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GLOBAL RISK & REGULATION NEWS

Beware the law of unintended consequences

The proposed database on candidate list substances in articles for waste operators and consumers will not deliver what it promises

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The circular economy strategy and all its related measures, such as the recent European Commission Communication on the interface between chemicals, products and waste, is an important initiative, both for society and industry. Its ultimate aim is the sustainable use of resources through the entire product lifecycle, which the automotive industry supports.

However, it also provides a perfect case study of the 'law of unintended consequences', in which theoretically good ideas sometimes lead to dubious conclusions and possibly unnecessary, costly and thus highly questionable legal requirements. A good example arises under the recently revised Article 9 of the waste framework Directive (WFD), which was endorsed by the European Council on 22 May. This requires:

Echa to set up a database of REACH candidate list substances in articles within 18 months of the Directive coming into force (that is, January 2020);

member states to transpose the Directive into national law by July 2020;

any companies that produce, import

or sell articles in Europe to submit information on candidate list substances in their articles by January 2021; and

access to be provided to 'waste treatment operators' and consumers upon request.

This is intended mainly for the benefit of waste operators and consumers, but it is also supposed to increase the responsibilities of article importers into the EU and to further push for substitution. As such, it is expected to have a major impact on the waste sector, as well as member states, Echa and industry.

This new obligation was not included in the original Commission proposal but was added later during 'trialogue' negotiations with the European Parliament. Unfortunately, neither the impact nor the added value for the stakeholders involved has undergone robust assessment. It is also uncertain whether the waste sector has been consulted on the expected usefulness of such information.

Finally, there has been no assessment of the technical feasibility of such a database, which is supposed to contain information about all the billions of individual articles on the European market with a level of detail following the Court of Justice of the European Union (CJEU) judgement on articles. This requires the 0.1% reporting threshold for candidate list substances to be calculated and, depending on the interpretation of the requirement, also communicated, based on the weight of the smallest possible article – for example, the pin on a resistor.

To demonstrate the challenges involved, this article includes an impact assessment from the automotive industry, using the example of just one vehicle model. Like most others, this is available in hundreds of different variations – about 1,600, in fact – because of options in colour, equipment, transmission, chassis and so on. Its components are produced by around 1,200 global suppliers and the final product is assembled in Europe.

Technical feasibility

In theory, each individual vehicle option could contain different candidate list substances, so the Echa database would have to cover separate entries for each option of each model. As there would be no effective way for a vehicle manufacturer to give a name to each of these options, the only way to manage the variants effectively would be via their vehicle identification number (VIN).

There would thus have to be a separate database entry for each individual vehicle. Based on 2017 sales, around 17.5m very complex data sets/year would have to be generated just for vehicles, each containing thousands of sub-data for each relevant sub-component. Every spare part placed on the EU market would have to be included as well, resulting in more millions of often very complex and sometimes duplicate datasets to be reported.

It seems to be the expectation that industry would have to enter the information into the database, ideally in a standardised format which does not even exist today. Echa would still need the resources to process and maintain the data. To add another level of complexity, the candidate list is usually updated twice each year, so each individual dataset would need to be checked and updated following this.

Additional obligations and difficulties arise for the waste management and treatment sector. A typical end-of-life vehicle (ELV) treatment operator processes over 3,000 vehicles/year, most of which were produced 18-32 years ago and are completely different from each other (Figure 1).

Imagine the additional resources this company would need to check each individual VIN against the latest dataset in the database prior to the treatment operations. Furthermore, if the vehicles have been repaired using newer spare parts – probably from the independent aftermarket – the waste operator would need this updated data for the specific vehicle and the often independent repair shops would have to update the database.

Lead was recently added to the candidate list. Each vehicle variant may contain many lead-containing articles – some in soldered electronics but mostly in metal parts, where it was used as a non-substitutable alloying element. Many of these are tiny and they are widely distributed throughout the vehicle.

Under the ELV Directive, each specific exemption to the broad heavy metal ban is being carefully assessed on a regular base and approved because no viable lead-free substitutes are available and there is no substantial associated risk for health or the environment.

Lightweight aluminium, for example, may contain up to 0.4% w/w of lead. The sector is following the principles of the circular economy by achieving high rates of recycling for aluminium that might contain traces of lead, which cannot be removed or avoided by any existing technology.

In all, it is likely that the millions of vehicle data sets in the database contain probably thousands of records of candidate list substances, resulting in billions of data points for the automotive industry alone. Extrapolating more widely across all industries, it is likely that the final number would make this one of the largest civil database projects in the world, massively larger than even Iuclid.

Each data set in the database will have to be entered, processed, checked, stored, updated and, most importantly, made available in an accessible, understandable and usable format to consumers, to help them make 'informed' purchase decisions, and to workers in the waste sector, to enable them workers to separate the tiniest candidate list substance-containing articles from the end products. These are, in themselves, a conglomerate of articles and components.

The effort required to create it and get it working would thus be phenomenal and the time scale is very challenging. But will the targeted recipients really use this data and are these efforts therefore justified?

Added value downstream?

Complex products require very complex technical information to enable all relevant stakeholders, including consumers, to make meaningful use of it. A certain level of technical skill is needed to understand this information. Experience from the automotive sector, however, proves that most of our waste sector partners and customers neither require nor use information about substances of very high concern (SVHCs) in vehicles.

This can reasonably be assumed to be the case for many other sectors making complex products in Europe or elsewhere. In any case, consumers already have a right under REACH Article 33.2 to such information within 45 days of a request and do not therefore need an additional database.

The proposed database is supposed to be helpful mainly for the waste sector during the waste and recycling phase to separate SVHC-containing components by dismantling. However, a recent Öko-Institute study has shown that dismantling is impractical for complex products like

cars, planes and computers. With lead-containing articles, for example, it is neither theoretically nor practically possible to separate them from the car prior to the shredder. The Echa database will not change this simple fact.

Moreover, the cars and other durable products entering waste treatment facilities today were produced decades ago, when no data was collected and much technical information about them has since been lost. The first reliable information would be available for vehicles developed after about 2005. These will be scrapped at any time up to around 2032. By then more, efficient recycling technologies will be available that will probably make the Echa database information redundant.

Furthermore, the candidate list is always growing. It is not even possible to ensure an exhaustive database for when current products become waste. This is a general concern for all durable products with long lifetimes as retroactive measures will increase the complexity and problems described earlier, in many ways.

The sector-specific recycling obligation in the ELV Directive has meant that the automotive industry already has recycling rates of about 85% of the car by weight. This is matched in other regions and was achieved mainly via market-driven cooperations between the vehicle manufacturers, their suppliers and the recycling business.

Highly specialised ‘post-shredder’ recycling technologies, like Volkswagen Sicon, have been developed which do not require dismantling of components and materials. Such processes separate the different fractions after the shredder and provide output fractions that are used as secondary materials in several applications.

Impact on industry

Also in response to the ELV Directive requirements, the automotive industry has developed a tool that enables vehicle manufacturers and their suppliers to collect information about the substances used in their components. The International Material Data System (IMDS) now contains over 70m data sets.Since 2000, vehicle manufacturers have invested around €10bn directly and indirectly to develop and maintain the system, and add improved data from suppliers. It took over five years to achieve an acceptable level of data quality. Two decades on, the sector has learned that the data is and never will be 100% correct, due to the constantly changing nature of automotive parts and the large reliance on information from the supply chain.

From this rough calculation, one might get an idea about the potential impact of building Echa's database on the overall EU economy. In fact, the automotive industry has proven that electronic data submission on substances and materials along complex supply chains is possible and can be beneficial for companies and sectors for business reasons. However, the practicalities of developing, maintaining and using such a tool and its data are completely overestimated.

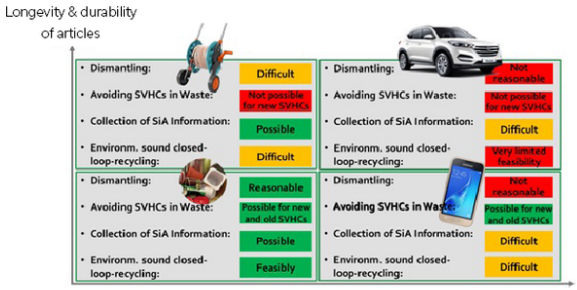

Figure 2 - Longevity v complexity in durable articles

In this context, it is important to understand that different sectors face additional challenges, like the protection of confidential business information (CBI), market power or influence over their supply chain, quantities, development and production cycles, and SME involvement. To address these and reduce the costs of data collection, industry should consider developing a common solution that will enable different sectors to exchange data. This would follow a standardised approach in terms of:

data structure/format and detail;

data security;

data usage;

data collection and restricted substances lists;

data quality; and

company v sector-wide solutions, or even cross-industry approaches.

Whatever solution is finally chosen, successful implementation is likely to take several years. Even when complete, it is highly questionable how useful such information will be, especially for complex and durable products, to the waste sector in 'detoxifying' the waste stream and to consumers in making informed purchasing decisions.

Conclusion

The overall goal is to achieve the objectives of the circular economy across the whole European industry in the most efficient way. Products and sectors, however, differ in their size, complexity and processes. Thus, there cannot be a 'one-size-fits-all' solution.

Instead an alternative approach is needed, that considers the longevity and durability of articles versus their complexity (Figure 2). This may finally lead to different solutions for different product sector groups but is more achievable as a result. Thorough assessment of potential options will be key for a more informed and sustainable decision on how to achieve the common goals.

Thus, for complex products, where dismantling is only a very limited option, the Echa database would only cause costs, without contributing to the achievements of the goals. The money would be better invested in the further development of recycling technologies.

Data collection, data provision and dismantling are reasonable for simple products in theory. But it will still not be possible on an industrial scale to identify producer and chemical composition prior to the definition of the best waste treatment operation for each individual piece on the recycler's rapidly moving band-conveyor. Labelling, marking or other identification measures will not change this fact.

Finally, the 'golden solution' of avoiding hazardous waste by substituting SVHCs in the development and production of highly durable products is practically impossible, especially regarding future additions of SVHCs to the candidate list. These substances were not known to be SVHCs at that time. What is not known cannot be avoided.

Furthermore, the pressure to substitute that lies behind the push for the database

is already being addressed through the candidate list as well as through other existing EU legislation; it is not certain that it will further boost this trend.

These and many other arguments need to be taken into consideration when continuing discussions on the Echa database, as well as its benefit to the circular economy goals. The automotive industry is already very active in this regard and will continue to increase its related efforts and support.

The views expressed in this article are those of the expert author and are not necessarily shared by Chemical Watch

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