


A close-up photograph of a person wearing a white nitrile glove holding a glass test tube. The test tube contains a yellow liquid. The background is a blurred laboratory setting with various glassware and equipment.

# SUBSPORT

the Substitution Support Portal



– guidance on how to substitute  
hazardous chemicals



*“Many hazardous substances are posing a big threat to our freshwater, marine ecosystems and to nature generally. The SUBSPORT project will help us to better understand which substitution solutions and innovations companies have applied so far to protect our environment and our health.”*

*– Tony Long, Director European Policy Office,  
WWF (World Wide Fund for Nature)*

# Your resource

Substitution is a core action to reduce the risks hazardous chemicals pose to the environment and public health. However finding a safer substitute can be a challenging task – the SUBSPORT web portal is your resource to facilitate this work.

SUBSPORT is a free-of-charge, multilingual platform for information exchange on alternative substances and technologies, as well as tools and guidance for substance evaluation and substitution management.

The SUBSPORT web portal aims to be the first entry point for anyone interested in substituting hazardous chemicals, to support companies in fulfilling substitution requirements within EU legislation, as well as being a resource for other stakeholders such as authorities, environmental and consumer organisations, and scientific institutions.

You are welcome to use SUBSPORT and to share your substitution experience in our growing database of case stories.

[www.subsport.eu](http://www.subsport.eu)

# The idea behind SUBSPORT

The substitution of hazardous substances is an important measure to protect the environment, as well as the health and safety of workers and consumers. European and international legislation emphasises the need for substitution or compels enterprises to find alternative solutions due to substance restrictions.

**The SUBSPORT project** is based on the belief that enterprises all over Europe, and beyond, already substitute hazardous chemicals ahead of legislation. This is done due to company policy to gain competitive advantages by producing safer products and saving chemical management costs, as well as to benefit from a green and innovative image. However, for various reasons, qualified and well-prepared public descriptions of these substitution activities have until now been missing.

**SUBSPORT collects such enterprise reports** and similar documents on substitution as the core of its information portfolio, which is provided free of charge and in four languages.

**Substituting a hazardous chemical** can be made easy by copying good ideas and practice from other enterprises, but it can also be a complex innovation process involving several stakeholders within a company and the supply chain. Experience demonstrates that enterprises learn best

from reference enterprises, from those companies that successfully use substitutes in their processes.

**The SUBSPORT portal** not only provides information on case stories, alternative substances and technologies, but also on tools and guidance for substance evaluation and substitution management. To guarantee quality SUBSPORT developed a harmonised alternative assessment methodology in cooperation with an experienced institute from the US – the Toxics Use Reduction Institute (TURI).

**SUBSPORT aims to support enterprises** in fulfilling an increasing level of substitution requirements from authorities, be it national or EU legislation, such as the REACH authorisation procedure, the Water Framework Directive or the Chemical Agents Directive. Furthermore other stakeholders, such as authorities, NGOs or scientists, will benefit from the portal, such as promoters or pressure groups, researchers or decision makers. Due to the variety of target groups, SUBSPORT provides specific access points to information, i.e. different levels of detail, adapted language and various navigation options.

**The SUBSPORT project gathers a network** of stakeholders who assist in developing content and promoting the portal, as well as ensuring sustainable updates and maintenance.

**The SUBSPORT training sessions** are already a success story. SUBSPORT partners are providing training in different countries and for very different groups of users on substitution methodology and the assessment of alternatives.

**The EU supports SUBSPORT financially** through its financial instrument for the environment, the LIFE Programme, together with complementary financing from the German Federal Institute for Occupational Safety and Health (BAuA) and the Austrian Lebensministerium.

**The project coordinator** – Kooperationsstelle Hamburg IFE – was able to form the SUBSPORT consortium, involving three other experienced institutions – ISTAS, Grontmij and ChemSec. Each partner already runs databases on hazardous chemicals (RISCTOX, SIN List) or provides information on alternatives (CATSUB, CLEANTOOL, ALTERNATIVAS).

**These four partners** have worked together to make SUBSPORT the major state-of-the-art resource on safer alternatives to hazardous substances it now is.

*– Dr. Lothar Lißner, Managing Director,  
Kooperationsstelle Hamburg IFE GmbH*



# Aiming to substitute hazardous chemicals

## Sign up for the SUBSPORT newsletters

The portal provides news about substitution as well as a newsletter – sign up here!

## Legal substitution requirements

This section presents an overview of regulations and international agreements covering the issue of substitution.

## How to identify hazardous substances

This section offers guidance on how to define substances of concern providing an overview of the criteria and definitions most commonly used by different stakeholders.

## Database of hazardous substances that are legally or voluntarily restricted

Which are some of the hazardous substances that we need to substitute most urgently? The SUBSPORT Restricted and Priority Substances Database encompasses several lists of hazardous substances that are legally or voluntarily restricted by authorities or companies, or proposed for restrictions by trade unions or NGOs.

## Database with substitution examples

This database presents practical examples of substitution, and many of the case stories are provided directly by companies carrying out substitution efforts. The case stories can serve as inspiration and offer concrete help to companies or organisations searching for substitutes to hazardous chemicals, as well as prove useful in e.g. procurement and in legislative processes.

## Tools to compare and assess alternatives

There is a wide range of existing substitution tools to be used to compare and assess alternative substances and technologies. This section describes several tools in more depth, including how they can be used and for which kind of assessments they are most useful.



The screenshot shows the SUBSPORT website. At the top left is the logo: a green diamond with 'SUBS' in white and 'PORT' in black, with 'Substitution Support Portal' below it. A navigation menu on the left lists: Home (with a red arrow), News, Newsletter, About the Project, Substitution Steps, Substitution in Legislation, Identifying substances of concern, Restricted and Priority Substances Database, Case Story Database, Substitution Tools, and Training. On the right, there's a banner for 'MOVING TOWARDS SAFER' with a blurred image of a laboratory flask. Below that is a 'Latest News' section with a photo of chemical bottles and a red 'X' on a label, titled 'SUBSPORT publication story datab' and dated '24.05.2012'. The text below the photo says 'Support for Substitution' and 'Substitution of hazardous chemicals is a fundamental measure to reduce risks to environment, workers, consumers and public health.' Below that is a 'Read more' link. At the bottom left, it says 'Financial Support by' with the European Union flag and the word 'Life' in a stylized font. At the bottom right, it says 'Welcome on SUBSPORT the Substitution' and 'Here you can find information to support your efforts exploring the portal and please do not hesitate to ask questions.'

# als? This portal will show you how!

**ALTERNATIVES**

**Substitution Steps**  
Substitution may be fast and easy or a more complex process. Generally it includes the following steps:

1. Define the problem
2. Set substitution criteria
3. Search for alternatives
4. Assess and compare alternatives
5. Experiment on pilot
6. Implement and improve

[Read more](#)

**Search SUBSPORT**

Website  
 Restricted and Priority Substances Database [» link](#)  
 Case story database [» link](#)

[» Overview](#)

**External substitution websites and databases**

**Your contribution**

[Provide substitution examples](#)  
[Provide feedback](#)

**Training**

[Alternatives identification and assessment](#)

## A substitution step-by-step guide

Where to start, and how to proceed? This step-by-step short guide walks you through the process from identifying which hazards to move away from, to finding and evaluating alternatives.

## Search within substitution related websites and databases

This search function simultaneously searches a number of external websites and databases containing information about substitution of hazardous substances.

## Contribute with your substitution example

Take the opportunity to share your experiences of substitution in the growing SUBSPORT case story database. The database builds on substitution examples and information on alternatives shared – the more you share, the more will be available to guide others.

## Information about training sessions

A number of training sessions on identifying and assessing alternatives are being carried out throughout Europe. Here you can learn more about the training concept and find out when and where upcoming training sessions will be held.

# Substitution case stories

The SUBSPORT case story database presents practical examples of substitution, and many of the case stories are provided directly by companies carrying out substitution efforts. Sharing information and practical experiences on substitution is a fundamental step towards phasing out hazardous substances.

The case stories can serve as inspiration and offer concrete help to companies or organisations searching for substitutes to hazardous chemicals, as well as prove useful in e.g. procurement and in legislative processes such as the authorisation process of the EU chemicals regulation REACH.

Meet three representatives from companies and organisations who have provided substitution examples for the SUBSPORT case story database.



*Wolf-Uwe Kilian,  
Managing Director of  
Kilian Industrieschilder  
GmbH, Hamburg,  
Germany*

## **1. What was the problem you were facing?**

For the manufacture of metal nameplates we used tetrachloroethylene as a solvent for the removal of bitumen protective layers from defined areas after lacquering. But as our production facilities are located in a water protection area the safe handling and prevention of emissions got more and more complex and costly.

## **2. What was the solution introduced?**

As a first alternative we used hydrocarbon solvents instead of the halogenated solvent. But then we tried esters based on coconut oil that are safer in handling and even more efficient in removing the protective layer.

## **3. What were the main drivers to seek safer alternatives?**

In the beginning, legislative requirements were the main driver, but then we recognised the benefit of an environmentally friendly policy for our enterprise and implemented an environmental management system.



**4. What were the main barriers you encountered in finding/implementing the solution and how did you overcome them?**

The alternative solvent had to remove the protective layer without affecting the lacquer in other areas, which is a very tricky process. After a long period of testing and collaboration with authorities and consultancies we finally introduced the coconut oil esters that we have been using for many years now.



*Paul Murray, Vice President of Sustainability and Environmental Affairs, Shaw Industries*

**1. What was the problem you were facing?**

Shaw set a goal of re-engineering carpet tile products using Cradle-to-Cradle design principles, including eliminating hazardous chemicals and facilitating 100% recyclability while meeting demanding environmental, qualitative and economic performance specifications compared to existing tile products. The use of industry-standard PVC backing, while it performed well, presented potential hazards in manufacture, use and disposal/recycling.

**2. What was the solution introduced?**

Knowing recyclers are reluctant to take PVC-contaminated nylon for non-carpet applications, we identified a food-grade metallocene polyolefin compound that allowed us to eliminate PVC and continuously recycle face pile and backing into new fibre and backing. This compound,

along with other technical improvements, allowed us to significantly out-perform the PVC product it replaced.

**3. What were the main drivers to seek safer alternatives?**

Commercial carpet tiles are a rapidly growing, competitive category and Shaw holds a global leading market share. Shaw pioneered the design of carpet tiles according to Cradle-to-Cradle principles in order to meet growing demand from key customers for tile products that are completely recyclable and free from the hazardous chemicals associated with PVC.

**4. What were the main barriers you encountered in finding/implementing the solution and how did you overcome them?**

PVC had been an industry-standard backing, which allowed carpet tiles to be developed to meet highly demanding performance criteria. There was no like-for-like replacement for PVC and our overall aims for the project therefore required us to re-think our product design and choice of raw materials, as well as to adopt Cradle to Cradle CM design principles.



*Carmen Mancheño Potenciano, Health and Safety Coordinator, TU CCOO-Madrid, Spain*

**1. What was the problem you were facing?**

During a visit to a hospital laundry with the worker representatives we found that tetrachloroethylene (R40) was

being used in a washing process without any protective measures.

**2. What was the solution introduced?**

Worker representatives required the company to eliminate the process or to look for a safer alternative. If they could not find any acceptable alternative, they reminded the management that they had the obligation to apply the requirements of the current legislation for protecting workers who are exposed to carcinogens. The management decided to change the process so the solvent was no longer needed.

**3. What were the main drivers to seek safer alternatives?**

The high risk of the product and its use by the workers without any protective measures.

**4. What were the main barriers you encountered in finding/implementing the solution and how did you overcome them?**

The possibility that the management would decide to outsource the process was the main risk we feared when we asked the company to search for safer alternatives. The issue was solved by the worker representatives during the negotiations with the management, who committed to maintain the washing process.



# How to assess alternatives?

How do you find out if an alternative substance is really a safer alternative? For assistance tackling this challenge, there are several alternative assessment tools available, provided by authorities, industry associations, scientific bodies and NGOs.

The SUBSPORT web portal presents a set of methods and tools for assessing alternatives, as well as guidance on which tools are most useful for different kinds of assessments, which level of knowledge they require etc.

The following assessment tools are further presented in the SUBSPORT web portal:

1. Column Model for Chemical Substitutes Assessment
2. COSHH Essentials
3. Technical Rules for Hazardous Substances (TRGS) 600 "Substitution"
4. Green Screen for Safer Chemicals
5. Determination and work with code-numbered products (MAL Code)
6. Pollution Prevention Options Analysis System (P2OASys)
7. Priority-Setting Guide (PRIO)
8. Quick Scan
9. Stockholm Convention Alternatives Guidance
10. Stoffenmanager

To avoid replacing a hazardous chemical with another hazardous chemical a Substance Database according to SUBSPORT Screening Criteria is provided for basic alternatives assessment.

*"SUBSPORT is the perfect tool to help workers and their representatives identify safer alternatives to hazardous chemicals in the workplace. It will also help employers comply with their substitution obligation under the workers' protection legislation."*

*– Judith Kirton-Darling, ETUC (European Trade Union Confederation) Confederal Secretary in charge of Health and Safety.*

# Substitution step-by-step

At the core of eliminating hazardous chemicals lies the ambition to remove them at source by substituting them with safer alternatives or techniques. Substitution is an innovation process, leading to the development of products that are no longer based on hazardous chemicals and dangerous processes.

However, finding the safer alternative chemical, or the technique or behaviour that replaces the need for hazardous chemicals altogether, can be a challenging task. This guide gives you an introduction to the substitution process – step-by-step.

*“Substitution of substances of very high concern is an important element of the REACH regulation. It also contributes to sustainable development. I believe that SUBSPORT will be a useful and important tool to many companies when searching for new innovative solutions that benefit health and the environment and often also lead to economic gains.”*

*– Bent Horn Andersen, Danish Environmental Protection Agency,  
Ministry of the Environment.*

## ➔ Define the problem

The first step is to identify which chemicals to substitute, and for which functions they are used. Prioritise which substances to focus on with regard to hazard, worker and consumer exposure, legislation, company policies, and consumer demands. A suitable focus is always to start with the most problematic substances found in the core business, or in the products sold in the highest quantities. The SUBSPORT web portal provides you with a set of useful links for identifying hazards. The Restricted and Priority Substances Database gives you a quick overview of substances of concern.

## ➔ Set up substitution criteria

Substitution criteria will help you filter the safer alternatives from the ones that are not good enough. There are several priority lists or ‘black lists’ put together by authorities, companies and NGOs, which can serve as inspiration for your substitution criteria, and they are listed in SUBSPORT’s Restricted and Priority Substances Database. You can also check the criteria used by different organisations in SUBSPORT’s Overview of criteria.

*“For the authorisation procedure under the REACH Regulation it is essential to know if suitable alternatives are available. Substitution is the first choice in chemicals management in the workplace. SUBSPORT is recommended by BAuA to find information on alternative substances and technologies that is useful for enterprises and competent authorities.”*

*– Prof. Isabel Rothe, President of the German Federal Institute for Occupational Safety and Health (BAuA), Competent authority for REACH and CLP enforcement in Germany.*

### ➔ Search for alternatives

Start by looking for alternatives already elaborated and implemented by others, which could lower both risks and costs. A good place to start is the SUBSPORT database of successful substitution case stories. Ask if your supplier offers or can develop an alternative.

You might also need to do a broad internet search, or ask stakeholders such as authorities, professional associations, NGOs, or trade unions for ideas on suitable alternatives.

### ➔ Assess and compare alternatives

Assess all alternatives with the same method or tool for comparability. Base the assessment on the substitution criteria already set up, and analyse costs and benefits. Select the alternative that is safer, feasible and fits the nature and dimension of your problem. The SUBSPORT web portal provides you with a list of substitution tools for effective alternatives assessment and substitution management.

### ➔ Test the alternative

Try the alternative on a smaller, pilot scale. The substitution process needs to be assessed with regard to

functional performance, impact on the environment, workers and consumers. Employees need to be consulted. Technological and organisational changes need to be planned and evaluated, and risks pre-evaluated. SUBSPORT lists useful links for more information about exposure and risk assessment.

### ➔ Implement the safer substitute

Any other measures or improvements needed before implementing the substitute at full scale? Collect feedback from workers and clients and inform your supply chain as well as downstream users. Implement the substitute, and continue evaluating and improving if needed. Share your substitution experience in the SUBSPORT case story database. SUBSPORT also lists useful links for more information about chemicals management.

# Want to dig deeper into the issue of substitution? Take part in our training sessions

The SUBSPORT project offers free training sessions in different languages on substitution and alternatives assessment. These training sessions are discussion-based and focus on the experiences of the participants, consisting of short introductions and practical exercises in working groups. The training is aimed at authorities, industry, trade unions, NGOs and other interested parties that want to know more about the substitution of hazardous chemicals.

The goal is to provide the participants with basic concepts and tools for substituting hazardous substances. The sessions seek to help participants get started with the substitution process, learn about the different stakeholders

involved and their interests, identify which substances are of most concern, how and where to look for new ideas and alternatives, and introduce them to tools for assessing alternatives.

For more information about upcoming training sessions around Europe, please visit [www.subsport.eu/training](http://www.subsport.eu/training). If you are interested in co-organising a training session, please get in contact.

*"I think that the group work is very enriching, sharing experiences with other participants and exchanging information with them is very useful for my daily work"*

*– Participant at a SUBSPORT training session in Madrid, 2012*

*SUBSPORT training session in Madrid, 7 March 2012*



# Project partners and funders

SUBSPORT is a project that is currently run by four partner organisations:

**Kooperationsstelle Hamburg IFE GmbH** is a German consultancy offering national and international services and studies on the topics of occupational safety, health and environmental protection. The core objective is to promote and enhance the cooperation between the world of science and the world of labour – via projects, consulting and the dissemination of knowledge.

[www.kooperationsstelle-hh.de](http://www.kooperationsstelle-hh.de)

**The Instituto Sindical de Trabajo Ambiente y Salud (ISTAS)** is a self-managed trade union technical foundation supported by the Spanish Trade Union Confederation (CCOO) to promote the improvement of working conditions, occupational health and safety, and environmental protection in Spain.

[www.istas.ccoo.es](http://www.istas.ccoo.es)

**The International Chemical Secretariat (ChemSec)** is a Sweden-based non-profit organisation working to

develop concrete tools and enhance dialogue between business, academic institutions, legislators, investors and NGOs so that important steps towards a toxic-free future are taken.

[www.chemsec.org](http://www.chemsec.org)

**Grontmij A/S** is a Danish consultancy offering services within the spheres of building, construction, water, occupational health, energy, industry and environment, with the aim to create sustainable improvements in people's working and private lives.

[www.grontmij.dk](http://www.grontmij.dk)

SUBSPORT is funded by

- LIFE+ Programme of the European Union
- Federal Institute for Occupational Safety and Health (BAuA), Germany
- Federal Ministry of Agriculture, Forestry, Environment and Water Management (Lebensministerium), Austria



# Moving towards safer alternatives



Sharing information and practical experiences on substitution is a fundamental step towards the phase-out of hazardous substances. Access to this kind of information is invaluable for businesses, regulators and other stakeholders.

The SUBSPORT project provides useful information on substitution and a number of substitution resources. At the heart of the project is a free-of-charge web portal in four languages that aims to be the first entry point for anyone interested in substituting hazardous chemicals. It constitutes a state-of-the-art resource on safer alternatives and is a source of information on alternative substances and technologies, as well as tools and guidance for substance evaluation and substitution management.

Besides the web portal the SUBSPORT project gathers experts, enhances dialogue and offers training.

This leaflet gives a brief introduction to the SUBSPORT project and web portal. For more information and guidance in your substitution efforts, please visit [www.subsport.eu](http://www.subsport.eu).

SUBSPORT is a three-year project run by Kooperationsstelle Hamburg IFE GmbH (Germany), Grontmij (Denmark), ISTAS (Spain) and ChemSec (Sweden).

[www.subsport.eu](http://www.subsport.eu)



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[www.istas.ccoo.es](http://www.istas.ccoo.es)



[www.chemsec.org](http://www.chemsec.org)



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