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SCIP – The New ECHA-Database for Substances of Concern (Dr. Dipl.Chem. Beate Kummer)

SCIP stands for "substances of concern in products" and is a new database that will be set up by the European Chemicals Agency (ECHA) and will be accessible in all Member States. It is planned to feed it with a number of information on "substances of concern" in products. This information will be made available to waste recyclers, which will then know which waste streams contain substances of concern. The main target of the database is to finally remove such hazardous substances from the economic cycle and thus come a step closer to the EU Commission's goal of a "Tox-Free Environment". It will start in January 2021.

However, all manufacturing companies are well advised to get to grips with it as quickly as possible, because data acquisition will be the real challenge. For example, when a car or electronic device is placed on the market in the EU, there are highly complex supply chains during the production process. It is not unusual to find hundreds of suppliers in Asian countries or on other continents. However, the database can only be "fed" if all the necessary information from all suppliers is available. Manufacturers of less complex products such as packaging, toys or textiles are also affected.

SCIP aims to collect information on substances of concern or of very high concern in articles or complex products (such as lead stabilisers or plasticisers in plastic components, brominated flame retardants in electronic equipment, polyaromatic hydrocarbons in tyre granules, etc.). The database has its EU legal basis in the Waste Framework Directive (WFD). SCIP is based on Article 9(1)(i) in conjunction with (2) of the recently amended WFD. This is a renewed attempt to more closely link chemicals and waste legislation. Member States are now required to adopt targets for waste prevention measures. The wording in the WFD as legal basis for SCIP is the following

"(i) promote the reduction of the content of hazardous substances in materials and products, without prejudice to harmonised legal requirements concerning those materials and products laid down at Union level, and ensure that any supplier of an article as defined in point 33 of Article 3 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council¹ provides the

¹ REACH-Ordinance

information pursuant to Article 33(1)² of that Regulation to the European Chemicals Agency as from 5 January 2021.. „

The current WFD is therefore the basis for waste management in the EU; it contains extensive requirements for the proper disposal of waste. It must be implemented into the national law of the EU member states by July 2020. In Germany, the draft of the „Kreislaufwirtschaftsgesetz“ takes up this issue with the new Section 62a. According to this, ECHA has until 5 January 2021 to set up the database.

For suppliers of an article containing substances on the Candidate List, Article 9 (1) (i) of the WFD subsequently provides for corresponding notification obligations to ECHA. The so-called Candidate List (Annex XIV of the REACH Regulation) currently contains about 200 substances which must comply with the criteria of Article 57 of the REACH Regulation:

- Substances that are classified as carcinogenic or mutagenic or toxic to reproduction of category 1A or 1B according to Regulation (EC) No. 1272/2008 (CMR substances),
- Substances which are persistent and bioaccumulative and toxic according to the criteria of Annex XIII of REACH (PBT substances),
- Substances which are very persistent and very bioaccumulative according to the criteria of Annex XIII of REACH (vPvB substances),
- Substances which, according to scientific evidence, are likely to have serious effects on human health or the environment but which cannot be classified in the above-mentioned groups - e.g. endocrine disrupters.

The request of the EU Commission to provide recycling and waste management companies with more information on substances of concern is correct. In most cases, disposal companies today do not know which substances of concern are contained in the waste to be disposed of (e.g. electronic scrap, batteries or packaging) when it arrives at the recycling plant. The EU Commission now wants to counter this with SCIP. The aim is to create more transparency regarding the composition or presence of hazardous substances in complex products, and this is fed by the manufacturers who can still use hazardous substances today - in some cases with legally regulated exceptions (e.g. lead in various compounds).

This means that companies that supply articles containing substances of very high concern (svhc - substances of very high concern) in a concentration above 0.1% weight by weight (w/w) to the EU market will have to submit information on these articles to ECHA from 5 January 2021. An "article" is an object that contains a specific shape, surface or design during production (e.g. cable or screw on a printed circuit board). This definition can be found in Art. 3 of the REACH Regulation, and "complex objects" will soon also be affected by the reporting obligation. These in turn are products consisting of more than one product (e.g. printed circuit board).

The SCIP database is only applicable if a high number of affected manufacturers participate. SCIP provides, for example, that information exceeding the legal requirements must be entered. Thus, not only information on substances of very high concern ("svhc") but also on "substances of concern" must be entered, i.e. substances that are restricted in products under regulations other than REACH (e.g. POP Regulation³). The information (consisting of product names, concentration ranges, localisation of the svhc substance, information on safe use of the substance) in the database will then be made available to waste disposers and consumers. Whether this ambitious project will be

² Article 33 (1) REACH Regulation: Article 33 (1) of Regulation 1907/2006/EC (hereinafter also referred to as "REACH Regulation") requires suppliers of articles containing at least one SVHC substance in a concentration of more than 0.1% by weight to provide the recipient of the articles with the information available to them that is sufficient for safe use of the articles, but at least the name of the substance concerned.

³ POP Regulation: Regulation (EU) 2019/1021 of 20 June 2019 on persistent organic pollutants

crowned with success is more than questionable, however. Car manufacturers⁴ and manufacturers of electrical appliances⁵ (see examples below) have already announced that it will not be possible to provide billions of individual pieces of information per manufacturer. The database will cause high costs and a very complex information gathering process. But recyclers⁶ have also already communicated that SCIP will not be helpful.

Which examples illustrate the problems of SCIP?

Example data supplier automotive industry: Since the first regulations on end-of-life vehicle recycling came into force, the automotive industry has relied on IMDS - International Material Data System⁷ as a database for materials and components. According to its own information (T.Unger, 2020), it has cost the European industry around 10 billion euros to establish the database. Anyone who asks the operator can get access. In the IMDS material data the material and chemical compositions of components, semi-finished products and materials are declared. The main use of the IMDS material data is to secure and prove legal substance regulations for complete vehicles and their spare parts. Furthermore, IMDS material data are used as a data source for the calculation of the recycling rate according to ISO 22628 in the system approval of the EU type approval. Currently IMDS is accessed by about 130,000 active users and about 14,000 substances are reported. Besides aircraft, passenger cars are certainly the most complex products affected by SCIP. The establishment of SCIP now means that for thousands of individual affected items per vehicle all necessary information on svhc has to be obtained from suppliers in the EU and outside the EU. In the figure below, an electronic component from a vehicle is used to illustrate (see Fig.1) that even the designation of an "article" or product is not easy because there are often no generally valid proper names. The European automotive industry expects several billion Euros for this complex data collection for substances of very high concern, because the current IMDS structure is not usable.

• Example for an IMDS-Article Descriptions:

Large concerns at industry (esp. complex article manufacturers) because of unrealistic expectations to notify the name of each article falling under Art 33



- 8A CPU SUB ASSY-LHD AUTO
- 9HP 48 QX
- AMP NGPTSQ 12
- JNVSM
- Screw

- IMDS data structure is not usable
- Would require either new IMDS data or separate collection
- Possible costs of X Billion Euro!

Pict.1: IMDS-Description of some articles (Unger T., 2020).

Example Data supplier to the electrical and electronics industry: Electronic assemblies - e.g. printed circuit boards fitted with electronic components - typically have several hundred assembly positions with a large number of electronic components; these are "articles" according to REACH. The majority of the electronic components used are typically in a weight range of 2 mg to 5 g each (see example in

⁴ Unger, T. (Hyundai), lecture "The Substances of Concern in Products Database (SCIP)", Annual Conference on Product Safety in the Chemical Industry, 20-21 January 2020, Bonn.

⁵ Statement on the SCIP database and its national implementation, ZVEI, bitkom and VDMA, 20 January 2020.

⁶ EURIC – Statement Joint Workshop Chemicals Articles Waste Cross Industry Platform, 17. Juni 2019, Brussels; "Risk to generate an enormous amount of unmanageable information. We work in tons, not in units."

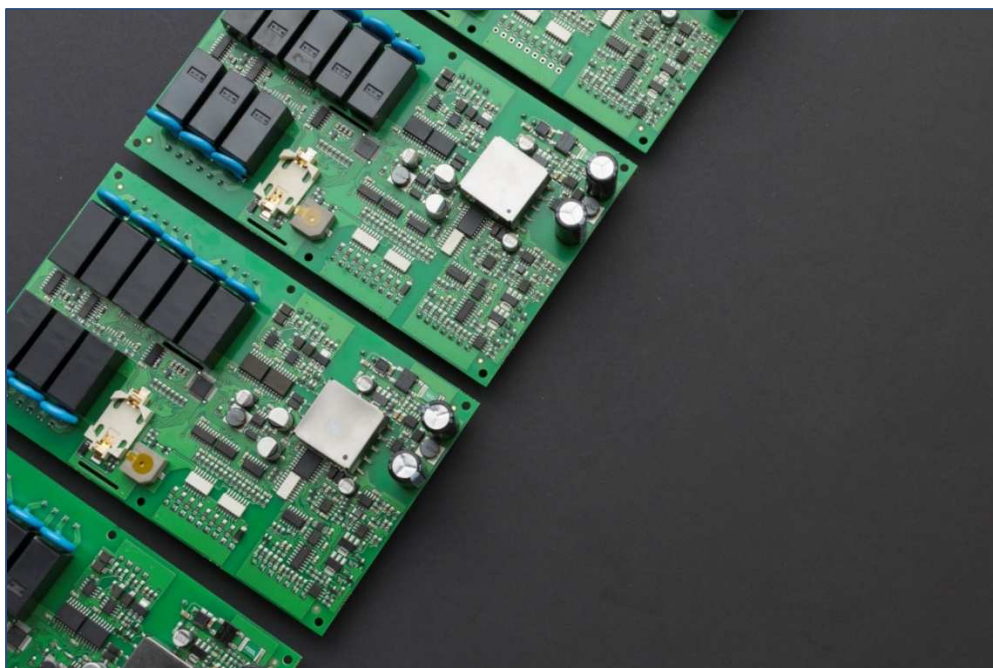
⁷ The IMDS (International Material Data System) is the material data system of the automotive industry. It is a joint development by Audi, BMW, Daimler, DXC, Ford, Opel, Porsche, VW and Volvo. Other manufacturers have joined the network in the meantime, making IMDS a global standard that is used by almost all globally operating OEMs. In addition, talks are being held with other manufacturers about participation in IMDS. In IMDS all materials used in the production of cars are collected, maintained, analysed and archived. By using the IMDS, it is possible to fulfil the obligations imposed on car manufacturers and their suppliers by national and international standards, laws and regulations.

Fig.2). Multiple sourcing (several suppliers per assembly item), a common practice in the electronics industry, further increases the amount of information to be provided to ECHA. In the case of assembled PCBs, it is not possible to identify the electronic component to which the information entered in SCIP belongs, because such a component usually does not have any identification features to distinguish it from others. A member of the ZVEI (Zentralverband Elektronindustrie, Frankfurt) has recently made calculations on the effort required. 2651 end products were identified that contain brass components with low lead content (lead is an svhc substance on the REACH candidate list). As part uses of these components in end products there are 426,370 combinations that would have to be created in the database. For all parts and substances concerned, this company would have to employ a total of 23 people for one year in order to map each product variant once in the SCIP database.

Example data users in the recycling industry: The nature of today's recycling technologies (e.g. dismantling facilities for end-of-life vehicles and shredder plants) will hardly allow for the determination of individual material information for each component of a vehicle regarding questionable materials in day-to-day business. Hundreds of different vehicle models of the most varied composition are usually disposed of in one plant. What counts here is essentially a high throughput in tonnage in order to ensure economic recovery in view of the raw material price situation. If questionable substances have to be removed from individual "mining products" (such as screws, solder contacts) in the future, economic recovery is practically impossible, because simply checking for the presence of questionable substances will take far too long. This applies not only to vehicles but also to many other complex products. Furthermore, the question must be answered, is this even necessary to achieve the EU's "Tox-Free-Environment" goal? For example, the svhc material lead as an additive in steel alloys changes into the gaseous aggregate state during the recycling process and does not remain in the melt. A separation of individual alloying elements is thus carried out automatically. Electronic scrap is treated separately by specialised recyclers in accordance with the WEEE Directive, and manufacturers already provide the information required by Article 15 of the WEEE Directive (e.g. via the I4R platform). In the recycling process, only very specific components (such as batteries) are removed manually before the remaining parts go through the sorting and treatment processes. In complex electronic devices, the substance of very high concern is usually present in very small quantities in small sub-particles of the product (see example of assembled PCB in Fig. 2). Detailed information about these tiny sub-particles (product category, material category) is not helpful for recyclers, because knowing the presence of svhc substances would usually not change the final, often metallurgical treatment process. Some svhc materials (e.g. organic hydrocarbon compounds) do not survive the recycling process at all, they are destroyed by the high process temperatures.

What will happen next?

In February 2020, ECHA published a database prototype. It can be found under the following link: <https://echa.europa.eu/de/scip-prototype>. The full version is to be set up in the course of the year. Manufacturers or suppliers of articles containing svhc will be obliged to submit information to the SCIP database from January 2021. This requires the software IUCLID 6, which already had to be used for the registration of substances and can be obtained free of charge from the ECHA homepage (www.echa.europa.eu). ECHA has already announced that webinars on the use of the SCIP database will be organised for affected companies. The EU Member States must now establish concrete aspects for the legal enforcement of the SCIP database in national law by summer 2021.



Pict. 2: Printed circuit board (source: www.freepik.com) which contain hundreds of single articles.

What are the main points of criticism?

The application of the new database will cause enormous difficulties. First of all, it is of paramount importance to remind all the companies concerned of their obligations. From today's point of view, it is more than questionable whether this will succeed in the foreseeable future in view of the current economic crisis and experience with REACH. In the coming months, business associations, chambers of commerce, ECHA and training institutes would have to offer numerous events to raise awareness of SCIP and demonstrate the use of the prototype. It would be helpful at this point to first of all familiarise oneself with the experiences with REACH and the implementation of the already existing information obligation for products.

In a market surveillance programme, for example, the obligation to apply Art. 33, which has been in force since 2007 (!!) and already includes the obligation to provide information (notification) on substances of very high concern in the supply chain, was reviewed. In 15 countries it was examined whether product manufacturers comply with their obligation to provide information on substances of very high concern (svhc). The result is alarming: there is a high infringement rate of over 80%. This means that more than three quarters of the companies investigated do not receive the necessary information on svhc from suppliers or do not pass it on to customers. Therefore, at this point it must be doubted whether data for SCIP is reported in sufficient detail⁸. Furthermore, the handling will be much more complex and opaque than the current information obligation according to Art. 33 within the supply chain.

The use of the SCIP database by recyclers is also more than questionable. Even if the idea of bringing more transparency into material flows is correct, SCIP will not, from today's point of view, be able to contribute to "shedding more light on the pollutants in waste". Recycling companies work on a tonnage scale, the input into the processing plants is fed by many different models (see for example above: thousands of models of vehicles and electrical appliances). Even with a somewhat simpler material flow such as packaging, the recyclers do not have it much easier. In addition, article

⁸ Wursthorn, S., lecture "Status quo of market surveillance in Germany", Annual Conference on Product Safety in the Chemical Industry, 20-21 January 2020, Bonn

descriptions are not communicated to the disposal company, and a sorting system for packaging, for example, is not designed to sort according to article numbers, but according to colour, type of plastic, etc. The recycler will usually not have time to take care of further information if he has to generate sales in a short time.

Before the adoption of SCIP, a broad discussion with all market participants in the EU would therefore have been more than helpful to ensure that a well-intentioned request could be successful. The overlap between waste and chemicals legislation is extremely complex, so a high degree of judgement is required if the well-intentioned goal of a "tox-free environment" in particular is to succeed in the long term. However, an impact assessment is urgently needed for SCIP, and the involvement of data holders and recyclers would be necessary in such a project in order to assess the effort, costs and benefits.

Is there an alternative to SCIP?

In order to meet the goals of the EU Commission in the area of climate protection and resource conservation, there is no alternative to more recycling and a higher use of recycled raw materials. In order to solve the "pollution problem" in waste, more trust in the economy is necessary. Today, there are a large number of restrictions on pollutants, which are already regulated in chemicals, substances and waste legislation. Here are just a few examples, all of which must be applied when placing new products on the market: Toys Directive, End-of-Life Vehicles Directive, Electronic Scrap Directive and ROHS (EU Directive 2011/65/EU serves to restrict the use of certain hazardous substances in electrical and electronic equipment), Packaging Directive, substance restrictions in Annex XVII of the REACH Regulation, POP Regulation. The application of all of the above-mentioned regulations already existing today will gradually - in connection with REACH - lead to the fact that substances of less and less concern will also arrive in waste management. Even today, there are hardly any cases in which recycled waste has led to a pollution problem in production. Today, the much greater challenge is to bring more waste into high-quality recycling in order to save more, especially non-renewable resources. In the worst case, SCIP will lead to even more pollutant removal in recycling, when it will then lead to even more disposal of waste streams. As a result, large amounts of valuable resources will be lost, which are also necessary for successful climate protection.

The EU must therefore move away from having a completely pollution-free recycling economy and continue to pursue a "Tox-Free Environment". Already today we have ubiquitously occurring pollutants in all environmental media, which represent the so-called background pollution. These loads are caused by water pollution, emissions from industry, traffic, agriculture, etc. However, we have already achieved a great deal through strict environmental and product legislation. Particularly today, in times of foreseeable massive economic and raw material crises and the threat of climate catastrophe, it is not appropriate to spend billions of euros on a new database that will probably not work. Rather, it will be necessary in future to weigh up with a great deal of judgement how climate gas reduction and resource conservation can be regulated within the EU. Additional burdens for the economy, which cause high costs and bring little benefit, and are also not enforceable, are not needed at present. The chances of changing the SCIP database can currently be classified as extremely low, so manufacturing companies are well advised to look into the matter (<https://echa.europa.eu/de/scip-database>) and, if necessary, to consult external scientific advice.

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