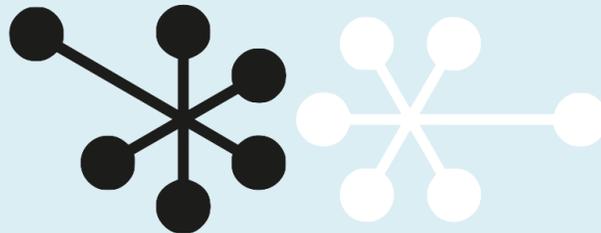


LIFE / FIT FOR REACH

**FREQUENTLY ASKED QUESTIONS  
ABOUT CHEMICAL MANAGEMENT AND  
SUBSTITUTION**



2020

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## General questions

### 1. Is powder a chemical?

Powders (dust, talc) or granules are chemicals, because they do not have a particular form, structure or surface that determines their function. A powder means that a chemical takes the form of a dry solid composed of very fine particles. Powders can be natural or “man-made”. They can be a substance, if they are obtained in that very composition from a chemical synthesis or from nature. Or, they can be mixtures if different substances or mixtures (of powders) were intentionally put together to produce the powder. Examples are: spice the “curry” (natural mixture) or cosmetic powder (synthetic mixture).

### 2. Is a nanomaterial (nanoparticle) a chemical?

Yes, it is a substance.

Nanomaterials or nanoparticles are chemical substances with particle sizes between 1 to 100 nanometers. They fulfill the REACH and CLP definition of a substance, thus the provisions set by these regulations apply. This means they have to be registered and classified just as any other substance.

As of 1 January, 2020, explicit and additional legal requirements under REACH apply for companies that manufacture or import nanomaterials that are called substances in nanoform.

### 3. Is a little exposure to hazardous chemicals really harmful to health?

It depends – but to be on the safe side, avoid any exposure if possible.

The answer to this question is not easy. Many chemicals cause visible or tangible effects only if they are “consumed” in high amounts or concentrations. An example of a chemical where you can observe that the effect increases with the amount is alcohol – starting with “nothing tangible” and ending with a serious poisoning or even death if there is an intake of high amounts. However, although we cannot feel it, also if consumed in minimal amounts, brain cells are damaged. Hence, very little exposure has an adverse effect.

Of many chemicals that are used today, we do not really know whether or not they cause damage at low exposure concentrations or not and therefore, it is wise to reduce exposures as much as possible.

The additional issue that should be considered is that humans and the environment are not exposed only to one chemical, but usually many different chemicals are present. If their effects add up, together they may cause an effect. They may even enhance each other’s effects. Alcohol, again, may increase or decrease the effect of a medicine, for instance. For this reason, it is specified on the instructions of many medicines that they should not be combined with alcohol. This is called the “cocktail effect”, i.e. a mixture of chemicals.

Whether or not these effects occur and at which exposure levels can hardly be predicted. But it can be said for sure that the fewer the number of different chemicals and the lower the exposure concentrations of each, the lower are the risks of damage or harm to occur.

#### 4. Where to quickly find information on hazardous chemicals?

The quickest and easiest way to find information on (hazardous) chemicals is to use ECHA's database. It offers information on three levels of detail: summary information (Infocard), more detailed information (brief profile), and information directly extracted from the registration dossiers (database of registered substances).

If you enter either the substance name into ECHA's search window, the CAS number or the EC number, the database retrieves a list of entries. If you click on the substance name, you are shown the so called Infocard which presents:

- the key information on a substance,
- the most prominent hazardous and critical properties of a substance,
- legislative and safe use information associated with the substance and other relative information.

From the Infocard you also get access to the brief profile and the registration database, as well as a compilation of legal obligations applicable to the substance and to the PACT, which informs about current and foreseen regulatory activities.

#### 5. Am I affected by REACH?

Yes, everyone, including consumers, is affected by REACH.

REACH has an effect on a wide range of companies, but basically there are four roles with responsibilities (a single company may have more than one role):

*Manufacturer:* if you manufacture substances for self-use, for selling or supplying to other companies, you have some important responsibilities under REACH including registration of your substances<sup>1</sup>;

*Importer:* if you buy individual chemicals, mixtures or products from outside the EU/EEA countries, such as clothing, furniture or plastic products, you are likely to have some responsibilities under REACH;

*Distributor:* if you source a chemical substance or a mixture within the EEA, store it and then place it on the market for someone else (also under your own brand without changing its chemical composition in any way) you are likely to have some responsibilities under REACH;

*Downstream user:* if you handle any chemicals in your industrial or professional activity, you might have some responsibilities under REACH.

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<sup>1</sup> If the production volume of a substance remains below 1 t/a or the substance is exempted from registration (e.g. active substances for use in pharmaceuticals or biocides), the registration obligation may not apply to use.

## 6. How can I find out if my company uses chemicals?

Typically, what is referred to as chemicals are substances or mixtures and can be liquids, solids, powders or gases. They may be “natural” or man-made. Examples are cleaning agents, metal salts, lubricants, polymers, acids, nitrogen gas, solvents, coatings or inks.

In general, all products for professional use that the company purchases, which are liquids or gases are chemicals. Additionally, all solid raw materials of synthetic origin (or extracted from raw materials, e.g. plant extracts) which are powders or granules (not food or feed, also natural materials of organic origin, e.g. wood, wool, leather, etc.) that do not yet have a particular form (like a screw or a table or a button) are chemicals as well.

If you want to know if your company uses chemicals, you may check the material management system (if existing) or what the company purchases/obtains as the input materials.

## 7. How can I know which substances are endocrine disruptors?

Check ECHA’s [list of substances that are undergoing an endocrine disruptor assessment](#) under REACH or Biocidal Product Regulation.

The Substitute It Now ([SinList](#)) list includes substances that are officially identified as SVHC under REACH and substances, which the organization ChemSec, assessed as having properties of very high concern, including [endocrine disruption](#). [Substances that have been added to the list solely because of their endocrine-disrupting mode of action are found here.](#)

## 8. How can I know which substances are hazardous for the environment?

The easiest way is to look at hazard (H) phrases of the substance or mixture: environmental hazards start with 4 (i.e., H410, H411, etc.). The H-phrases starting with 2 are physical hazards and those with 3, health hazards.

## 9. How can I recognise a PBT or vPvB substance?

If the substance or mixture meets the criteria of persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) it has to be identified in the section “2.3 Other hazards” or “12.5 Results of PBT and vPvB assessment” of the safety data sheet. For example, “Substance meets the criteria for vPvB according to Regulation (EC) No 1907/2006, Annex XIII”. To identify the substances that meet the criteria of PBT and vPvB substances you can also check [ECHA’s candidate list](#), and other lists such as the [PBT assessment list](#), [Public Activities Coordination Tool \(PACT\)](#), or the [SinList](#).

## 10. What is the difference between a hazard and a risk?

In general, hazard is defined as a potential to cause harm. A risk is the likelihood with which damage could occur.

In the context of chemicals, hazards are the physical chemical, health and environmentally harmful properties of a substance or mixture. The risk is based on a comparison of the expected exposure level, (i.e. the amount, duration and frequency - how much, how long, how often) with which a human or the environment comes in contact with the chemical, and the concentration or dose above which a particular damage is expected to occur.

If, for example, a risk is identified due to the measured exposure level of a substance at a workplace being higher than the safe threshold, the employer should take action and assess if he can substitute the substance or implement technical measures, or use personal protective equipment to improve the conditions.

## Chemicals management

### 11. What are the first steps for proper chemicals management? Is it having an inventory?

There are many elements of chemicals management at the enterprise: purchasing, storage, disposal, internal communication on risks of chemicals, and more. The inventory is one of them and is particularly important, as it compiles the basic information to plan or implement all other processes.

Chemicals inventory is an overview of all chemical substances and mixtures used in a company. It should include information on the identity, classification, storage, place and amounts of use, final product, and any other information that is relevant for safe handling of hazardous chemicals. As such, a chemicals inventory can be seen as a cornerstone or enabler of conducting a good chemicals management.

According to the national legislation, a chemicals inventory must exist in all companies that are professional or industrial manufacturers or users of chemicals to comply with legal requirements.

Check the requirements for chemicals inventories in the country the company is established.

But the inventory is not necessary only because the law requires it. If done properly, it can be used to:

- structure systematic information collection on the used (hazardous) chemicals;
- get an overview on which hazardous chemicals are used and create a sound information basis to prioritise action needs to improve the situation, e.g. for workers, the environment, the installation safety or the produced products;
- identify priorities and frame a company's future strategies and development plans;

- support checking legal compliance of all input materials and the company's own products;
- allows you to quickly find the necessary information, e.g. if you are visited by inspectors or asked by customers about your products and/or input materials.

Here you can download the [template](#) for creating a chemicals inventory.

## 12. All substances and mixtures we use comply with the legal requirements, why should we substitute them?

You should consider substituting those chemicals, which could cause problems for human health and the environment. Not every chemical should and can be substituted!

Some of the substances and mixtures on the EU market may, although they are legally compliant, be hazardous to the environment and human health. As you are responsible for your products, you should generally avoid any problems caused by them.

The main arguments, why you should check if substitution of hazardous chemicals is possible are: they could be regulated in the future; the transition to safer chemicals gives your company a competitive advantage; it improves the working environment for employees (i.e. you may need less measures to protect workers and/or they are likely to have less sick-days due to chemicals); and reduces the environmental risks posed by the company's activities. It is also likely that your product that is then safer will be more attractive to the market. Therefore, it is always useful to check for opportunities to substitute.

Check if chemicals you use are [priorities for substitution](#).

## 13. How can I prevent my company from starting to use new substances or mixtures that are hazardous and may be regulated in the future?

The best way to ensure that only "future proof" substances are used is to have a systematic assessment of input materials by the purchasers of the company, possibly in cooperation with the person responsible for health, safety and environmental management.

Usually, individual substances are regulated, while companies mostly use mixtures. Therefore, if a mixture should be purchased, it is important to assess if any of the components of the mixtures (i.e. the substances therein) may be regulated.

As "early-warning signs" there are several lists that "signal" that a substance may be regulated in the future. Usually they can be screened or filtered using the CAS-number, EC-number or the substance name.

- To identify if a substance is already regulated now, check the new database [EUCLEF](#). If you enter the substance identity, the database will indicate any existing legislation applicable to it which it covers.

- The Public Activities Coordination Tool (PACT) shows you if the authorities are or will be assessing a substance by,
  - Conducting a REACH substance evaluation (SEV)
  - Assessing its hazardous properties, like PBT/vPvB or ED
  - Prepare a risk management option analysis (RMOA), which is a process whereby the best option to regulate a substance should be identified
  - Assessing its inclusion onto the candidate list (SVHC identification)

If the substance is evaluated before being included in the candidate list - this is a "serious warning".

It could also be helpful to read the question [“What I should do if I found out that my chemical is on candidate list?”](#).

Additional information:

What is more, you can apply "group approach". For example, bisphenol A (BPA) has been included in the REACH candidate list as an SVHC. Other bisphenols have a similar structure and are likely to be similarly hazardous as BPA but there may not be as sufficient evidence to prove it and/or to develop a restriction proposal. Therefore, replacing BPA with BPS would be a bad decision.

#### 14. Who in the company should be responsible for substitution?

Usually, to carry out a substitution, different people in the company need to be involved. In any case, one person should manage this process. This person is frequently a manager with cross-departmental responsibilities, e.g. the environmental manager, the quality manager or the person responsible for chemicals management. In small companies the CEO may coordinate the work.

The question of who should be involved; i.e. which competencies are needed, depends on the complexity of the substitution case. For example, if a cleaning agent is substituted and no technical changes are expected, the substitution could be done by the purchasing department and the environmental manager alone. If the substitution concerns an additive in a plastic part used in an electronic device, the responsible persons for technical processes, quality, the product line etc. would have to be involved.

Also, workers or their representative can be involved in substitution processes as in many cases they would face changed work conditions. This is useful at the stage of prioritising which substances should be substituted and at the stage of selecting possible alternatives, as the acceptance of substitution and potentially linked new work routines are likely to be higher.

#### 15. We would like to start new production technology together with a partner from the US, and use chemicals produced in the US. Should we do anything regarding REACH?

Yes. If you will need substances as such or contained in mixtures above a volume of 1 t/a you have to register all substances (in the mixtures), because you are considered an importer under REACH. You may also check if there are representatives who import and register chemicals for you. Check the [questions and answers on ECHA's webpage](#) and/or contact your [national REACH Help desk](#).

## Legal requirements

### 16. How can I find out if a substance is regulated and might become a priority for substitution?

To identify if a substance is already regulated, you can check the database [EUCLEF](#). If you enter the substance identity, the database will indicate obligations from the most common legislation applicable to it.

To identify if a substance may be regulated in the future, you should check the [Public Activities Coordination Tool \(PACT\)](#), which shows you if the authorities are or will implement any regulatory activities, including

- Conducting a REACH substance evaluation (SEV)
- Assessing particular hazardous properties, like PBT/vPvB or ED
- Preparing a regulatory management option analysis (RMOA), a process by which the best option to regulate a substance should be identified
- Assessing its inclusion onto the candidate list (SVHC identification)
- Preparing a restriction under REACH
- Preparing a proposal for harmonized classification and labelling

### 17. Is substitution required under workers legislation?

Yes and No.

Workers protection legislation has a clear hierarchy regarding the management of risks from chemical agents: if possible risks should be eliminated by substituting the hazardous chemical agent then it is to be replaced with a less hazardous alternative. It requires assessing if substitution is feasible. Only if it is not feasible, e.g. there are no suitable alternatives available, it is OK not to substitute but to implement technical measures to reduce the risk as much as possible. However, the decision should be regularly reviewed.

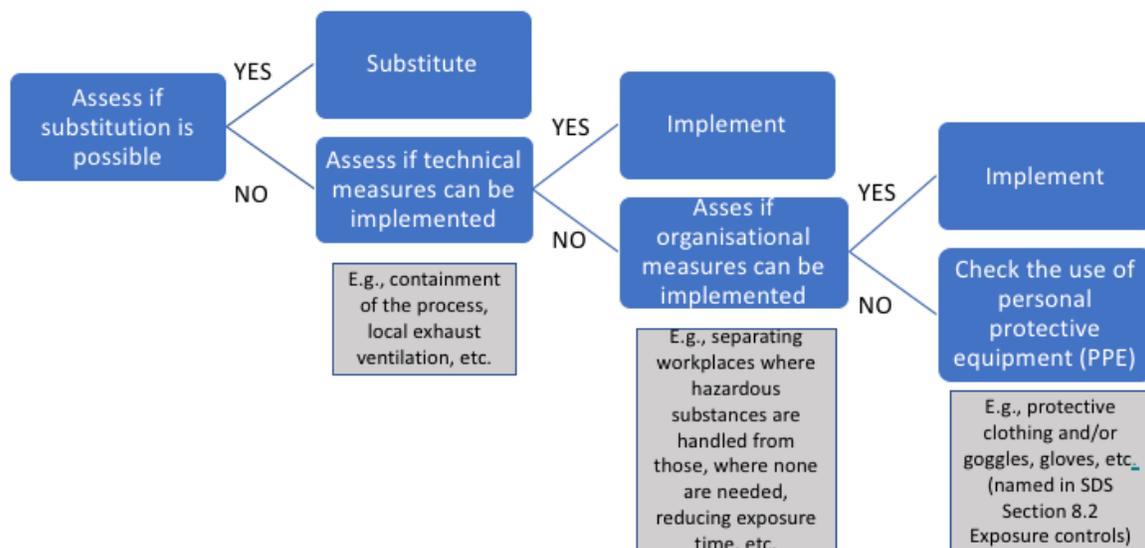
The EU principles of worker protection from hazardous substances are laid out in the overarching [Occupational Safety and Health \(OSH\) Framework Directive](#). The so called “daughter directives” on [Chemical Agents](#) and [Carcinogens and Mutagens](#) particularly address safety and health of workers regarding risks from exposure to carcinogens, mutagens and other hazardous chemical agents.

The Chemical Agents Directive defines the “STOP principle”, which requires following a hierarchy of measures in managing chemical risks at work. STOP stands for

S: Substitution

T: Technical Measures  
 O: Organizational Measures  
 P: Personal protective equipment

Hence, the sequence is:



### 18. Is substitution required under the Industrial Emissions Directive (IED)?

Yes and No.

Article 58 of the IED requires that VOCs classified as carcinogens, mutagens, or reprotoxicants (with the H-statements H340, H350, H350i, H360D or H360F) and/or mixtures containing these shall be replaced as far as possible by less harmful substances or mixtures. Only if an assessment reveals that substitution is not possible, other options to control resulting risks may be considered and implemented. The possibilities to substitute should be regularly reviewed.

The IED aims at regulating pollution from industrial installations via integrated permits that are based on emission limit values that can be achieved using best available techniques (BAT) for a particular sector and/or process. BATs may also include the use of less hazardous substances and, hence, could also trigger substitution depending on the sector or process concerned.

### 19. Do the EU restrictions also apply if I export the chemical?

No and yes.

Marketing and use restrictions of chemical substances listed in REACH Annex XVII apply to the territory of the European Union. If you sell to companies in other EU member states the restrictions apply and this is legally **not** considered an export.

Export, means supplying outside of the EU (e.g. China, Ukraine, Belarus, Russia, Switzerland, etc.).

The reasons why a chemical is restricted in the EU is usually that it causes unacceptable risks to humans or the environment. This situation is usually the same in other countries. Hence, although a restricted chemical may be exported, you should consider if from an ethical and risk perspective, you want to (continue to) do so.

If substances are restricted in the EU but in line with the rules of your target country for export, there is a good chance that target country may also restrict it in the near future. Thus, it is always a good idea to substitute hazardous chemical substances to avoid regulatory problems in the future and reduce human health and environmental risk.

Additional legislation may apply, if you export chemicals:

Please note that if you export certain hazardous substances, you also have obligations under PIC regulation (PIC, Regulation (EU) 679/2012). This requires that you notify an export to the authorities of the receiving country and get a “prior informed consent” for your export. The PIC regulation applies to many active substances in plant protection products and biocides. Among the industrial chemicals requiring a prior informed consent are very hazardous solvents, flame retardants and phthalates. All of them are either banned or restricted in the EU.

You are not responsible to ensure that your chemicals comply with the legislation of the country you export to, but the company who buys your products (i.e. the importer in the other country). However, to keep your market and to be able to discuss with your customers, you should make yourself aware of the rules and regulations about restricted substances that apply there.

## Safety Data Sheets

### 20. What is a safety data sheet and where can I find it?

A Safety data sheet (SDS) is a document that must be provided to you if you are a commercial buyer of a substance or mixture that is classified as hazardous by the company selling that chemical to you.

An SDS contains information on the identity and composition of a substance or mixture, the dangerous properties, how it should be stored, used and disposed of safely, and whether or not specific protective measures for workers and the environment need to be implemented.

The requirements for SDSs are laid down in REACH Regulation Annex II. The SDS is divided into 16 Sections and must be provided in the official language of the Member State(s) where the substance or mixture is placed on the market.

For more information please see question [“Do I need to have a safety data sheet for every chemical and mixture?”](#), and the [European Chemicals Agency Guide on Safety Data Sheets and Exposure Scenarios](#).

## 21. Do I need to have a safety data sheet for every chemical?

According to the legal requirement, SDSs need to be provided when:

- A substance or mixture is classified as hazardous;
- A substance(s) is persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB); or
- A substance is included into the Candidate List for Authorisation according to REACH for other reasons than above;
- Mixtures which are not classified as hazardous, but which contain specified concentrations of certain hazardous substances (e.g., workplace exposure limits) also require an SDS to be provided on request.

If a supplier updates an SDS, they must provide an updated version to all recipients to whom the substance or mixture has been supplied within the preceding 12 months.

## 22. We use only paints that our clients require us to use and states to be safe. Do we need to get safety data sheets for the paints?

It depends.

If the paints that your clients request you to use are not classified as hazardous, no SDS is required. But you should check if this is the case. If the paints are classified, you must have a safety data sheet.

Check out the detailed conditions under which you must be provided with an SDS: [“Do I need to have a safety data sheet for every chemical?”](#).

## 23. I feel, safety data sheets are not always correct, is that possible? How to evaluate if my SDS is correct?

Yes, unfortunately, there are many safety data sheets that contain mistakes.

Here are a few tips for checking if an SDS meets general requirements:

- The language must match the country of use, i.e. the SDSs you receive must be in the language of the country you are located in.

- The creation and revision date of the SDS must be shown on the first page. SDSs should be no older than May 2017<sup>2</sup>. However, you may consider asking your supplier for an up-to-date SDS also earlier, e.g. when it is older than 3 years.<sup>3</sup>
- 16 sections and sub-sections must be provided.
- No sections or subsections are left blank.

If at even one condition is not met, ask your supplier to provide the updated SDS.

For a closer look, here is a simple [checklist](#) to download that shows how you can judge SDS quality. Also, [the background information](#) from the European Chemicals Agency could be useful.

Additional information: consider checking for all chemicals that you use and which are classified as hazardous if you have a safety data sheet. If you only check if those SDSs that you have at your working place are up to date, you may miss that some are missing at all.

## 24. Supplier of a substance has sent an SDS of very lousy quality. Can I use a better SDS from the Internet?

You should contact your supplier, give them feedback on the (bad) quality of their safety data sheet and request them to provide a good one in due time. It is your obligation to have the specific information from the supplier.

If you need to ensure safe use of the substance in the meantime, you may of course use any information source available to you to obtain information on necessary risk management measures.

## 25. How do I know if an SDS is outdated?

The only “easy” indication an SDS is outdated is that it still refers to the old classification and labelling system, i.e. includes R-Phrases for hazards and S-Phrases for precautionary information. If you are unsure or the SDS is rather old, ask your supplier if you have the most recent one. Request it if this is not the case.

Please find more information on the basic requirements for SDSs under question [“I feel safety data sheets are not always correct, is that possible? How to evaluate if my SDS is correct?”](#)

## 26. What do I need to look for in a safety data sheet to understand if a substance or mixture should be substituted in the company?

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<sup>2</sup> EU regulation 2015/830 required updating of SDS according to REACH. It came into force in 2015 and allowed chemicals suppliers a transition period of 2 years (i.e. June 2017).

<sup>3</sup> EU legislation does not require a regular updating of SDSs. However, your suppliers must update them if any new information on the substance becomes available or if they are newly or differently regulated.

Look at Section 2 of the safety data sheet and check if under “hazard identification” the words PBT, vPvB, SVHC, carcinogenic, mutagenic or reprotoxic are listed. If this is the case, substitution should be considered.

If the chemical is a mixture, you may continue and check in Section 3 if any of the components of the mixture, which should be listed there, are classified with any of the following H-statements: H300, 310, 311, 314, 330, 340, 350, 360, 361, 362, 370, 372, 400, 410, EUH032. If this is the case, it may be considered to substitute the mixture or to approach the supplier and ask them to substitute the substance.

Additional information:

Section 1 of the SDS identifies the substance/mixture and provides other relevant details. Section 3 lists the hazardous component of a mixture along with their identification numbers (CAS/EC no.) and associated hazard classification. The identification number (CAS or EC number) can be used to check if a substance is included in regulated substances lists (or warning lists; cf. question “How can I prevent my company from starting to use new substances or mixtures that are hazardous and may be regulated in the future?”).

## **27. Does the SDS have to be in the national language? Whose duty is it?**

Yes, an SDS must be provided in the language of the EU Member State where the chemical is placed on the market, unless there is legislation in that Member State stating that it is not necessary.

Additional information: It should be noted that any exposure scenario provided with the SDS is considered to be an integral part of the SDS. It is therefore subjected to the same translation requirements as the SDS itself – i.e. it must be supplied in an official language of the Member State(s).

It is important to highlight that in Section 2 of the SDS, either the full wording of the hazard classes or the “Hazard Class and Category Code(s)” may be used. If the full wording is used, it needs to be in the language of the SDS. If the Hazard Class and Category code(s) are used, the abbreviations given for each hazard class must not be translated. For example, for a flammable substance, if the Hazard Class and Category Code “Flam.Liq.1” (corresponding to Flammable liquid, Category 1) is used, this must not be translated. The full text corresponding to that code, however, has to be given in the language of the SDS, in Section 16.

## **28. How can I best inform workers about the relevant content in the SDS?**

Employers should make the access of workers to SDSs as easy as possible to reduce the barriers in using them.

Some companies use workplace instruction cards based on the SDS to summarise the most important information: first aid, firefighting instructions, personal protective equipment, disposal instructions.

SDSs are intended to inform workers on all aspects necessary to protect their health and safety at the workplace and handle chemicals in a way that also protects the environment. Therefore, they should be trained in reading these documents and motivated to use them whenever questions arise on how chemicals should be used. The information on chemicals could be communicated individually or during trainings or provided in writing.

### **29. What do I do with an SDS extension? Can it help in substitution?**

If you receive exposure scenarios with an SDS, you must check that you use the substance or mixture according to the conditions described in it. The extension of the SDS does not help you in substitution.

If your use/use conditions are not covered by any of the exposure scenarios received from your suppliers, you have different options, including to eliminate or substitute the substance or the activity with a safer alternative. Alternatively, you may assess yourself if your use is safe (DU CSR) or communicate with your supplier to assess your conditions of use as safe and revise the exposure scenarios.

### **30. Who is responsible for updating SDSs? Is it the supplier's duty to send it when it is modified?**

The supplier of a substance or a mixture that is classified as hazardous according to CLP regulation (Regulation (EC) 1272/2008) has to update the SDS as soon as possible. As he becomes aware of new information about the substance or mixture (i.e. the substances contained in it), they must provide the SDS to you if you have purchased the substance or mixture from them during the last 12 months.

If you buy a chemical for the first time from a particular supplier, they should provide you immediately with an up-to-date SDS.

Your supplier may get new information on a substance or the substances in their mixture from their supplier, from databases or because new legislation is passed, in particular a restriction or an obligation for authorisation.

Downstream users should ensure that they have updated SDSs because it is the basis for good chemicals management and safe use.

For details about assessing whether a safety data sheet is correct, please see the question ["I feel safety data sheets are not always correct, is that possible? How to evaluate if my SDS is correct?"](#)

### 31. I checked with ECHA's database, and some substances are classified differently in the SDS that I received from my supplier. Which classification to use?

Differences in classification may be due to the degree of impurities of substances and mixtures. Therefore, sometimes there are many different classifications in the classification and labelling inventory and the safety data sheet.

According to legislation, your supplier's information is the most relevant for you. However, you should contact them and ask if they are aware of the differences and if they can explain why their classification differs.

If the classification in the C&L inventory are more severe than in the SDS of your supplier, you may decide to still use the more stringent classification to base your risk management upon to be sure that the level of protection is sufficient for your workers and the environment.

## Initiating substitution

### 32. How can I get started with substitution in my company?

If you are thinking about substitution, you have already started it. The next thing you can do is to prepare the reasoning for your upper management. See the question [“How do I convince my management that we should avoid the use of hazardous substances, if possible?”](#) for more tips.

Consider putting together a team which will be involved in the substitution process. Read about the competencies that might be needed: [“Who in the company should be responsible for substitution if we do not have such competencies?”](#).

The next step is to identify candidates for substitution, see the question [“Is there a checklist for companies to use if there is a need to substitute?”](#) for guidance.

### 33. Is there a checklist for companies to use if there is a need to substitute?

Check if the chemicals that you import, produce or chemicals from which mixtures are created are not marked with any of the following danger symbols:



Check whether the employees in your company that are in contact with certain chemicals have raised concerns about health problems, such as frequent headaches, skin rashes, dizziness, nausea, or eye irritation.

Check if the chemicals you use found on the safety data sheet's Chapter 2 have any of the following hazard statements:

Substitution is very important	Second priority	Substitution should be considered
<p>Substances included in the REACH Candidate list for authorisation and/or carrying the H-Statements 340, 350, 360, 361.</p> <p>Substances included on the SinList (i.e. that may be included in the candidate list in the future as they meet the respective criteria according to the assessment of ChemSec) could be prioritized in the highest group.</p>	<p>H300, 310, 311, 330, 362, 370, 372, 400, 410, EUH032</p>	<p>H301, 302, 304, 312, 314, 315, 317, 318, 319, 331, 332, 334, 341, 351, 371, 373, 411, EUH029, EUH031</p>

### 34. How do I convince my management that we should avoid the use of hazardous substances?

Most importantly, be convinced yourself that it is a good idea! And then build up a good argumentation that considers the economy of substitution – because that is what your management will care about!

For the management, answers to the following questions should be presented clearly and concisely:

- Why should a substance be substituted? This is particularly important to answer if there is no legal requirement that forces changing to another chemical.
- What are the costs of substituting? Here, at least a statement on the types of costs (e.g. man-power to find alternatives, laboratory costs for quality testing, etc.) and the price ranges should be provided. This may not only be needed to calculate if substitution is “worth it” but also supports the management in deciding how many resources need to be made available.
- What are the benefits for the company, in terms of legal compliance, cost savings, a better competitive position? This is of course the part, where management wants to see benefits for the company, because staying on the market and being competitive is the basis to be secured.

Ideally, management should be aware of and interested in managing risks to their business from the use of hazardous chemicals, in particular regarding workers health.

Check if a substance is included as an SVHC or other lists, or may be regulated in the future (then having time to change proactively now is better than having to make decisions under time

constraints later). Another set of reasons could be from occupational safety and safe exposure levels. Also, see if substances travel further through the supply-chain. If an article containing HS is provided to other downstream users, pressure from their side could aid substitution.

### **35. What do I do if my clients want me to use a hazardous substance that I want to substitute?**

The most important action to take is to talk to your clients in order to find out, why they insist on using that particular substance. In the communication, you are then able to present your substitution intention and discuss with a client how a solution can be found that is satisfying for both of you.

If the substitution is necessary due to legal requirements, most likely your client will agree to substitute and may or may not want to be involved in the decision-making on an alternative chemical.

If you want to substitute “only” because of your policy to avoid hazardous substances, you will have to identify the possibilities to convince your client and, if they insist on the use of the substance, you will have to decide what is more important – substitution or keeping the client. Important aspects for the client could be that the technical properties of the product you produce will not change and that the substitution will not affect the price (significantly). So, if these criteria remain the same (or improve) after substitution it should not be a problem. Otherwise, provide your client with all the relevant information on risks hazardous substances pose and explain the benefits of substitution, e.g. reduction of hazardous chemicals exposure for workers, consumers and environment, increased product quality and/or production efficiency, market benefits, etc.

### **36. What is the estimated time allocation to complete a substitution procedure?**

It really depends on the case and the scale. Some substitution cases can be implemented in a matter of months (e.g. reformulation of detergents, exchange of one mixture by another), while others have to go through a series of tests to validate an alternative, or initially, the alternative is not so easy to find. Some cases where research and development are involved may take many years. Each substitution case is to some extent special. However, to get an idea about how substitution could work and how long it takes, you may want to look at the case stories from the [LIFE Fit For REACH project](#) or the case story database in the [SubSport plus](#) portal.

### **37. Substitution is a demanding process, perhaps there are examples for specific industry types?**

Yes and no. There are cases of substitution ([“Where can I find good practice examples on substitution?”](#)) that might be directly applied for specific industries. However, in many cases the

chemical substitution process is individual to each company because of differences in functions chemicals perform in different products, processes, and with different equipment.

The industry associations may be able to guide you to some materials and approaches that are implemented in the sector/branch. General material may be published on their website, but specific advice will be given only if you are an association member.

### **38. I have founded a new manufacture company. I want to design my processes/products to avoid substitution in the future. What should I know?**

Get acquainted with the “Safe-by-Design” (SbD) principles. The whole idea of SbD is to address (chemical) safety issues during the early development of design process of the product and manufacture processes. There are several publications available on the internet explaining the approach, for example, [“Safe-by-Design of Materials and Chemicals”](#), **an article in ECHA’s newsletter “[From Substitution to Safe Design](#)”**.

Reading the answer of [“How can I prevent my company from starting to use new substances or mixtures that are hazardous and may be regulated in the future?”](#) could also be useful.

## **Identifying candidates for substitution**

### **39. How can I make good decisions on what to substitute? I know sometimes there may be complicated dilemmas (e.g. better for environment but causes some health effects)**

Generally speaking, any legally required substitution should get a high priority and does not need any evaluation of whether or not it is environmentally beneficial. The second highest priority should be given to SVHCs on the candidate list. There the benefits from decreased (eco-)toxic risks can be regarded as generally outweighing any potential disadvantages to the environment.

Only for the remaining cases, a comparison of impacts may be needed.

You can read more about it here: [“There are several substances that we identified as a candidate for substitution, how do we know which one is the most important?”](#)

In addition, tools like [SubSelect](#) may help you to prioritise.

### **40. There are several substances that we identified as candidate for substitution, how do we know which one is the most important?**

It really depends on which priorities you find the most significant in your company.

First priority, and as a minimum, is legal compliance. So, if there are any legal requirements which make substitution necessary, this is the first to go for.

Then, you may prefer protecting the environment or rather human health, you may want to start with a “simple” substitution, or you could consider larger technology investments, which may enable substituting chemicals at a larger scale. You may want to consider your clients demands or substitute a substance, of which you know that there is a good alternative.

Tip: make a list of the values of the company (e.g. sustainability, protection of workers, transparency) and derive which priorities could be set based on this – what fits to the company? Then assess, which “case” should be the most suitable to start with.

#### 41. What are the most important lists of chemicals to keep an eye on? What is the SIN List?

The most important lists of chemicals are regulatory lists, in particular the REACH candidate list for authorisation.

To check this and other (future) legislation see “How can I prevent my company from starting to use new substances or mixtures that are hazardous and may be regulated in the future?”

The SinList is not an official regulatory list but is established by an NGO called ChemSec. The list contains approximately 900 substances that ChemSec has evaluated as fulfilling the criteria of a Substances of Very High Concern under REACH, but which are not (all) listed on the candidate list for authorization. The SinList can be used to identify, prioritise and substitute hazardous chemicals in products and processes with safer alternatives.

#### 42. What I should do if I find out that my chemical is on the candidate list?

The action needs and the obligations from using a substance, which is included on the candidate list for authorisation (a so called Substance of Very High Concern (SVHC)), depend on what products they are included in. Therefore, you should first identify your legal obligations.

- 1) If you are a **formulator** (you use it as an input material to a mixture) ensure that you list the SVHC in Section 3 of your safety data sheet, if its concentration exceeds the concentration limit for identification.
- 2) If you use the SVHC (as part of a mixture) to **produce an article**
  - a. Calculate the concentration of the SVHC in the article (cf. guidance on substances in articles on the European Chemical Agency’s webpage).
    - i. If the concentration exceeds 0.1% (w/w) you need to provide at least the substance name and possibly information on safe use
      1. To your commercial customers immediately
      2. To consumers within 45 days and free of charge if they request it

3. To ECHA together with other information under certain conditions<sup>4</sup>
  - ii. If the concentration remains under 0.1% (w/w) you have no legal obligation to communicate it to others
    - b. You should consider substitution of the SVHC if it is above 0.1% w/w as your customers are likely to ask more and more for SVHC-free products
- 3) If you **produce a product that consists of several articles** and were informed that one (or more of them) contains an SVHC in concentrations greater than 0.1% (w/w) you have to forward that information to
  - a. your commercial customers immediately
  - b. consumers within 45 days and free of charge if they request it
  - c. the European Chemicals agency, in case this has not been done by your supplier already
- 4) If you are a **retailer** and are informed by your supplier that an article you buy and sell contains an SVHC above 0.1%:
  - a. You are obliged to forward that information to your commercial customers and provide it to any consumers on request within 45 days and free of charge

More about Candidate List obligations can be found on the [European Chemical Agency webpage, in particular the guidance on substances in articles](#).

Additional information:

Substances on the candidate list have very hazardous properties and their use should be avoided as much as possible. Therefore, and in addition to the legal compliance, you can check the market if there are any other chemicals or technical solutions that have the same functions but are less harmful to human health and environment. If this is the case, you should consider starting the [substitution process](#).

**43. We are using only chemicals from well-known European companies with a stringent chemicals safety policy. So, there is nothing that we should substitute, right?**

Not necessarily.

Companies that do care for chemicals management may produce or use substances of (very high) concern. As long as they are not restricted, this is legally possible and may even be necessary, as a suitable alternative may not be available for all uses of a hazardous substance.

Therefore, you should always look at the Safety Data Sheets and assess if there are substances of (very high) concern, e.g. by comparing it with the REACH candidate list for authorization, which lists [Substances of Very High Concern](#). If this is the case, you may consider substituting the mixture or requesting your supplier to substitute the substance(s) in it.

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<sup>4</sup> Notification to ECHA is needed if the total amount of that SVHC in all of your article exceed 1 t/a and the substance is not already registered for that use.

You can also use the [SinList](#) for comparison with the SDS. The SinList lists substances, which the institution ChemSec has evaluated as fulfilling the criteria of a Substances of Very High Concern under REACH, but which have not (all) been listed on the candidate list for authorisation.

The use of substances included on the REACH candidate list may require authorisation in the future. Early substitution of these chemicals helps to avoid issues in the long run.

#### **44. All chemicals we use we manage properly (safe storage, apply occupational safety measures, etc.). Do we still need to substitute?**

The “need” to substitute is not static but requires looking at the individual chemicals and the products/processes they are used. Generally, there is always room for improvement, so substitution should be considered regardless of the proper handling of chemicals. Read more about [substitution](#).

#### **45. Are there any electronic tools that could help with identifying suitable alternatives to hazardous substances?**

There are some tools to support identifying alternatives, but as their suitability depends on the specific case, their ability to help is generally limited.

Finding an alternative for a hazardous substance really depends on each case. Your best bet would be to contact your supplier and ask them about an alternative chemical or to contact their competitors, i.e. suppliers of similar types of chemicals and ask if they provide alternatives. However, they would only advise you on chemical alternatives.

There is the “[Marketplace](#)” organized by ChemSec, where information on alternatives are provided according to different categories. The aim is to bring suppliers of safer products in contact with users of chemicals that should be substituted. These alternatives may include more fundamental changes, such as using a different material.

An industry association may be able to support in the identification of alternatives, as well as universities or scientific literature. Also, check the question [“How do I identify alternatives? Is it OK to ask our supplier? Where to find the potential alternative substances for substitution \(databases, websites and etc.\)?”](#)

#### **46. During our research, hazardous substances were found in the company's wastewater, but we do not use such substances after reviewing the chemicals inventory. What should we do?**

Some hazardous substances can be released from semi-finished and finished articles used in the company's processes such as textiles, or plastic materials. Another potential source of hazardous substances entering the wastewater system could be impurities from raw materials

or reaction products of chemical processes. Finally, the incoming water from the water company could already be contaminated and/or rainwater run-off might contribute to contaminations of the wastewater.

You may consider which of these pathways you think are most likely to be the origin of the substances and may contact your suppliers about more information on suspicious raw materials, chemicals and mixtures. Laboratory testing could also help to identify the source of hazardous substances. If this does not help to eliminate the source of hazardous chemicals consider (additional) treatment of wastewater, if possible.

## Finding alternatives

### 47. How do I identify alternatives? Is it OK to ask our supplier? Where to find the potential alternative substances for substitution (databases, websites and etc.)?

The first thing to do is to contact your supplier asking to provide an alternative. Then you can do Internet research, screen scientific literature, contact industry associations, or screen case story database [Subsport plus](#). There is also a database of alternatives called "[Marketplace](#)". Read about this in the question ["Are there any electronic tools that could help with identifying suitable alternatives to hazardous substances?"](#).

When making the list of possible alternatives it is important to understand the function the chemical performs in the product or process and if this function can be achieved using non-chemical means. This widens the scope of possible substitution options from "only" chemical-to-chemical to also changing technologies where chemicals are no longer needed, changing the product design or eliminating the need of the functions as well.

### 48. If I identify more than one alternative, how do I know which one is best?

It is very important to assess possible alternatives. There are several methods and available tools to assess alternatives. In general, you need to carry out a hazard/risk assessment, a performance assessment, an economic viability assessment, and an assessment of other impacts. There are a few tools that could be used for alternative assessments, such as [SubSelect](#) (SME friendly free IT-tool may be of help for a rough comparison of alternatives), [GreenScreen](#), and [GHS Column Model](#).

More information with useful links can be found on [ECHA's website](#).

## Alternative assessment

**49. We learned that we can reduce the use of disinfectants (containing environmentally hazardous substances) with new equipment by applying local heating, but it requires energy. How can I know if it's feasible from an environmental point of view?**

Check the severity of the hazards first. If the disinfectant contains significant amounts of PBTs/vPvBs or PMT/vPvM substances, then it is worth considering making a life-cycle assessment (LCA) to get a better idea about the size of the impacts of a substitution. If the disinfectant is classified as H411 but used in low amounts/concentrations it may be better to continue the use, as energy production is also related to emissions of toxic substances (emissions from energy production plants). Please note that LCAs are not targeted to assess toxic impacts of chemicals. While they have respective impact categories, they are too rough to provide a clear decision about whether or not toxicity reduction should be preferred over energy reduction.

**50. What can be done if there are no appropriate substitutes?**

Very often companies encounter problems with substitution because alternatives are simply hard to find. Some ideas on how to find alternatives are given in question ["Are there any electronic tools that could help with identifying suitable alternatives to hazardous substances?"](#). If your search does not result in the identification of alternatives, you should document your efforts, i.e. prepare a report on whom you asked, where you looked, what you checked, which chemicals appeared to be possible and why they turned out not to be an alternative.

There are two reasons you should document your efforts: 1) if authorities come to check, e.g. to enforce substitution requirements of VOCs under the Industrial Emissions Directive or substitution efforts to implement workers protection, you can prove that you did your best but that currently no alternatives are available. 2) if you want to search for an alternative at a later time, e.g. after 5 years, you have a good starting point and can save assessing the same substances, products, technologies or other options for a second time.

**51. What to do when company faces changes in product quality after substitution? In case the product does not provide the same properties or qualities.**

If the product quality decreases after substitution you should not substitute but look for another alternative now or later! Make sure you communicate with your customers, provide them with the new product (with the alternative) and ask them to thoroughly test it for their uses and purposes before you start regular production, or drop the substitution if the quality is not sufficient!

Substitution needs to follow a particular sequence, so that companies do not end up with a product that does not fulfill the quality criteria of the customers/the market. It may be

acceptable to have a certain decrease in quality if this is justified by an increase in another aspect, but this must be thoroughly assessed and communicated with the customers.

Substitution starts with problems of identification, followed by a search for alternatives and their assessment. The assessment should include the achievable quality of the product with the alternative as well as whether it meets all related criteria set by the company (legal, technical, (eco-)toxic hazards, cost, etc.). The alternative(s) meeting the criteria should then be tested in practice. A particular chemical substance/mixture is tested in manufacturing, the end product properties are investigated, sent to laboratories for various analyses, tests. If it satisfies all of the criteria, it can be adapted to full scale manufacturing. A company that does not comprehensively test an alternative before taking it on, risks not only its reputation, but also its pocket.

## Getting support

### 52. Who can help me if I do not know how to substitute?

Contact research institutes, industry associations, consultants. Read the information materials on substitution, browse databases of substitution cases ([“Where can I find good practice examples on substitution?”](#)).

### 53. Where can I find good practice examples on substitution?

Here are a few databases and websites with implemented substitution cases:

- Cases from the Baltic states on the [Fit For REACH website](#);

SUBSPORTplus - the databases of nearly 400 cases where the search can be done within different industry sectors, function of chemicals, industrial processes and/or by individual chemicals.

### 54. Can inspectors help me regarding substitution?

Yes, they can help you in identifying hazardous substances, especially related to legal compliance which could be substituted. Also, they can provide information about the substitution process, e.g. where to find information on chemicals, their properties, legal status, financial support, etc.

### 55. How do I know that a consultant is really good for me?

A consultant should help to solve particular problems, should report the results of their work, and be transparent.

ECHA published a checklist on [“how to hire a good consultant”](#).

## 56. Are small companies capable of substituting chemicals by themselves?

Whether or not substitution can be done with a company's resources does not depend on the size of the company but on the complexity of the substitution case and the respective competences of the staff.

If there is a person who is eager and responsible for organizing such a process, it may even be easier in a small company, because less people need to be involved.

## 57. Where to find financial support for substitution if there are large scale investments needed?

You can check the national available funds that support protecting the environment, SMEs, occupational safety, green industry, eco-innovations and other related topics. Usually many funding programmes can be found through the ministries of Economics and Environment. Funding opportunities can also be found in various [EU funding programmes](#) (i.e. [LIFE](#), [Horizon 2020](#), [EIB](#), etc.) , EEA and [Norway grants](#), also check private funds.

## 58. How much does substitution cost?

It really depends on the case and the scale. Some substitution cases can be implemented with very little additional costs, others that require extensive investigation, testing and technological renovations may cost a fortune. However, substitution may also save money as it can bring regulatory, waste management, IPPC associated costs, personal protective equipment (PPE), emission to air or to water management costs down. In fact, substitution can even become profitable. But the financial balance of substitution can only be known when the scope of your substitution is determined.

## Benefits of substitution

### 59. What is the benefit to the company of implementing substitution?

Substitution may ensure compliance with current and future legislation, increase production efficiency and the product quality, help companies to gain a competitive advantage in the market, and save costs (e.g. related to occupational health when there is no longer a need to use PPE and/or to install other risk control measures). Ultimately, substitution benefits human health (workers and consumers) and the environment, and contributes to the credibility of a company's environmentally friendly image.

Cost savings might be not so obvious because in the short-term a lot of costs may arise. Therefore, it is wise to estimate costs over at least a mid-term perspective and to include the whole product life-cycle into the cost assessment.

Substitution may also just be the starting point to review the design of a product and process and in the end result in larger innovation.

## **60. How can I communicate that I successfully substituted a hazardous substance? E.g. as marketing argument?**

You can communicate that you do not use specific substances (anymore) on your website or in any environmental or sustainability report. It may also be of interest for investors.

If you communicate that a particular substance is no longer contained in your product(s) you should ensure that you follow the rules for making such claims to avoid “green washing”. You should have sufficient evidence to prove the change, for example within your SDSs or ingredient list of the product. To encourage development of meaningful and reliable environmental claims and to avoid misleading information, we recommend following four principles:

1. Address the most important environmental aspects throughout life-cycle of the product or service
2. Develop precise and clear content of the claim
3. Use only visual information that is relevant
4. Ensure that the claim can be substantiated

You can download our publications for further reading [“Use of Environmental Claims: Best Practices for Companies”](#).

You should not forget to communicate successfully implemented substitution. This could be a good case to gain market advantage and new clients.

## **61. If we admit that we use hazardous chemicals, will we harm our image?**

There is no better way to improve the company’s image from a chemicals point of view than with responsibility, transparency, and aiming to change for the better. In fact, most companies use chemicals that are hazardous in some way, partly because they are necessary to fulfill a certain function and there is no alternative. Other reasons include hazards only becoming recent knowledge and partly because it is not deemed important. The most responsible companies are those which are not only transparent but also choose to phase out the most hazardous substances and replace them with safer alternatives, wherever this is feasible.

## **62. Are there any cases where substitution would turn out to be profitable without large initial capital investments?**

Yes, there are. You can check cases developed through the [project LIFE FitForREACH](#).

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