Making the essential-use concept enforceable, effective and understandable

– a communication from the Horizon 2020 project ZeroPM

Background

The concept of essential use in policy can be traced back to the Montreal Protocol signed in 1987. The agreement protects the Earth's ozone layer by phasing out chemicals that deplete it and by limiting the use of ozone-depleting chemicals to only essential uses [1]. The scientific community picked up on this concept in 2019 when a peer-reviewed publication applied the essential use concept to per- and polyfluoroalkyl substances (PFASs) [2].

When is it justified to use the most harmful substances?

The essential-use concept gained further regulatory momentum in 2020 with the publication of the Chemicals Strategy for Sustainability towards a Toxic free environment (CSS). Here, the essential-use concept was extended to restrict the use of *"the most harmful chemicals"* which *"are only allowed if their use is necessary for health, safety or is critical for the functioning of society and if there are no alternatives available from the standpoint of environment and health."* [3]

The "essential-use" concept versus broader concepts of "essentiality"

From a theoretical point of view, there are several levels of "essentiality" that involve different stakeholder groups such as industry, policy makers, consumers and academics. These levels also include the essentiality of a given chemical, the essentiality of a given chemical's function in a product (or end use), and the essentiality of a given product (or end use). In addition, function can be considered from the perspective of the chemical, the end use, or as a service [4].

This communication aims to disentangle the complexity caused by the different levels of "essentiality" and move towards making the essential-use approach enforceable, effective and understandable.

Enforceable: the essential use concept at the policy level

There is currently a policy window open for integrating the essentiality of the use of a given chemical into European Union regulations. Specifically, the concept of essential use and associated criteria will be defined in the coming months by the European Commission (EC) [3], making it enforceable for policy makers at the EC and Member State levels. The definition and criteria will allow for the integration of new knowledge through revisions that occur over time, making it a flexible approach that can adapt to new evidence. The final outcome of the political discussion will be used in chemical policy.

Effective: avoid loopholes and unnecessarily lengthy decision processes

The existing paradigm of substance-based regulation has limitations and can take decades to reach a final outcome [5]. At the policy level, the implementation of the essential-use concept should result in a faster process for the restriction of the most harmful chemicals, such as by adopting substance grouping approaches to avoid "drop-in substitution" for substances sharing a similar structure or hazard [4,6]. It follows therefore that the production and use of problematic substance groups or hazardous substances will decrease over time.

Understandable: broader concepts of essentiality in society

Public debate can be a driver for policy change and correct communication is therefore very important. The narrow scope and accompanying technical nature [2,7,8] of the essential-use concept needs to be more comprehensible, along with the wider context of essentiality [9].

In the broader context of essentiality in society, understandability can be looked upon by considering benefits, necessity and risks of using either harmful chemicals, the chemical function they are used for, or the products themselves they are used in. In such instances it may be more intuitive, from a consumers' point of view, to consider products as a first step. It is more tangible to place an emphasis on alternative products where net benefits are greater than net harm. Clear communication of trade-offs can provide stakeholders/consumers with the information that is needed for them to make informed choices based on available options.

Combining Enforceability, Effectiveness and Understandability

The overlap between enforceability, effectiveness and understandability is an important point which may co-determine the success of the "essential use" concept. As experience is gained with the enforceability of the regulatory definition of essential use, it will become clearer how effectiveness and understandability can be increased to harness the overlap between the three purposes.

Moving forward in ZeroPM

The Horizon 2020 Research and Innovation Action project ZeroPM: Zero pollution of persistent, mobile substances interlinks prevention, prioritization and removal strategies to protect the environment and human health from persistent and mobile substances. ZeroPM approaches the essential-use concept and broader concepts of essentiality in society from many angles, with a focus on persistent and mobile substances. Following the political discussion closely, ZeroPM supports enforceability by feeding appropriate results to the European Commission level. Understandability related to the broader concepts of essentiality is advanced by bringing in social and behavioural aspects, developing risk communication tools, as well as investigating risk/harm and benefit perceptions, motivations and barriers. ZeroPM also develops current methods for weighing up alternatives at all functional levels against each other to ensure that alternatives are safe, sustainable and desirable.

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