

Acknowledgement.

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This guide will be adapted to the conditions and regulations of United Kingdom within 2000.

Substance Register

**A Guide
to the Organisation and Use
of Chemical Information**

The Leonardo da Vinci project REDUCE

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1. Why Use a Substance Register?

Because the company needs knowledge and overview in case

- the employees wonder how disinfectants should be managed
- the company has an unintended discharge, and the authorities ask about its contents
- there is a fire in one of the buildings, and the fire department wants to know what is in there
- a former employee holds the company responsible for chronic injuries
- the insurance company inquires about the company's control of chemicals

This guide is an aid for companies that are going to build up a Substance Register, or want to utilise the possibilities of a Substance Register.

The authorities require that companies, which manage hazardous chemicals, have a Substance Register. The guide is based on the demands made on Substance Registers (according to national regulations) and on Material Safety Data Sheets, MSDS, (according to national regulations). However, the guide gives advice and guidelines beyond what is required by the authorities, which makes a Substance Register a profitable investment for your company.

What is a Substance Register?

The Substance Register in a company is a central card file, which contains information about all chemical substances and products that are used in the company. This includes raw materials, intermediate products created in the production process, self-made and purchased chemicals and products.

The Substance Register must contain a Material Safety Data Sheet for the chemical/product. For chemicals that do not require a Material Safety Data Sheet, the Card File shall at least contain information about name, composition, producer/retailer, physical, chemical and toxicological properties, risks, preventive measures, first-aid treatment.

In addition it would be useful to add information about the company's total purchase/consumption (amount), about place of use (where), and perhaps how many/who are in contact with the chemical/product.

(Reference to working environment act)

(Reference to regulations on systematic work for health, environment and safety)

The excess value of a Substance Register goes beyond keeping up with the authorities' demands. A well-functioning Substance Register will give the company control over its own chemical management, control that will give employees, customers, insurance companies and environmental organisations more security.

There are increasing demands on reducing risks regarding employees as well as the outer environment. This results in demand for documentation. Ignorance is no excuse. A company, which has not registered its chemical substances and products, may be liable to pay damages.

This is how Storebrand Insurance Company (Norway) proceeds:

When entering an insurance policy, Storebrand often supplies safety forms that are to be filled out. In most of these the focus is put on the company's routines for control of health, environment and safety. An area where this type of form is used is when entering industrial injuries insurance policy.

A good working environment, with few risk elements, reduces the company's expenses for personal injuries with following sick leave. Storebrand would like this to be taken into account in the industrial injuries insurance premium as well.

In one section of the form used by Storebrand there is a question about the company's treatment of hazardous chemicals. If the company answers "yes", they must know exactly which chemicals they use. They must also know what hazardous effects the chemicals may have, to be able to measure the proper effects. Storebrand also asks questions about training, documentation and the company's internal control system.

The insurance agent assists in filling out the form, which makes the basis for deciding the premium for the occupational insurance.

Working environment, health and safety

The Substance Register may increase awareness amongst employees about what materials they handle and what precautions must be taken to avoid injuries. Training and knowledge about proper storage and use of chemicals reduces the risk of material damage, such as fires.

A Substance Register will also provide information about what protective equipment is needed and the right use of the protective equipment. The information in the Substance Register may thus prevent accidents and chronic injuries, and in that way reduce sick leave in the company. Accidents may be acid injuries, breathing problems, dehydration of skin, headache, nausea and vomiting. Chronic injuries may be allergies, fertility damage, cancer, lapses of memory, or impotence.

Acute health injuries caused by chemical substances and products, are being systematically registered by four large hospitals in Norway. This data is collected in the injury register of the "Folkehesa". The most of the injuries are from poisoning and corrosive injuries. Doctors have a duty to report to the Labour Inspection, amongst other things, work-related diseases caused by chemicals.

In Norway there are per 1998 about 60.000 chemical products on the market that contain about 10.000 different chemicals. Each year this causes:

- 3.200 accidents due to exposure to chemical products
- 100 cases of brain-damage due to solvents

200.000 people are working with chemicals daily (more than 4% of the population).

The External Environment (Nature)

The Substance Register can provide information about expected damage, reactions and effects on the external environment. The Substance Register should also provide information on how to use the products, how to dispose of waste and empty packaging to protect the external environment against pollution and unnecessary strain.

What is Special Waste?

Special waste is waste, irresponsible disposal of which may lead to a risk of harmful pollution or injuries on people or animals. Examples of special waste are waste oil, leftover paint, discarded pesticides, outdated chemicals, etc.

Products labelled with warning symbols for fire, health or environmental hazards will almost without exception be special waste.

(Reference to regulations regarding special waste)

The MSDSs in the Substance Register provide information about the breakdown ability of the chemicals, accumulating abilities, ecotoxicity and other possible damage. The company gets the necessary knowledge to be able to replace hazardous chemicals with less harmful alternatives, where this is possible.

The Substance Register can provide the industry with a survey of the amount of chemicals used, and the industry will be able to eliminate over-consumption, reduce the total consumption and discharge of chemicals harmful to the health and the environment

Reduction in products at The Norwegian Directorate of Public Roads.

In a trial project the Directorate made a survey of the number of chemical products in use in the three northernmost counties. The figure below shows the number of registered products, and the number that remained when the first reduction step was carried out. Further reduction is expected.

County	No of products before the reduction	No of products after the reduction	Reduction in %
Norland	1474	483	67,2
Troms	1180	365	69,1
Finnmark	670	313	53,3

There are three major reasons for the reduction in number of products used:

1. Old chemicals were stored for years (these were gathered and handed in as chemical waste, or phased out in the initial phase of establishing the central card file.)
2. Great extent of freedom to purchase chemicals without checking whether the chemical had the status “allowed for use”
3. The department lacked a survey of use and purchase of chemical materials and products.

Economy

Experience shows that industries with a well-functioning Substance Register have positive results in reduction of number of products and contractors. Most companies will be able to reduce the number of products with 50 - 70%.

This means:

- less locked-up capital
- better prices
- fewer invoices

There is also an increasing demand from both customers and investors for documentation about the conditions in the company itself, and how the company affects the environment. In practice this means that companies with a Substance Register, are therefore in control of their own use of chemicals, and will have competitive advantages. Environmental profile is in demand and must be documented. In the future, the winners in trades exposed to competition, will be those who have a well-functioning Substance Register.

2. A Company Project

The work of constructing, maintaining and utilising the possibilities in a Substance Register, has much in common with a traditional quality work. The work must be firmly established in the line of command, and attitudes must characterise the company and be reflected in the company culture.

The top leader in the company (i.e. manager, chief officer, etc.) is responsible for ensuring that the company operates within the existing laws and regulations. The decision to establish a Substance Register must be made by the management of the company, and must be reflected in the company’s goal for health, environment and safety work (HES).

The top leader can delegate authority and tasks, but he cannot disclaim responsibility, neither to the line management nor to the staff management.

2.1. *The leader’s role.*

The top leader is responsible for appointing a leader for the project of constructing a Substance Register, and making resources available for the work. In addition the top leader must clarify which unit/department/person is in charge of maintenance, management and application of the register when it is established (see chap. 3.6 for further guidelines on where the Substance Register should be located in the company).

It is important that the top leader makes sure that the project leader and the Substance Register manager (this may be the same person, but not necessarily) get the necessary authorisations.

In order to achieve a complete and well-functioning Substance Register, the whole company must be involved. For small companies this does not require much information, but in larger companies each unit/department must be informed, see figure 1 (i.e. the sections found in the company). The information must be given in a way that makes the involved line leaders understand the importance of a Substance Register. In larger companies the line management should get a course in the Substance Register, and be responsible for informing their respective units/departments.

2.2. The role of the project leader.

The project leader is responsible for constructing the Substance Register, i.e. to make sure that information is gathered about which chemical substances and products are used in the company. The project leader must see to it that there is an updated Material Safety Data Sheet for all these chemical substances and products, make sure that these are gathered in appropriate way (card file, data base, excel sheet), and to ensure a good management of the Substance Register. The project leader is responsible for reporting to the top leader and to the board of directors if desired.

Who should be project leader?

Others who at present are in the staff management, like the HES-leader or the purchasing officer can carry out this function, or it may be given to another employee qualified for the work (see figure 1).

For a number of companies, especially small ones, it might be useful to hire an experienced person to lead the project of constructing a Substance Register. The disadvantage of hiring a person, however, is that a lack of knowledge about the company and the company culture may complicate the work. It is also more demanding to establish routines for good management of the Substance Register when the construction work is completed and the project leader is no longer in the company.

The ideal project leader!

Each company must adjust the demands to the company culture. However, experience has proved the following points to be useful:

- Experience of project work
- The ability to be systematic and thorough
- Good communication skills and the ability to motivate
- Personal interest and understanding of the importance of a Substance Register
- Broad knowledge of the company (or quickly acquire this knowledge)

It is not necessary for the project leader to have chemical background, but the person in question should not be afraid of complicated chemical formulae!

Suggestions for authorisation/job instructions for the project leader

For the company to have a complete Substance Register, the project leader must have clear framework for his work. The framework can be set out in the form of job instructions, or through authorisation for the work. The work must be put in concrete terms, the authority of the project leader defined, supply of resources described (it is recommended to define use of time and budget in advance), and procedure for reporting made clear.

The work comprises:

- make sure that all chemicals and chemical products found in the company are registered
- constructing the Substance Register
- adding MSDSs to the Substance Register
- organise the use and operation of the Substance Register

Authority may include:

- decide on disposal, if needed
- instruct units/departments to register their own products
- appoint persons in charge of registration in the units/departments in question
- establish a chemical forum to support the construction of the Substance Register

Supply of resources:

- make clear how much time is allocated for constructing the Substance Register (in units/departments, and if the project leader has permanent appointment with other defined tasks)
- budget (e.g. to purchase a Card File, to hire personnel, for management)

The project leader should preferably report directly to the top leader and through the top leader to the board of directors, but it may be expedient (in large companies) to place the project leader further down the line so that he reports in the line of command.

2.3. The role of the working environment committee and the safety deputy (where that exists)

(Referring to regulation)

3. Planning and Organisation of the Substance Register

When the project leader has been appointed, the work itself starts. The figure on the centre page in the guide illustrates the progress of the work. Feel free to take it out and put it up on the wall, then it will be easier to see where you are in the process, and what is left.

Remember - the Substance Register is not primarily meant to meet the authorities' demands (obviously, however, this is a useful side effect!). The Substance Register is to be established and used to prevent damage on people's health and on the environment, cf. chapter 1.

3.1. Status for existing routines

Before the actual registration of chemical substances and products starts, the project leader must find out what routines exist at present, to reveal lack of routines.

This may be

- routines for approval of new chemicals
- routines for registration of chemicals
- routines for obtaining a MSDS
- routines for disposal
- routines for upgrading the MSDSs
- routines for training
- routines for reporting accidents

The survey should give a picture of what is well functioning and what is not.

3.2. Chemical Committee/Forum.

During the work of constructing the Substance Register, it may be useful for large companies to establish a consultative forum, for instance a chemical committee. The committee may give advice to the project leader and later on give advice to the Substance Register manager regarding disposal/removal of products, how to find the least dangerous products, etc. A chemical committee would be made up of resourceful persons in the company.

An example of a Chemical Committee in a Municipality

- Project leader / Substance Register manager
- Chief Fire Officer
- Purchasing Officer
- Municipality doctor
- Safety officer
- Safety deputy

3.3. Disposal and History

The project leader must decide on the relations between registration and disposal. Experience shows that there are two alternatives.

Alternative 1: Register everything. Then evaluate whether products in store in small quantities and products that are not in use can be transferred to other departments or disposed of/removed.

Alternative 2: Registration and disposal is made continually.

A good example of alternative 1 being profitable, is a large municipality in Eastern Norway that established a Substance Register. On average, 50 litres of stain, which there was no use for, were found in storage in every nursery school in the municipality. These were collected and later used on other buildings in the municipality.

Using alternative 2 the possibility of transferring remains/products not in use to other departments is lost. The job, however, may seem more manageable, and will be labour saving, especially for small companies. If alternative 2 is used, it is important to give guidelines to the person/s doing the registration. The guidelines must comprise criteria for disposal, labelling, and registrations of the products that are to be disposed.

Regardless of whether you choose to dispose of products during or after registration, every chemical that is to be removed/disposed of, must be registered, preferably with a MSDS in a historic file (or in the Substance Register). A historic Substance Register with information about all chemicals used and stored in the company will provide information concerning possible chronic injuries.

The same applies to products whose MSDSs are being revised; the old MSDSs should be filed in the historic file. It is also an idea to attach the MSDSs to a document, which says what the product was used for.

3.4. How to manage purchase in the registration phase?

When planning how to register the chemical products in the company, it must be decided what measures the company will take, with regard to the purchase of new products. This is to prevent alteration in the use of chemicals in the different areas, without the person doing the registration getting feedback about these alterations.

There are two alternative solutions:

Alternative 1: Establish routines for gathering information about new products, which will be added to the Substance Register during the registration.

Alternative 2: Introduce purchase ban for new products.

The following should be considered before choosing alternative:

- present routines - is it possible to introduce (new) routines for collecting MSDSs and approval of new products in the company?
- the size of the company
- number of purchasers

3.5. Choosing system

Now time has come to consider what type of filing system the company should have. There are two main alternatives: An electronic card file or a paper card file.

Things to be considered:

- the size of the company
- number of MSDSs to be filed
- number of users
- availability for the users

For companies where few employees use a limited number of chemicals, it may be practical to base the file on a simple loose-leaf file with paper copies of the MSDSs (e.g. small laboratories, offices, etc.)

If the company, however, uses many chemical products that vary greatly over a period of time, an electronic solution should be chosen. An electronic solution can be a simple calculating sheet or a fully defined data base system. NB! It is important that the project leader and the IT section co-operate on the choice of solution, and that the card file system may be integrated into existing systems (e.g. the internal control system).

Electronic systems on the market pr. January 1999 (Norway)

- CHESS from Tero Safe AS
- SafeWin from Quasar AS
- SENSOR from Loke Software AS

These systems make it possible to print out different forms of reports.

There are also electronic databases on the market that contain a given number of ready-made MSDSs. However, they do not meet the requirements for a company's Substance Register. Remember that the importer/retailer is responsible for providing an updated MSDS. A ready-made database may easily make that responsibility unclear and the database will soon become outdated. It is also possible to build up your own electronic database, or collect the MSDSs in an electronic calculating sheet.

3.6. Who should manage the Substance Register?

The manager of the Substance Register should be the person in charge of the system for the Substance Register when the construction phase is completed, cf. chapter 6, Operation Manual. If the project leader is not to be in charge of the Substance Register, it is important that the management at this stage decides who is to be in charge when the Substance Register is completed, in order that this person can follow the work and make some suggestions.

Where to place the responsibility for the Substance Register, depends both on the size of the company and type of organisation. If the company has its own HES-department this would be the obvious place for the overall responsibility for the management of the Substance Register. Other possibilities would be that the department/unit that uses most chemical substances and products will be in charge of the Substance Register, or that it is placed in a central purchasing department.

Regardless of where the company places the responsibility for the Substance Register, the operating manager must have access to the necessary competence to be able to quality check the MSDSs, cf. chapter 4.6. The manager should have authorisation as regards registration, training, reporting, etc. Large companies with an electronic system need to appoint a manager in each unit/department.

4. Registration

The registration phase gives a survey of which chemical substances and products are found in the company. The foundation for the quality of the Substance Register is laid at this time. The registration consists of several phases:

1. Register which chemicals are in use and in storage
2. Dispose of products that are outdated or no longer in use (NB special waste, see definition in chapter 1)
3. Collect MSDSs for products that have been and are in use
4. Register the MSDSs and any other information (see chapter 1) in the Register.

4.1. *What should be registered?*

(Requirements about a Substance Register are found in regulations.)

The Substance Register should contain MSDSs for chemical substances and products as found in regulations. For optimal use of the information in the Substance Register, it is recommended to collect/prepare MSDSs for all chemical substances and products found in the company, including those that are outside the scope of the regulation. Only then will the company have a complete Substance Register, which will provide information about development over time, and ensures the environmental profile of the employees as well as the company, cf. chapter 1.

The MSDS regulation requires data sheets for all substances and products with obligatory labelling. Note that products that ought to be labelled may not be labelled! No label may be due to the product being old and the criteria for labelling being altered after the product was

manufactured. Another reason may be that the producer did not comply with the rules, or that your company has changed the packaging, e.g. poured white spirit into empty plastic bottles, poured diesel into unlabelled cans, etc.

What should be registered?

Examples of products are acetone, benzene, rust-remover in an aerosol container, detergents, painting, cement, thinners and laboratory chemicals.

In brief you could say that chemical substances and products (chemicals) are everything that is found as liquids, as paste, powder or gas. Substances and products that alter properties when used should also be registered, e.g. welding electrodes which emit gases when used.

Experience shows that many companies lack knowledge about the amount of chemicals found in their own company – “we do not deal with chemicals”. Just think about the amounts in your own kitchen cupboard, in the garage or your hobby room!

4.2. Who should register?

The project leader has to decide to what extent s/he can do all the registration, or if a responsible person is needed in each unit/ department. If the size of the company requires more people to carry out the registration, the project leader must see to it that persons in charge of the registration are appointed, and give instructions on how to carry out the registration.

It is important that the person carrying out the registration, has proper protective equipment to encounter chemical problems.

Check list for registration work:

- Use protective equipment! Clothes, goggles, gloves, shoes.
(Remember that you may run into chemicals that are unlabelled / with a wrong label, that can be caustic, carcinogenic, etc.)
- Use registration sheet (cf. 4.1 What is to be registered)
- Mark the products you are going to dispose of / recommend for disposal
- Make sure the chemicals are securely stored (e.g. in a locked cabinet)

4.3. How to register?

To be able to produce an updated MSDS for the products found in the company, start with registering what chemical substances and products are found in use and in stock.

The registration must include:

- Brand name
- Contractor (not a local retailer, unless there is only a foreign contractor stated on the label)
- Whether the company has an updated MSDS for the product

Additionally, the following information should be noted:

- Warning symbol for health, fire and environment
- (YL group. Norwegian regulations on organic solvents.)
- Amount
- What language the label is in
- Products with old labelling.

It would be advantageous to note whether the products are in use, will be used or are dispensable. Products to be disposed of should be marked, cf. chapter 3.3 Disposal and History. If the product is special waste, it must be sent to an approved refuse disposal plant.

It is also important to register pipes with drain cocks; each cock should be labelled with information about hazards. It is recommended to use the label of the substance/product.

4.4. Routines for collecting MSDSs for the Substance Register

Collecting MSDSs can be carried out during the registration phase, or it can be done when the registration is finished. It may be convenient to ask the contractors for all the MSDSs at the same time, but then you have to wait until the registration is completed. On the other hand the registration work and installation into the Substance Register will be more evenly spread if all the MSDSs do not arrive at the same time. In other words, it is a matter of taste - and the project leader must decide which method to choose.

What should be asked for?

The information in the Substance Register must make the users able to manage the chemicals in a secure way. The information must contain 16 obligatory points.

If you have chosen a paper-based register, you ask for a paper copy of the MSDS. If you have chosen an electronic register, you ask for the MSDS in the format you request. If the contractor cannot meet your request, at least ask for an electronic sheet so that you can transfer it to your Substance Register by the cut-paste method, or ask for an HTML-format on Internet. The last alternative if you have an electronic register, is to scan in a paper copy.

Check list for collecting MSDSs:

1. The MSDS contains all 16 points in English

2. The right format (paper, excel, data base)
3. An updated MSDS within a given date (if they cannot meet such a request, the contractor should not be employed).
4. If the contractor does not have an MSDS because the product does not require obligatory labelling, you still ask for an MSDS, or at least demand a confirmation of the product not being hazardous to health, environment or safety.
5. Set a deadline for the receipt of the MSDS.

4.5. Reporting

When you have carried out the initial registration, and the work of collecting MSDSs has started, you should report what you have got, both up and down the line of command. How many inflammable products / Which materials are in stock and in use in the company? How many products or materials are there? In what amount? How many toxic products? How many contractors do you deal with? How large is the stock? etc. Most people are surprised, and both the management and the staff can get motivated to work with the Substance Register when such figures are presented. This can also influence the management to re-evaluate and understand the HES-goals. Chapter 5 will go thoroughly into this question.

4.6. Quality control of MSDSs.

When the MSDSs arrive, they must be quality controlled before they are filed in the Substance Register. The project leader can carry out quality control or the responsibility can be delegated to the chemical committee or other forums.

First of all the quality control implies that the necessary information has been provided (referring to regulations), and that the MSDSs are updated as requested. Below is a useful checklist.

If the company does not have the necessary competence to carry out the quality control of the MSDSs, external sources like safety deputies and health personnel (industrial hygienist) or consultants may be contacted.

Quality control of MSDSs.

1. Is the contractor registered in the Product Register?

All importers / producers must declare products which have a hazard or classification.

Remember that the contractor named in the MSDS, is identical with the one who is legally liable for the information.

2. Is the MSDS updated?

The minimum requirement is that it must be updated in accordance with new regulations, NB new requirements for environmental labelling, and requirements for labels on aerosol cans.

3. Does the MSDS contain all 16 points ?

Regarding point no. 2 Chemical Composition: Check what components are the bases or the classification, and that these are in accordance with the latest chemical list.

Regarding point no. 8 Exposure Control and Personal Safety Equipment:

Check that the information agrees with the latest norm list

- «Use suitable respirator” is not sufficient information
- protective gloves / gloves must state type, e.g. rubber gloves, neoprene gloves, etc. “Use protective gloves” or “Use appropriate protective gloves” is not sufficient information

Regarding points 11 and 12: Check if the information about health or environmental hazards in this point is in agreement with that on the label. Check the label on the product or ask the contractor to enclose a label.

Remember that all products must be labelled in English!

If there is any insufficiency in the MSDS, contact the contractor and ask for a new MSDS. The contractor must provide an updated MSDS, cf. latest regulation.

If you are unable to get a complete MSDS from the contractor / producer, do not use the product. Only MSDSs you approve of are to be filed in the Substance Register. If you are not sure, contact the local occupational inspection authorities for help and advice.

When importing and producing chemicals for own use, or when mixing raw materials to a semi-product or a manufactured product, the company has the responsibility to prepare English MSDSs and see to correct classification and labelling.

Input into the Register

When an MSDS is “approved of”, place it into the Register together with other information like place of use, amount purchased, etc.

5. Goals and Priorities

When the Substance Register is completed, the company can, based on HES-goals, decide work priority and define projects to reduce the strain on health and environment caused by use of chemicals.

It is you, the project leader, together with involved parties like the Chemical Committee, Working Environment Committee, involved employees and the safety deputy, who must reveal the problem areas and suggest new goals, give priority to measures, and define specific projects. Below are some hints on how to proceed with this work.

5.1. Status Report

When the registration is completed, and the filing is in progress, you will probably be able to describe the present situation. A description of the company's use, storage, and management of chemicals will be the best way to reveal faults and flaws, and motivate both management and staff to work with chemicals.

The status report should state number, volume, and type of products, number of products in stock, etc.

Examples of status reports from the Substance Register:

- what carcinogenic chemicals are used in the company and where are they used?
- where are products containing organic solvent used?
- how many detergents are used in the company?
- where do we find explosive substances?

There may also have been some hints and comments from the employees during the registration. These should be taken seriously, and be referred to anonymously in your description of the present situation.

Authorities' Requirements

Based on the status report, check if the company meets the authorities' requirements.

First you need a survey of what chemical-related requirements your company has to comply with. Many countries now offer information on the Internet. If you are not sure of what requirements your company has to comply with, contact the inspection authorities.

5.2. The Company's HES-Goals

Then you can start defining the company's own goals and requirements concerning chemical management, or compare the information in the Substance Register with existing goals.

Examples of goals:

- 0-emission of high-priority environmental poisons
- 100% secure waste management
- Reduce the number of chemical products in the company (with x %)
- Reduce the number of products with warning labels (with x %)
- Reduce the consumption of chemical products (with x %)
- Introduce routines for purchase of chemical products
- Introduce good routines for training employees

Examples of requirements:

- Products with $\text{pH} > 12$ or $\text{pH} < 2$ must not be used
- Carcinogenic substances must not be used
- The concentration of solvents in the working environment should not exceed 1/3 of administrative norm for pollution in the working environment
- Substances containing more than 1% heavy metals must not be used
- Chemicals in use should be considered regularly, regarding replacement by chemicals that are less harmful to the health and the environment
- New employees should, within three months, have been trained in the use of the Substance Register
- New chemicals should not put more strain on the cleaning works than the chemicals used previously

5.3. Priority of Measures

To meet the HES-goals and the specific HES- requirements the company has made, you will probably have to clear up in the company's chemicals: Stock, contractors, type of products, amount, etc. Before you start, it can be wise to rank the different goals/requirements / measures by the greatest advantage at lowest price.

The following should be considered as regards the rank:

- Employees' safety
- Reduced strain on the environment
- Cost reduction or increased income
- Fast results (e.g. reduced costs, improved profile)
- Co-operation with other planned measures
- Educational effect on the organisation

- Internal motivating effect as regards employees
- Marketing gains
- External profile
- Attractive workplace

It may be wise to begin with the measures that are relatively easy to carry out, take short time, and have noticeable effect. As the motivation rises, and you see the measures with the first priority pay off, the more complicated and expensive measures may be carried out.

The measures that have the greatest financial gain in the short term are often in the following areas:

- Reduction in products and contractors combined with enhanced purchase agreements
- Reduced stock
- Reduced industrial insurance premium
- Reduced industrial insurance and fire premium as a result of good chemical management

In large companies priority may be given to groups of workers who use great amount of chemicals, like employees in cleaning, maintenance and workshop. Better training and appropriate safety equipment will often generate participation and motivation.

5.4. Chemical clear-up

Regardless of how the company has made its priorities, it will sooner or later have to clear up the stock (if this hasn't been done during the registration), evaluate number and type of products, and consider contractor connections, to improve supervision and get more knowledge about chemicals in the company. Following are some simple advice on what to emphasise in the evaluation.

PRODUCT EVALUATION

Evaluation of products can be carried out before the MSDSs are filed, provided that enough information has been registered in the registration phase, cf. chapter 4.1 What is to be registered. If that is not the case, you will have to wait until all the MSDSs are in the file.

It is easiest to carry out the product evaluation by categorising the products in four groups:

1. Products with obligatory warning labels which must be destroyed (label out of date, cannot provide an MSDS, etc.)
2. Products no longer in use, that will not be used elsewhere (cannot be used in other areas, there are better alternatives)
3. Products no longer in use, that may be used elsewhere (e.g. left-over paint)
4. Others

Products that fall within categories 1 and 2 must be destroyed safely.

Products that come within category 3 must be evaluated to determine if they can be used elsewhere.

Products in category 4 must be evaluated against the HES- requirements of the company. It is easiest to see if there are any overlapping areas of use, and if it is possible to reduce the number of product types in the future (new purchase). When reducing, choose the product types that have the lowest strain on health and environment everything considered. Examine if there are alternatives to the products. In the cleaning sector, for instance, there are alternative products (micro fibre clothes) that reduce the use of detergents by 70-100%.

Fewer product types will provide better liquidity in form of reduced stock, fewer invoices – better economy (treatment of invoices as per 1 January 1999, is estimated to cost the company between 150 and 500 NOK!). 1 GBP = 12,5 NOK.

CONTRACTOR EVALUATION

As a step in bringing the product clear-up further, the company can now consider if it is possible to improve the contractor connections by reducing the number of contractors, and by getting more from the contractors they choose to employ. The purpose of reducing the number of contractors is to save money having fewer and better purchasing agreements, fewer invoices, better training and fewer injuries, simple up-dating of the Substance Register, reduce the total consumption. Some contractors may also be of assistance when it regards the right dosing of detergents, for example, by offering automatic dosing.

Which contractors should be eliminated?

1. those who cannot provide a MSDS
2. those who are not registered in the National Register of companies.
3. other reasons?

Then consider:

- Which contractors can cover most of your demands?
- Which routines does the contractor have for updating MSDSs?
- What does the contractor have to offer as regards training in the use of the chemicals?

6. Use and maintenance

The Substance Register is now installed, and the work of updating, maintenance and sensible use of the Register starts. The project leader's work of constructing the Substance Register finishes by stating routines for use and maintenance of the Substance Register. For large enterprises (like a municipality) it may be expedient to state routines in the form of an operating manual. Below you will find some elements that should be treated in an operating manual. Even if the company is not going to make an operating manual, the following elements need to be considered to state good routines.

6.1. Routines for use and maintenance

The purpose of stating firm routines for the Substance Register is to secure updating, maintenance and use. A dormant, outdated Substance Register is worthless! Below you will find eleven points on what to consider when stating routines. For companies making an operating manual, it can be organised into eleven chapters each treating one of the eleven points.

1. Laws and regulations (a survey of what the company must comply with)
2. Goal for chemical work (cf. systematic HES-work)
3. Organisation/responsibility
4. Maintenance of the Substance Register
5. Training in the use of the Substance Register
6. Distribution of MSDSs in the company
7. Protective clothing/safety measures
8. Requirements for subcontractors using chemical products in the company
9. Control and revision of the Substance Register
10. Deviation management
11. Documentation

1. Laws and regulations

The company must make a survey of relevant laws and regulations, as well as the requirements made, see chapter 5.1 Authorities' Requirements.

2. Goal for chemical work

The company's HES- goals, and the motivation behind these goals, must be seen in relation to reality (i.e. the Substance Register). What efforts has the company made to find alternative chemicals?

3. Organisation/responsibility

The linear responsibility must be described and supported by a description of the organisation that shows who carries what responsibility, cf. figure 1. Specific responsibility as regards obtaining an MSDS, operation, maintenance and updating of the Substance Register must be placed. Responsibility and roles for existing functions like HES-managers, safety deputies, industrial medical services, must also be defined precisely.

4. Maintenance of the Substance Register

State routines for

- How to follow up registered chemicals to reveal changes in classification
- How to replace existing chemicals with less dangerous alternatives
- Approving purchase of new products
- Purchase of new products are made by appointed, trained personnel, and an MSDS for a new product is evaluated before purchase

Before purchasing new chemicals, the buyer should ask the contractor to send an MSDS for the product. The producer/contractor is in duty bound to enclose an MSDS in first delivery of a chemical or product to his customers. If possible, a number of alternative products should be considered.

Every time there is a change in knowledge about a substance that enters the Substance Register, the MSDS must be checked. As a follow-up it would be natural to consider if there are less dangerous chemicals that can replace the existing ones.

5. Training in the use of a Substance Register in the company

It is the employer's duty to ensure that the employees get the necessary information about and training in the use of the Substance Register. Also remember that the employees are to be informed about changes in the Substance Register.

A person responsible for training in the Substance Register must be appointed. The users must be trained to understand the contents of the MSDSs. It would be natural to relate the training in the Substance Register to training in the use and treatment of chemicals, as well as internal routines for purchase.

6. Distribution of MSDSs in the company

If a manual system has been chosen, the MSDSs must be copied manually and distributed to the units/departments. It may also be necessary to make abstracts of the MSDSs if they are too complicated for the users. It is also the employer's duty to inform about special conditions related to the company's use of chemicals.

If you have © REDUCE an electronic system, and it is available for those who should have access to it, further distribution is not necessary. However, if the electronic system is only available for a limited number of users, it must be printed out in order that everybody gets sufficient information. It is also possible to print out internal short versions for the places of use.

7. Protective clothing/safety measures

The employer must use the information in the Substance Register to secure a safe treatment and storage of harmful substances and biological material in the company. The employer must use the information in the Substance Register as a part of the grounds for considering necessary safety measures and preparation of working instructions. The employer must see to it that the needed protective equipment is available for the users.

8. Requirements for subcontractors using chemical products in the company

Unfortunately it appears too often that companies hiring in external aid, e.g. craftsmen, do not consider that the products used may be harmful both to employees and the nature.

Therefore it is important to make demands on hired aid/subcontractors who are to carry out work in the company. State routines for asking the following question: Are you going to use chemical products? If yes – what? Request an MSDS before the work starts, and ask what precautions the company must make. Precautions may be use of protective clothing, closing departments, etc. Finally the company must, if necessary, demand that hired aid/subcontractors do not leave remains of chemicals, as these will become the company's responsibility. If the remains are special waste, it may become expensive.

As an example, we can mention that a Norwegian municipality that had hired expertise from abroad was left with 200 litres isocyanides labelled in German. The bill for disposing of this was about NOK 7,000 in 1992. 1 GBP = 12,5 NOK.

9. Control and revision

To ensure that the Substance Register works according to intentions, routines for control and revision of the card file must be made. How comprehensive this work is, depends on the size of the Substance Register and of the company.

What is control and revision?

Control involves controlling that the contents of the Substance Register are correct and updated, and that the quality is satisfactory.

Revision involves systematic, independent inspection of the company to ascertain that the Substance Register, and its use and management is coherent with the intention, and that the Substance Register is practical and effective for obtaining the company's goals for safety and the environment.

Relevant questions when revising: Do the line managers do their jobs? Do the users have knowledge about the Substance Register? Is there an active work to find alternative chemicals, or reduce the use of existing chemicals?

Three parties may carry out the revision: the company itself (not the manager of the Substance Register), one of the company's customers, or an independent party (e.g. hired consultant). The inspection authorities have the right to control that the Substance Register is installed and operated according to intention. It will be strength to be able to produce a revision report when the inspection authorities arrive.

State fixed intervals for carrying out control and revision.

10. Deviation management

If deviation is revealed, make guidelines for how to report this, and who is in charge of starting measures to correct the deviation.

11 Documentation

Insert documentation stated in the above mentioned chapters. These may be evaluation reports about alternative chemicals, revision reports, deviation reports, abstracts from laws and regulations etc.

The documentation may be added manually to the operating manual, or it may be stored electronically if that is more practical. The requirement is that it should be easily available for those who wish to see it.

6.2. Concluding reflections

When routines have been stated and established in the management, the project "constructing a Substance Register" has come to an end. Congratulations!

Now it is you who are in charge of the Substance Register, who takes over, and must ensure operation in accordance with the operating manual. Make sure you motivate the company all the time, by showing good results.

Good luck!