are not currently addressed as part of a group approach, while it would highly benefit health protection, increase efficiency and provide more visibility to investors.

Question: In your opinion, how do hazard-based criteria for identifying endocrine disruptors in combination with a hazard-based approach to decision-making affect the following objectives?

Answer:

	Very negatively	Negatively	No effect	Positively	Very positively	Don't know
Human health protection	○	○	○	○	**X**	○
Environmental protection	○	○	○	○	**X**	○
Functioning of the internal market	○	○	○	○	**X**	○
Competitiveness and innovation	○	○	○	○	○X	

Question: In your opinion, how do hazard-based criteria for identifying endocrine disruptors in combination with a risk-based approach to decision-making affect the following objectives?

Answer:

	Very negatively	Negatively	No effect	Positively	Very positively	Don't know
Human health protection	○X	○	○		○	○

Environmental protection	X					
Functioning of the internal market	X					
Competitiveness and innovation		X				

Question: Are you aware of any gaps or overlaps in the way endocrine disruptors are regulated in the EU?

Answer: Yes. Clear management logics flowing from ED identification are currently lacking in each relevant EU law. Obvious gaps include: food contact materials, toys, cosmetics, workers regulations. Where regulations technically allow for ED management, test requirements for EDCs are inadequate (including REACH, pesticides, biocides, and medical devices).

To date, ED regulatory options have not allowed banning any pesticide or biocide. When it comes to REACH, the time lag between identification and regulation via authorisation takes years. Analogs to known EDCs such as BPA could have been prioritized by regulators years ago and addressed as a group, based on a precautionary interpretation of existing scientific knowledge.

The European Commission own supporting study on a non-toxic environment found that overall, there is insufficient management of endocrine disruptors. Acknowledging that EDCs must be treated as non-threshold chemicals across laws is an important part of solving this situation.

Question: Have you experienced issues or problems because endocrine disruptors are regulated differently in the EU compared with non-EU countries?

Answer: Yes. Considering that the WHO warns that EDCs are "a global threat that needs to be resolved" (State of the Science report, 2012), different regulatory frameworks result in people being unequally protected from their effects across the globe.

The possible export of banned/strictly regulated substances in Europe to other parts of the globe is also a problem (see PIC report 2018: the EU exported 700 000 PIC chemicals that year, including atrazine, a known ED banned in the EU, or EDCs for which the first REACH authorisations are currently assessed e.g. nonylphenols). Conversely the import of banned substances (only REACH restrictions regulate imports and official enforcement data suggests that unsafe chemicals regularly enter the EU market without adequate surveillance and information).

Double standards between virgin and recycled products result in possible weakening of regulations for EDCs even in the EU (eg lead or DEHP in recycled PVC).

Question: Do you have any further comments on the coherence of EU legislation with regard to endocrine disruptors?

Answer: Coherence gaps within the EU legislative framework with regards to EDCs are severe and numerous.

To start with, considering the scientific consensus about the threat of EDCs for people's health and the international recognition that it requires action, the state of existing identification provisions and regulatory measures are incoherent with founding principles of the EU treaties (precautionary principle, polluter pays principle).

Because EDCs are not properly addressed across laws, the general objective of high protection of human health is also not coherently met. Recognising that EDCs are chemicals of concern level equivalent to that of CMRs and PBTs, and that they must be addressed as non-threshold substances is important to increase overall coherence.

The lack of overarching approach to chemicals (which the Commission was committed to deliver through a non-toxic environment strategy by 2018 according to the 7th EAP) remains an important block and in the context of the new circular action plan, real improvements will only be made if the Commission commits to putting non-toxic cycles at the heart of circularity.

This lack of coherence has been highlighted in the Chemicals fitness check results (check) and both the European Parliament (Resolution on EDCs, April 2019) and the Environment Council (Conclusions, June 2019) have requested the Commission to take measures to address it.

EFFECTIVENESS IN ACHIEVING POLICY OBJECTIVES

Question: Do you agree with the following statement? "The regulatory process to identify and control substances with endocrine disrupting properties in Biocidal Products is effective in…"

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Protecting consumers by minimising exposure to endocrine disruptors	○	○	○	○	X○	
Protecting workers by minimising exposure to endocrine disruptors	○	○	○	○	X○	
Protecting citizens by minimising exposure to endocrine disruptors via the environment	○	○	○	○	X○	
Protecting wildlife by minimising exposure to endocrine disruptors via the environment	○	○	○	○	X○	
Improving the functioning of the internal market	○	○	○	○	X○	
Enhancing competitiveness and innovation	○	○	○	○	X○	

In principle, the BPR provides the needed tools to identify and adequately regulate EDCs (identification criteria, guidance document, clear regulatory consequences flowing from the identification). However, it is not implemented in a health-protective way.

Firstly, the EDC criteria require a very high level of evidence. This is particularly problematic in the context of biocides because data sets are old and inadequate to implement the criteria. To date, the adaptation of the ED test requirements in the BPR has also not been finalized.

Moreover the combination between the BPR work programme delay and the only recent introduction of ED criteria means that numerous substances that should have been assessed against potential ED properties have not undergone such assessment yet. These substances are on the market and people are exposed to them without even knowing about it.

Finally, since the criteria entered into force, only 2 biocides active substances have been identified, and non-approval has not been proposed for any of them. In the case of DBNPA, the biocides committee recognised that the substance meets the

exclusion criteria for human health and the substitution criteria for environment, and that there is 'no safe level of exposure'; however it provided a positive opinion for approval of several product types, under several conditions that raise questions about their enforceability and requesting confirmatory data to be submitted a posteriori. In the case of cyanamide (a carcinogen, reprotoxicant, skin sensitizer in addition to being an ED), a minority opinion submitted by Denmark following the committee positive opinion for approval for 2 product types raises the general question about how the analysis of alternatives is being performed to decide on the approval of identified EDCs. This is important due to EDCs' specificities (e.g. low doses effects).

Question: Do you agree with the following statement? "The regulatory process to identify and control substances with endocrine disrupting properties in Plant Protection Products is effective in…"

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Protecting consumers by minimising exposure to endocrine disruptors	○	○	○	○	X○	
Protecting workers by minimising exposure to endocrine disruptors	○	○	○	○	X○	
Protecting citizens by minimising exposure to endocrine disruptors via the environment	○	○	○	○	X○	
Protecting wildlife by minimising exposure to endocrine disruptors via the environment	○	○	○	○	X○	
Improving the functioning of the internal market	○	○	○	○	X○	
Enhancing competitiveness and innovation	○	○	○	○	X○	
Promoting alternatives to animal testing	○	○	○X	○	○	

In principle, the plant protection product regulation (PPPR) provides the needed tools to identify and adequately regulate EDCs (identification criteria, guidance document, de facto ban flowing from the identification). However, several problems hinder its implementation in a health-protective way.

Firstly, the EDC criteria require a very high burden of proof for identification, made even more problematic by the fact that

the adaptation of the test requirements for EDCs in the PPPR has not been finalised. Since the criteria entered into force in November 2018, no pesticide active substance has been identified as an EDC. In the meantime, active substances that would be considered as typical endocrine disruptors by the scientific community such as chlorpyrifos (see Endocrine Society) are not considered as such by EFSA (see EFSA statement on chlorpyrifos, 2019).

This supports the concerns expressed earlier by the public health and scientific community about the unfit character of the criteria to identify substances posing a threat to human health and the difficulty to use independent scientific evidence as a basis for identification in their implementation.

Recently, France announced the withdrawal of all authorisations for products containing the active substance epoxiconazole, based on ANSES conclusion that the EDC criteria are met for humans and non-target organisms (May 2019). To date, no intention for a follow-up ban at the European level has yet been publicly communicated; if this is confirmed, this would be a missed opportunity to use the criteria in a health-protective way.

Question: Do you agree with the following statement? "The regulatory process to identify and control substances with endocrine disrupting properties under REACH is effective in…"

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Protecting consumers by minimising exposure to endocrine disruptors	○	○	○	○	**X**	○
Protecting workers by minimising exposure to endocrine disruptors	○	○	○		x○	
Protecting citizens by minimising exposure to endocrine disruptors via the environment	○	○	○	○	**X**	○
Protecting wildlife by minimising exposure to endocrine disruptors via the environment	○	○	○	○	**X**	○
Improving the functioning of the internal market	○	○	○	○	**x**	○
Enhancing competitiveness and innovation	○	○	○	○	**X**	○
Promoting alternatives to animal testing	○	○	**X**	○	○	○

The REACH regulation allows for identification of EDCs based on hazard in the context of identifications of substances of very high concern (article 57(f)). This is a substance by substance assessment, which requires the member state proposing the identification to demonstrate an equivalent level of concern based on a weight of evidence approach. The process is long (only 16 substances have been identified at the time of writing) and it places a high burden of proof on the authorities (BPA, one of the world's most documented chemical, was only identified as an EDC in 2017).

The test requirements under REACH are not up to date to account for all the evidence relevant to ED properties, and this also hinders the process. Furthermore, there is a large time lag between the identification of a substance as an ED and the risk assessment process leading to its actual regulation. For instance, it is only in 2019 that the first authorisation requests for octylphenols and nonylphenols started being processed by the Risk Assessment Committee (some of these have been on the candidate list since 2011).

Finally, the low number of EDC identification can also be related to the substance-by-substance approach that has prevailed so far. Using a grouping approach for analogs of already identified EDCs (e.g. for bisphenols) could save the authorities time and resources, while contributing the more efficient, faster and overall more health-protective identifications.

Question: Do you agree with the following statement? "The regulatory process to identify and control substances with endocrine disrupting properties in Cosmetics is effective in…"

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Protecting consumers by minimising exposure to endocrine disruptors	○	○	○	○	**X**	○
Protecting workers by minimising exposure to endocrine disruptors	○	○	○	○	**X**	○
Improving the functioning of the internal market	○	○	○	○	**X**	○
Enhancing competitiveness and innovation	○	○	○	○	○	**X**
Promoting alternatives to animal testing	○	○	X○	○	○	

The cosmetics regulation lacks provisions to identify EDCs based on hazard and fails to specify automatic risk management measures for them (in contrast with CMRs, which are prohibited with possible derogations).

Moreover, ED identification for regulatory purposes is made even more difficult in the context of the ban on animal testing in cosmetics (except for chemicals also assessed under REACH). Because there are currently no internationally validated alternative methods (in vitro, in silico) allowing for testing of the relevant endpoints for ED identification, this means it is impossible to properly identify EDCs in this context – a concern raised by the SCCS chair himself in response to the 2018 public consultation on the EDC roadmap. It is particularly concerning that the European Commission totally overlooked this important aspect in its review of the regulation (2018), wrongly using the 2014 ban of 5 parabens as an illustration of risk

identification and management of EDCs (the ban was a result of the industry decision not to defend those substances, and therefore no adequate data was provided to the SCCS to proceed with an assessment).

In the context of the cosmetics regulation, minimum steps would be to apply the precautionary principle for all substances suspected to be endocrine disruptors in the absence of animal data (ban unless proven NOT to be an EDC) and to take into account the cocktail effect because nobody is exposed to one substance at the time. As is the case for CMRs, all known, presumed and suspected EDCs should be added to annex II (list of prohibited substances).

Question: Do you agree with the following statement? "The regulatory process to identify and control substances with endocrine disrupting properties in Medical Devices is effective in…"

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Protecting consumers by minimising exposure to endocrine disruptors	○	○	○	○	X	○
Protecting workers by minimising exposure to endocrine disruptors	○	○	○	○	○	X
Improving the functioning of the internal market	○	○	○	○		X
Enhancing competitiveness and innovation	○	○	○	○	○	X
Promoting alternatives to animal testing	○	○	X○	○	○	

The response to this question is made difficult by the upcoming entry into force of the Medical Devices Regulation in May 2020, and is hence based on earlier rules. The regulation refers to the ED identification criteria agreed in the context of the biocides product regulation (of which weaknesses we have mentioned above).

Because test requirements refer to the REACH regulation, overall the provisions are too weak to allow the proper identification of EDCs in medical devices, and as a consequence, to allow their adequate regulation in a health protective way.

Question: Do you agree with the following statement? "The regulatory process to control substances with endocrine disrupting properties under the Water Framework Directive is effective in…"

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Protecting citizens by minimising exposure to endocrine disruptors via the environment	○	○	○	○	○X	
Protecting wildlife by minimising exposure to endocrine disruptors via the environment	○	○	○	○	○X	

The Water Framework Directive is not effective in protecting citizens from exposure to endocrine disruptors. The recent REFIT exercise pointed a lack of coordination observed between the WFD and chemicals regulation, hindering the control of the pollution at the source and limiting the effectiveness of the WFD.

Only the drinking water directive through its recent recast sets a limit value for bisphenol A based on the WHO recommendations, reduces the limit values for essential parameters (eg lead), introduces limit values for a number of PFAS. It also establishes a watchlist for a number of substances (including EDCs beta-estradiol and nonylphenol), but only without triggering automatic policy action to reduce their presence. Overall this is way too weak to protect humans and the environment, especially considering that detection of EDCs in the water means emissions have already occurred and humans are thereby exposed.

Finally, the water case is a striking case of non-application of the "polluter pays principle". While companies releasing the chemicals into the environment have virtually no obligation regarding ED assessment, the burden of monitoring and follow up action weighs mostly on public authorities and the taxpayers.

AGGREGATED EXPOSURE AND COMBINED EFFECTS

Question: Do you agree with the following statements?

Answer:

	Strongly Agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Humans are protected by the current regulatory framework from the risks associated with the aggregated exposure to one substance with endocrine disrupting properties from all exposure sources	○	○	○	○	x	○
Wildlife is protected by the current regulatory framework from the risks associated with the aggregated exposure to one substance with endocrine disrupting properties from all exposure sources	○	○	○	○	x	○

Identification gaps and weaknesses mentioned in previous answers and the lack of coherence in ED regulations of exposure to multiple sources particularly acute. The failure of the EU regulatory framework to assess EDCs and protect humans in the context of our daily exposure to mixtures of chemicals from multiple sources is obvious and has long been acknowledged (see Environment Council Conclusions, December 2009). It has been highlighted in the Commission's own studies and reviews (supporting study on a non-toxic environment, chemicals fitness check…).

In June 2019, the Environment council called on the Commission "to present options to introduce requirements in the relevant pieces of EU chemicals legislation to ensure that the combination effects of chemicals (cocktail effects) and the combined exposure of humans and the environment from all relevant sources are properly and consistently addressed in the risk assessment and risk management processes".

Question: Do you agree with the following statements?

Answer:

	Strongly agree	Moderately agree	Neither agree nor disagree	Moderately disagree	Strongly disagree	Don't know
Humans are protected by the current regulatory framework from the risks associated with the combined exposure to different substances with endocrine disrupting properties (combined effects)	○	○	○	○	X	○
Wildlife is protected by the current regulatory framework from the risks associated with the combined exposure to different substances with endocrine disrupting properties (combined effects)	○	○	○	○	X	○

Because EDCs are ubiquitous, it is today impossible for an individual to consciously avoid exposure. On the scientific side, proposals have been made to address the challenge of mixtures and start adapting risk assessments accordingly (See Kortenkamp et al 'State of the Art Report on Mixtures toxicity', 2009; KEMI, 'Hazard and Risk Assessment of Chemical Mixtures under REACH', 2013; Kortenkamp et all, 'Should the scope of human mixture risk assessment span legislative/regulatory silos for chemicals?', 2015; Technical University of Denmark, 'Chemical Mixture Calculator'', 2020).

According to recent findings from the EDC MixRisk project, health risks associated with combined EDC exposures are currently systematically underestimated, clearly leaving people unprotected. Exposure to mixtures of EDCs at the prenatal stage has been associated with adverse health and development effects of children in three domains: sexual development, neurodevelopment and metabolism and growth. Mixtures tested in the project affected hormone-regulated and disease-relevant outcomes in various models at the same concentrations found in pregnant women. Using the assessment approach developed through the project indicated a higher risk for exposed children than when using methods focusing on single chemicals.

VULNERABLE GROUPS

Question: Do you think that the following groups are sufficiently protected from exposure to substances with endocrine disrupting properties?

Answer:

	Yes	No	Don't know
unborn through exposure during pregnancy	○	X	○
newborn up to the age of 3	○	X	○
children until puberty	○	X	○
young persons around the age of puberty	○	X	○
pregnant women	○	X	○
adults in general	○	X	○
people at work	○	X	
elderly	○	X	○
people with illnesses	○	X	○

Overall, the EU regulatory framework fails to define vulnerability and to provide coherent and adequate provisions to take it into account across sectors. This leads to different levels of protection across EU laws and is acknowledged in the results of the chemicals fitness check and the June 2019 Environment council conclusions.

Based on the scientific knowledge on EDCs, HEAL considers that pregnant women, babies in utero, children under 3, teenagers and the elderly are highly vulnerable to EDC effects. Workers either in the chemical industry or through the chemical input to other industries or sectors (eg agriculture) their families, as well as residents near chemical facilities or agricultural areas relying on chemicals inputs should also be considered particularly vulnerable. Such categorization appears to be in line with proposals made in the European Commission support study on a non-toxic environment.

Extensive evidence shows that babies are today born with more than 100 industrial chemicals in their bloodstream (or "pre-polluted"). This is of particular concern in the context of scientific associations between prenatal exposure to EDCs and a series of severe health disorders sometimes way later in life – including developmental, reproductive, and neurobehavioral disorders; endocrine-related cancers; as well as metabolic diseases. The significant body of scientific evidence is at the origin of the strong mobilization of the community of reproductive health specialists as well as endocrinologists in favour of improved identification and regulation of EDCs (see FIGO 2015 statement, Endocrine society consensus statements 2009 and 2015 notably). Although of larger reach than EDCs, the WHO chemical roadmap is another illustration of the need to better train health professionals to be able to identify vulnerable patients and adequately inform them for higher protection.

DATA REQUIREMENTS AND AVAILABLE REGULATORY TEST METHODS

Question: Are available regulatory tests sufficient to identify endocrine disruptors for humans (including vulnerable groups) as well as wildlife?

Answer: No. The PPP/BP guidance focuses on tests covering EATS modalities, which are not sensitive enough. And other modalities are also relevant to ED identification. New tests are needed to reflect additional hormonal pathways, assess the effects of fetal exposure on later development e.g metabolism or psychiatric disorders.

The recent "Consensus statement on key characteristics of endocrine disrupting chemicals as a basis for hazard identification" (Michele A. La Merrill et al., Nature Reviews, Endocrinology, Vol 16, Jan 2020) shows that standard tests fail to address crucial ED characteristics e.g. alteration of hormone receptors, of signal transduction in hormone-

responsive cells, of hormone metabolism or clearance, of fate of hormone producing or hormone responsive cells, of hormone synthesis, of hormone distribution or circulating hormone levels; induction of epigenetic modifications in hormone-producing or hormone responsive cells… All are good starting points for further test development.

Question: Are current provisions for data requirements laid down in relevant legislation (REACH, Biocidal Products Regulation, Plant Protection Products Regulation) sufficient to identify endocrine disruptors for humans (including vulnerable groups) as well as wildlife?

Answer: No. Inadequate data requirements for the identification of EDCs is acknowledged in the EU Commission support study on the non-toxic environment and the REACH review. Under REACH, required tests do not include all relevant endpoints and a screening for ED properties is not mandatory for low volume chemicals.

We welcome the recent initiation of the process to update REACH test requirements and the ongoing adapts of those of the pesticides and biocides legislations following the adoption of the EFSA/ECHA guidance. We urge the Commission not to wait until the completion of the present fitness check to complete these processes. A strict minimum would be to bring the requirements of all regulations in line with the OECD guidance document 150, although it is yet far from covering all relevant ED endpoints. This is why independent peer-reviewed scientific literature should be into account in identification discussions and given as much weight as validated tests.

Question: Considering the information requirements of REACH, the Biocidal Products Regulation and the Plant Protection Products Regulation, do you think the likelihood of identifying a substance as an endocrine disruptor is lower under one of these regulations compared to the others?

Answer: Yes. First of all, it is important to stress that the information requirements in all three regulations are currently too low to allow for the proper identification of EDCs.

At first sight, the requirements laid out in the EFSA/ECHA guidance for pesticides and biocides are stronger than those of REACH because they are in line with the OECD guidance document 150.

However, we believe that the GD 150 does not provide all the information needed to identify all the relevant substances and therefore information from independent studies is also necessary.

Finally because the EDC criteria for pesticides and biocides require a level of evidence that we consider too high, we doubt that stronger data requirements in comparison to REACH will make a significant difference for ED identification in the long-term.

Question: Do you have any further comments on available regulatory test methods and data requirements under REACH, the Biocidal Products Regulation, the Plant Protection Products Regulation, and other sector specific legislation?

Answer: The animal testing ban under the cosmetics regulation is raising important challenges in relation to identification and regulation of EDCs used in cosmetic ingredients and products.

Under the pesticides and biocides criteria, the overall high burden of proof for ED identification remains a concern and the making available of improved test methods can only be one part of the answer to improve the situation. When it comes to biocides, due to the delay in the work programme and the inadequate/old state of data sets for numerous substances falling in it, we doubt that full application of the data requirements will be possible any time soon. We also fear this might lead to numerous potential endocrine disruptors left on the market, either unidentified or identified but not appropriately regulated.

The Horizon 2020 funded EURION cluster on EDC test methods is a step in the right direction but more efforts need to be done to promote test developments and support international validation of new tests.

REGULATORY TESTING AND ANIMAL WELFARE

Question: Do you agree with the following statement: "In vitro and/or in silico methods are not used systematically enough to prioritise further investigations"?

Answer: Strongly agree. In vitro and in silico methods can be a helpful tool to screen substances for ED properties, indicate a potential concern for health or the environment, and prioritise further assessment.

This is particularly the case for cosmetics, due to the ban on animal testing and should be used in this sector to trigger precautionary bans or restrictions, when no in vivo data from REACH is available. Across sectors, they could also be used more systematically in initial evaluation phases. These methods can be useful in order to help make progress on identifying and regulating entire groups of chemicals.

However in vitro and in silico screening alone should not be used to discard evidence of adverse effects coming from in vivo studies (the latter are to date the only studies fit to provide such evidence).

Question: In your opinion, is the impact of assessing chemicals for endocrine disrupting properties on animal welfare minimised in the EU?

Answer: insufficiently minimized

Question: Do you have recommendations on how to further minimise the impact of assessing chemicals for endocrine disrupting properties on animal welfare?

Answer: First it is important to stress that at the moment animal testing is necessary for ED identification and minimising animal testing should not be used to impede it.

Second, the current lack of coherence in the identification of EDCs across sectors and regulations is leading to the same tests being performed several times but adding different endpoints.

This could be made more efficient and transparent through a more centralised approach to testing (based on industry fees but managed by independent authorities). The use of precautionary regulations and bans, based on indications of ED concerns in early screenings and unless industry applicants can prove that the substance is NOT an ED, would also improve the situation, benefiting human health and the environment. Assessing chemicals by groups, guided by precaution, is another way forward

EFFECTIVENESS OF REGULATORY PROCEDURES

Question: Are you aware of issues that result from the lack of specific provisions for identifying endocrine disruptors in sector-specific legislation for the following areas?

Answer:

	Yes	No
Workers protection	X	
Toys	X	
Detergents	X	
Fertilisers	X	
Electrical and electronic equipment	X	
Food contact materials	X	
Food additives	X	
Cosmetics	X	
Medical devices and *in vitro* diagnostic medical devices (only for effects on the environment)	X	
Human and veterinary pharmaceuticals (only for effects on the environment)	X	
Water	X	
Waste/recycling	X	
Other (please specify)	X	

Our responses to earlier questions point to the lack of adequate provisions to properly identify EDCs across sectors and regulations. We do not consider that identification criteria are needed in all the regulations mentioned above individually, but all of these regulations should refer to provisions allowing for ED identification – which is currently not the case (including food contact materials, cosmetics, toys, workers regulation…).

We also refer you to the useful European Parliament study drafted by Barbara Demeneix and Remy Slama, "Endocrine

Disruptors: from Scientific Evidence to Human Health Protection', European Parliament, Directorate-General for Internal Policies, Policy Department for Citizens' Rights and Constitutional Affairs", 15 January 2019.

Question: Are you aware of issues that result from the lack of specific provisions for managing endocrine disruptors in sector-specific legislation for the following areas?

Answer:

	Yes	No
Workers protection	X	
Toys	**X**	
Detergents	**X**	
Fertilisers	X	
Electrical and electronic equipment	X	
Food contact materials	**X**	
Food additives	**X**	
Cosmetics	**X**	
Medical devices and *in vitro* diagnostic medical devices (only for effects on the environment)	**X**	
Human and veterinary pharmaceuticals (only for effects on the environment)	**X**	
Water	X	
Waste/recycling	**X**	
Other (please specify)		X

These regulations either do not mention EDCs at all, or mention them without making a link to identification provisions and foreseeing clear regulatory actions as a consequence. Because ED identification under one regulation (e.g. REACH) does not automatically trigger risk management measures for the same substance under different regulations, people remain exposed to known endocrine disruptors.

For instance, EDCs identified under REACH should be automatically banned in consumer products (an automatic reference could be added to regulations of sectors of high human exposure such as food contact materials, toys... In the case of the workers regulation, exposure EDCs identified in any regulation should absolutely be avoided.

See European Parliament study, "Endocrine Disruptors: from Scientific Evidence to Human Health Protection', European Parliament, Directorate-General for Internal Policies, Policy Department for Citizens' Rights and Constitutional Affairs", 15 January 2019.

Question: In your view, on which areas should market surveillance authorities focus their activities to effectively enforce chemical safety of products as regards endocrine disruptors?

Answer:

	Yes	No	Don't know
Plant Protection Products	X	○	○
Biocidal products	X	○	○
General chemicals	X	○	○
Toys	X	○	○
Detergents	X	○	○
Fertilisers	X	○	○
Electrical and electronic equipment	X	○	○
Food contact materials	X	○	○
Food additives	X	○	○
Cosmetics	X	○	○
Medical devices and *in vitro* diagnostic medical devices (only for effects on the environment)	X	○	○
Human and veterinary pharmaceuticals (only for effects on the environment)	X	○	○
Waste/recycling	X	○	○
Other (please specify)	○	○	○X

EFFICIENCY OF REGULATORY PROVISIONS FOR ENDOCRINE DISRUPTORS

Question: Are the costs of the provisions for endocrine disruptor identification and management, for the sector(s) you operate in, justified and proportionate to the benefits accrued for society and the environment?

Answer: Fully. The few estimates of the burden of diseases of EDCs all point to the huge economic opportunity of prevention through increased regulation. The best conservative estimate of health costs arising from EDC exposure is of 163 billion euros/year in Europe (Trasande et al., 2016). The Commission's own support study on the Non-Toxic Environment highlights an annual €1.5 billion for female reproductive disorders and diseases in the EU as a result of exposure to EDCs.

The fact that the WHO/UNEP refer to a "global threat that needs to be resolved" and that scientific societies such as the Endocrine Society or FIGO are so mobilised in demanding policy upgrades is a clear indication that those figures are expected to keep increasing until regulation is improved.

Finally, the high overall societal costs of EDC exposure needs to be put in perspective of the high profits of the chemical industry: in 2017, the value of the global chemical industry exceeded 5 trillion USD and is projected to double by 2030 (GCO II). It is therefore urgent to apply the precautionary and the polluter pays principles.

ADEQUACY OF LEGISLATION TO ADDRESS NEEDS AND CONCERNS ON ENDOCRINE DISRUPTORS

Question: To what extent do you think exposure to endocrine disruptors is contributing to the increase in endocrine-related human diseases/disorders, in the EU, in comparison with other factors?

Answer: To a significant extent.

Question: To what extent do you think exposure to endocrine disruptors is contributing to the decrease in aquatic and terrestrial biodiversity in the EU, in comparison with other factors?

Answer: To a significant extent.

Question: Is the regulatory framework flexible enough to take into account new scientific information and methods in the assessment of endocrine disrupting properties (e.g. new toxicological tests, (bio)monitoring data, (eco)epidemiology)?

Answer: No. The precautionary principle allows taking regulatory action in the face of scientific uncertainty, is embedded in EU treaties and in numerous regulations that are relevant to the management of EDCs. Several regulations (e.g. pesticides, biocides) in theory allow the regulator to take into account new scientific evidence.

However, there is no systematic procedure for triggering action out of such evidence, and economic arguments are often raised to prevent it. As described in the "Late lessons from early warnings" case studies, we do have multiple examples of human or environment contamination due to failure to act on early scientific warnings (DES, BPA, DDT), but we do not have any example of precautionary actions that turned out unjustified.

In a context of limited sensitivity of validated tests for EDCs, it is clear that independent peer-reviewed evidence of health or environment effects is not used enough to trigger policy action.

Question: Do you have any further comments on the adequacy of legislation to address societal needs and concerns on endocrine disruptors?

Answer: Multiple scientific calls on the scale of the problem related to EDC ubiquitous exposure clearly show the inadequacy of the current regulatory framework. This was again illustrated by a recent editorial in The Lancet, Diabetes and Endocrinology (May 2019): "EDCs represent not just a public health problem or indeed a global health problem, but a planetary health problem. Calls to better regulate EDCs and minimise human exposure must be heard and acted on by governments and policymakers. The role of EDCs as potential drivers of the burgeoning epidemic of non-communicable diseases (NCDs) must also be recognised and taken into account in NCD prevention strategies."

In moving forward, the European Commission must commit to identifying and regulating in a faster, more protective way. This means applying the precautionary and polluter pays principles as well as having the courage to question which applications currently using EDCs are really essential for society (see Ian Cousins et al. 'The concept of essential use for determining when uses of PFASs can be phased out') compared to the long-term health burden for society as a whole. This also includes transparent communication about known, presumed and suspected EDCs through the establishment of lists according to available scientific evidence so that people can make informed choices across consumer products, companies can make smart choices and invest into safer alternatives to drive sustainable innovation, and health professionals can also play their important part in educating patients and having the tools necessary to do prevention early on.

ADDED VALUE OF EU LEVEL INTERVENTION

There have been instances where Member State authorities have taken unilateral action on endocrine disruptors before a decision has been taken at the EU level. For example, in October 2012, the French authorities introduced a ban of Bisphenol A in all Food Contact Materials, applicable from July 2015.

This is justifiable in some cases – protection of human health or the environment is more important than preserving the integrity of the single market.

When a member state becomes aware of valid scientific evidence pointing to ED properties of a substance and related adverse health effects linked to exposure, it is fully justified to take steps in order to protect the population.

At the EU level, the lack of identification provisions across sectors and adequate regulatory options to address EDCs in a comprehensive way may leave Member States can in a position when they have no other choices than taking unilateral measures – the more so when considering the long identification process and large time lag between identification and regulation.

In those cases, the European Commission should consider extending national decisions to the European level in order to increase protection for all Europeans, provide a level-playing field for industries and boost safe innovation. The French ban of BPA in all food contact materials is a typical illustration such a fully justified measure on health protection grounds.

Question: Do you have any further comments on the added value of regulating endocrine disruptors at EU level?

Answer: A hazard-based identification process and regulation for EDCs at the European level is a unique opportunity to increase levels of protection for Europeans, prevent diseases and health costs flowing from EDC exposure, and stimulate safe innovation among European industries.

In the context of the European Green Deal and several of its important pillars (sustainable chemicals strategy, circular economy action plan, farm to fork strategy, and importantly the EU's action plan on cancer) the update of EU's EDC strategy and their increased regulation are an absolute prerequisite to the delivery of President Van Der Leyen's Zero Pollution.

Finally, by boosting its own rules to protect the population from the effects of EDCs, the EU has the opportunity to inspire the rest of the world and lead by example.

Natacha Cingotti,
Senior Policy Officer, Health and Chemicals
Health and Environment Alliance (HEAL)
E-mail: natacha@env-health.org
Tel: +32 2 234 36 45

The Health and Environment Alliance (HEAL) is the leading not-for-profit organisation addressing how the environment affects human health in the European Union (EU) and beyond. HEAL works to shape laws and policies that promote planetary and human health and protect those most affected by pollution, and raise awareness on the benefits of environmental action for health.

HEAL's over 80 member organisations include international, European, national and local groups of health professionals, not-for-profit health insurers, patients, citizens, women, youth, and environmental experts representing over 200 million people across the 53 countries of the WHO European Region.

As an alliance, HEAL brings independent and expert evidence from the health community to EU and global decision-making processes to inspire disease prevention and to promote a toxic-free, low-carbon, fair and healthy future.

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