

Dangerous Chemicals in Industry

Seveso II in Finland

- Towards the prevention of major accidents -

The industrial handling and storage of dangerous chemicals

The intention behind the supervision of the industrial handling and the storage of dangerous chemicals is to ensure that an operator takes precautions in advance in order to prevent explosions, fires, releases of chemicals, operational errors, equipment failures or any other accidents, and to limit their consequences.

Based on the Seveso II Directive, regulations concerning the prevention of accident hazards have been transposed into Finnish chemicals legislation: *The Decree on the Industrial Handling and Storage of Dangerous Chemicals 59/1999*. In addition to this, there is special legislation for LPG, natural gas and explosives.

Responsibilities according to the extent of operations

Responsibilities according to current regulation are determined by the extent of operational activities. The operational activities of establishments are divided into two groups by legislation: Large scale and small scale establishments. Large scale activities are supervised by the Safety Technology Authority (TUKES). Small scale activities are supervised by local authorities, the Chief Fire Officer and the municipal chemical supervision authority.

The category of an establishment is determined by the amount and classification of the chemicals it uses. A category is arrived at by using a certain formula. Calculations for flammables and explosives as well as for chemicals which are dangerous to health or the environment are carried out separately.

The sum of ratios

The following formula gives us the calculated category of an establishment:

$$s = q_1/Q_1 + q_2/Q_2 + \dots + q_n/Q_n \text{ where}$$

q_n is the quantity of a dangerous chemical in the establishment and
 Q_n is the relevant threshold quantity.

Threshold quantities are divided into four groups:

1. the smallest quantity is used for determining the operator's obligation to make a notification of the activities of a small scale establishment
2. the second quantity is used for determining whether an establishment can be classified as large scale
3. the following quantity is used to determine the establishment's obligation whether to prepare a major accident prevention policy document, or not
4. and finally the last quantity is used in determining whether the establishment is required to prepare a safety report

If the value of s is equal or more than 1, the establishment is covered by the relevant requirements of the categories.

Large scale industrial handling and storage

The Safety Technology Authority of Finland (TUKES) supervises the large scale industrial handling and storage of dangerous chemicals. TUKES also grants licenses for such establishments and carries out inspections of them. It also examines safety reports and handles notifications of accidents.

New establishments, extensive modifications and expansions

Establishments involved with the large scale industrial handling and storage of dangerous chemicals, have to apply for a license prior to the commencement of construction. TUKES undertakes the commissioning inspection for such establishments prior to the commencement of operations. Also, modifications and expansions of existing establishments are considered to be comparable to construction of new establishments and are required to apply for a license and be inspected by TUKES before start-up.

Modifications requiring a license are for instance:

- the construction of a new unit or process line
- the total change of a process
- a new significant storage structure
- a new dedicated tank area (area with numerous storage tanks)

Notifications

An operator has to send TUKES a notification whenever there are significant expansion or changes at a plant.

Changes might include e.g.:

- any significant increase in the quantity of any dangerous chemical (5-10 %)
- a change in the classification of the physical form of a dangerous chemical e.g.: to begin to store toxic chemicals instead of harmful chemicals, or flammable gases instead of liquid flammables
- a significant change in processes. e.g.: an increase in process temperature or pressure, changing from a continuous run process to a batch process or visa versa

Periodic inspections

Large-scale establishments are inspected periodically according to a programme compiled by TUKES. The programme is based on the following criteria:

- establishments which have to prepare a safety report are to be inspected annually
- establishments which have to prepare a major accident prevention policy document are to be inspected every third year
- all other large-scale establishments are to be inspected every fifth year

The Major Accident Prevention Policy

Certain operators have to draw up a document setting out their major-accident prevention policy. This obligation depends on the category of an establishment (decree 59/1999, annex I, column 3).

The document or a summary of it, has to be enclosed in the application for a new establishment. Also, when there are changes at a plant which require a permit, this policy document has to be enclosed with the application.

An operator has to appoint a person who shall be responsible for seeing that the policy is followed and maintained.

An appointed chemical supervisor

Establishments involved with the large scale handling and storage of dangerous chemicals have to employ a person, who knows the legislation and regulations concerning chemicals (an appointed chemical supervisor). Several appointed chemical supervisors are required in big establishments. If the establishment has to prepare a document of Major Accident Prevention Policy, an appointed person for the major accident prevention policy and an appointed chemical supervisor together take responsibility for seeing that all required procedures are carried out according to the regulations and conditions of the license.

Before appointment, a supervisor has to pass an examination. The examination is required for new supervisors or if the supervisor changes the establishment and his or her examination was carried out before legislation was changed.

The appointment of the supervisors doesn't require notification to Tukes.

Safety reports

The largest establishments are obliged to produce a safety report which includes a presentation of the establishment and its environment, a description of the safety management system, a description of possible safety hazards at the plant and the control of these hazards. Also there are measures for protection and intervention in the limiting of the consequences of accidents.

A new establishment has to produce and send TUKES a safety report in adequate time prior to the start of operations. Existing establishments have the following deadlines by which a safety report must be produced and sent to TUKES:

- 1.2.2001 for establishments which have produced a safety report in response to earlier legislation
- 1.2.2002 for establishments which were not previously required to issue a safety report

A safety report must be reviewed, and updated where necessary, every five years. It might be necessary to update it even more often, for example if there has been made any modification which could increase major accident risk at the plant.

Document availability for examination

The operator has to have its safety report and the relevant list of dangerous chemicals available for public examination preferably at the plant. The information available can be restricted with TUKES' consent if some pieces of information can be considered as a trade and/or professional secret.

Information on safety matters

An operator who is required to produce a safety report is also responsible for informing the local residents and communities about any possible major accident which might affect them.

An operator has to provide this information by releasing and actually delivering a circular containing information on safety measures and actions to be taken in the event of an accident. The circular should reach individual households and businesses located area which could be affected in the likelihood of an accident.

New establishments have to circulate a safety information circular prior to the start of operations. Existing establishments have to deliver a safety circular after having produced a safety report.

The safety circular has to be issued at least every fifth year. Should any notable modifications be made in the plant, which might considerably increase a major accident hazard, a reviewed safety circular must be circulated immediately.

Emergency plans

Large scale establishments have to draw up an internal emergency plan. The emergency plans of new establishments and safety report establishments have to be sent to Tukes. Other internal emergency plans and the reviewed internal emergency plans of existing establishments have to be sent to the local chief fire officer. The deadlines for the plan can be seen in the table below.

Local authorities have to draw up an external emergency plan based on the information received from an establishment's safety report. The external emergency plan contains plans and directions for such situations, where an accident might extend beyond the confines of an establishment.

The notification of accidents

In the case where an accident occurs at a large scale establishment, an operator is obliged by law to inform TUKES at the first opportunity.

Storage areas

A storage area which is shared by several operators, must have the area confirmed as a specific storage area if the operators in question share collective areas and fire-extinguishing equipment.

1. Obligations which apply to all large scale establishments			
Obligation	Operators' responsibility	TUKES' responsibility	Dead lines for pre-decree establishments
A licence for a new establishment	Apply for a licence prior to the start of construction. Notification of the start up of the plant (1 month before).	A licence. Commissioning inspection before the start up.	Existing licences remain valid.
A licence for a plant modification (if the extension can be compared to the establishing of a new plant)	Apply for a licence prior to the start of construction. Notification of the start up of the plant (1 month before).	A licence. Commissioning inspection before the start up.	
A notification in the case of a significant change	A notification to TUKES within a reasonable period of time prior to the start up	A decision. No commissioning inspection. Checking during periodic inspections.	
A nominated chemical supervisor	An operator must nominate supervisors who have passed an examination before nomination.	Arranges examinations.	Pre-decree supervisors may continue with their duties without re-examination.
Periodic inspections	Deficiencies observed during inspections have to be corrected	TUKES creates the programme of inspections and inspects <ul style="list-style-type: none"> • annually, safety report establishments • every 3rd year, MAPP establishments • every 5th year, other large scale establishments 	
Internal emergency plans	To be delivered to TUKES in the case of <ul style="list-style-type: none"> • new establishments • all safety report establishments To be delivered to the Chief Fire Officer in the case of <ul style="list-style-type: none"> • other large scale establishments • all updated plans Updating of emergency plans at least every 3 rd year	Conclusions can be included with the license or as a separate decision, for those plans which are delivered to TUKES.	<ul style="list-style-type: none"> • 1.2.2001 previous safety report establishments • 1.2.2002 new safety report establishments • 1.7.2002 other large scale establishments
2. Additional obligations for MAPP establishments			
A Major Accident Policy document	A new establishment encloses a MAPP-document with the application	Surveillance during inspections	1.7.2000
A person appointed responsible for the	The nomination of a person who is responsible	Surveillance during inspections	1.7.2000

MAPP	for seeing that the policy is followed and maintained		
3. Additional obligations for safety report establishments			
Safety report	The safety report has to be made and sent to TUKES prior to the start of operations. Reviewed at least every fifth year	The conclusions of the safety report can be included with the licence decision or in a separate letter. Verification during inspections.	1.2.2001, previous safety reports 1.2.2002 new safety report establishments
Compulsory information, public information	A safety circulate is issued every fifth year	Surveillance during inspections	As with safety report
An external emergency plan	Relevant Information must be sent to TUKES with the safety report	Tukes sends information and comments concerning the plant to the municipality. The municipality creates the plan.	As with the safety report (the information is sent with the safety report)

Small scale industrial handling and storage

The local chief fire officer and the municipal supervisory authority for chemicals are responsible for supervising small scale industrial handling and storage of dangerous chemicals. The local chief fire officer oversees usage of flammable and explosive chemicals. The municipal supervisory authority for chemicals monitors usage of chemicals dangerous to health and the environment. Many establishments utilise chemicals belonging to both groups or chemicals with both dangerous properties, for instance toluene and methanol. For this reason the municipal authorities co-operate together on supervising.

Only some operators of small scale plants are required to make a notification. All operators are nevertheless required to fulfil all common safety demands.

Notifications

The operator has to forward a notification concerning small scale industrial handling and storage of dangerous chemicals to the local authority, if the quantity of chemicals held reaches a qualified the threshold quantity. This notification may be sent to either the local Chief Fire Officer or the municipal supervisory authority for chemicals. A notification is required when establishing a new plant, creating extensions or significant modifications.

An inspection

The chief fire officer or the municipal supervisory authority for chemicals inspects an establishment no later than three months after the start of operations. If both flammables and chemicals dangerous to health or the environment are present at a plant, the chief fire officer and the local chemical authority carry out the inspection together. If only minor amounts of chemicals belonging to either of the groups are present, the authority in question doesn't have to participate in the inspection.

While there are no exact limits for these amounts, local authorities can decide case by case whether a joint inspection is needed.

Chemical data

Flammable and explosive chemicals include:

- a) extremely flammable liquids and gases (including liquefied petroleum gas and natural gas)
- b) highly flammable liquids
- c) flammable liquids
- d) other flammable liquids (with flashpoints between 55 ° and 100 °C)
- e) oxidising chemicals
- f) explosives

Chemicals dangerous to health and the environment include:

- a) very toxic chemicals and chemicals with a hazard label of T+
- b) toxic chemicals and other chemicals with a hazard label of T
- c) chemicals which react violently with water
- d) chemicals which liberate toxic gas in contact with water
- e) chemicals dangerous to the environment
- f) corrosive chemicals
- g) irritant chemicals
- h) harmful chemicals and other chemicals with a hazard label of Xn or Xi

Enforcement of the Seveso II Directive in Finland:

The Chemicals Act (744/1989, amendment 58/1999)

The Explosive Materials Act (263/1954, amendment 58/1999)

The Decree on the Industrial Handling and Storage of Dangerous Chemicals (59/1999, amendment 240/2000)

The LPG Decree (711/1993, amendment 129/1999)

The Natural Gas Decree (1058/1993, amendment 128/1999)

The Decree on Installations Using Fuel Oil (1211/1995, amendment 130/1999)

The Explosives Decree (473/1993, amendment 131/1999)

The Land Use Planning and Building Act (132/1999)

The Rescue Services Act (561/1999)

The Decision of the Ministry of the Interior on Preparedness for Chemical Accidents, Tu-311/1999

The Government Decision on the Control of Major-accident Hazards liable to affect workers (922/1999)

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