

COMPLIANCE WITH THE NEW LEGAL REQUIREMENTS ON THE DEMONSTRATION OF SAFETY MANAGEMENT SYSTEMS IN THE SAFETY REPORT

Zsolt CIMER, Béla SZAKÁL, Imre HOFFMANN
cimer.zsolt@ybl.szie.hu, szakal.bela@ybl.szie.hu, imre.hoffmann@bm.gov.hu

Abstract

As of 1 July 2015 Government Decree 219/2011. (X. 20.) on the response to major-accidents involving dangerous substances was amended in line with the relevant SEVESO III EU Directive and the Act on Disaster Management. The requirements for the content of safety management systems in Annex III were also amended. In our article we present through a sample dangerous establishment how such requirements were to be met.

Key words

Disaster management, industrial safety, control of major-accidents involving dangerous substances, safety management system.

1 New legal regulations in connection with the description and application of safety management systems (hereinafter: SMS)

The Hungarian legal regulation of the the response to major-accidents involving dangerous substances was renewed by the implementation of the SEVESO III EU Directive into the domestic law. As such, Act CXXVIII. of 2011 on disaster management and Government Decree 219/2011. (X. 20.) on the response to major-accidents involving dangerous substances (hereinafter: Government Decree) implementing Chapter IV of the Act were also amended as of 1 July 2016. The amendment basically followed the amendments of the SEVESO III Directive. Such amendments mainly imply the change, widening and - generally in our view - the strictness of SMS related requirements.

In some cases the legal changes did not only challenge the operators and professionals of establishments with dangerous substances present but also the disaster management authority. In order to combat any misinterpretation, the Ministry of Interior's National Directorate General for Disaster Management also published a ruling on the technical interpretation of legal requirements. However, several questions remained to be answered only in the course of practicum during the preparation of safety reports, authority revisions and the everyday activity.

Let's have a look at some exact provisions that had not existed before or the applicability thereof had not been that empathized or exact. As per point 1.8.4 in Annex 3 of the Government Decree:

“As part of the standards, with a view to reducing the risk of system failure, the operator prepares the strategy and methodology for monitoring and control of the condition of technological equipment in order to manage and control the risks associated with ageing and corrosion of equipment installed in the establishment that might contribute to a major-accident involving dangerous substances listed in the safety report, and ensures appropriate follow-up actions and any necessary countermeasures. The operator introduces the norms of the safety management system to the personnel involved in the above activities.”

As per point 1.8.6 in Annex 3 of the Government Decree:

“The operator determines the performance indicators such as safety performance indicators (SPIs) and/or other relevant indicators applied in course of the safety performance evaluation procedures.”

Since the above had not been amongst the requirements, they are not included in the current safety reports. Meeting such requirements however, does not need to be faced when the current safety reports would be subject to periodic revision (i.e. in the next 1-4 years), but as of 1 June 2016 based on the Government Decree. Therefore, the new approach of the description of SMS needs to be started to follow immediately.

The authors – also engaging in expert and theoretical activity – would like to present how the new requirement could be met through the describing the SMS of the safety report of an upper-tier establishment where dangerous substances are present. The description of a whole SMS cannot be subject to our current article due to its extent, and as such, parts of the SMS that do not include new requirements are not detailed in our current article.

The establishment does not only represent a source of danger because of the dangerous substances present but it also highlighted from a national security perspective considering the increased risks of terror threats. Therefore, in our article we aim to avoid any factors that might increase the risk of an external forceful penetration, such as any direct reference to the name, location, supplies and defence of the establishment.

2 Description of the safety management system of the establishment – with special regard to the new legal requirements

Quality policy, main objectives relating to the prevention of major-accidents involving dangerous substances

Objective:

The aim of the Establishment’s management is to prevent and avoid unexpected and unwanted events that might cause human injuries, endangerment of the environment or material damages, and as such they pay attention to the prevention of major-accidents and the protection thereagainst.

Preliminaries:

The aim of the Establishment is to prevent and avoid unexpected and unwanted events that might cause human injuries, endangerment of the environment or material damages, and as such they pay attention to the prevention of major-accidents and the protection thereagainst. In order for that they keep all the legal, authority and their own internal regulations aiming at increasing safety and decreasing risks and also have such regulations followed by others. The laws of different levels are implemented in the Establishment’s own safety system; through the operation of such safety system it is continuously controlled and documented that the regulations are kept.

The safety policy has an impact on all the activities and decisions of the Establishment, including its setting up, operation, storage of materials and goods, the course of transportation and waste management.

Based on the safety policy of the Establishment, regular and systematic danger prevention has the highest priority. However, was an unwanted event still to occur, more serious consequences must be prevented by well planned, synchronized and well-practiced activities.

To this end, the Establishment acknowledges the importance of early detection of unwanted events and if it is possible the overcome of such events in their early stages as well as the prevention of further unwanted events developing.

The management of the Establishment has committed itself to the following:

1. Considers the prevention of major-accidents as its own objective;
2. Keeps the relevant legal regulations and the voluntarily assumed norms;
3. Examines the accidents and “near misses”, explores their causes and prepares a report on the findings;
4. Efficiently supports the introduction of “best practices” for safety purposes;
5. Considers issues relating to the prevention of major-accident as essential business aspects, and takes into account such issues during the assessment of employees;
6. Encourages employees to undertake to increase safety, to consider safety issues concerning people and to recognize safety related problems.

QUALITY POLICY

The Establishment’s management has defined its quality policy while the following factors were taken into account:

- Economic and market environment,
- The expected market demands,
- Previous experiences,
- Professional information.

The published quality policy is annually revised by the management in course of the management audit. The quality policy is changed only in the following cases:

- There has been a significant change in the management strategy,
- The amendment is important and justifiable,
- The amendment is necessary due to the change of market conditions.

The currently applicable and published quality policy:

Quality policy

The Establishment’s management is aware of the responsibility relating to the quality and reliability of the goods produced by them. We take all the necessary measures to meet the requirements deriving from the characteristics of our products and from the quality demands of our customers. Meeting the quality requirements always has a high priority. We aim at the highest possible level of customer satisfaction. Our quality policy applies to all the employees of our company. Accomplishing our objectives is the obligation of all our employees; the Company’s management is liable to ensure and supervise the conditions required for that. Our quality policy is based on a quality-orientated corporate perspective and a corresponding management action. Our process orientated quality management system ensures the continuous development of efficiency.

For the purpose of that our products completely and permanently meet the customers’ expectations we are taking quality improving measures continuously, using the acquisition, production, sale and customer experiences in an organized form. The reliable quality level of our products is ensured by the following:

- Our product documentations
- Our suppliers
- Our system to supervise external products
- Our inter-production and end product supervision

- Our material and product identification system
- Our failure correction activity
- Our documentation management
- Documented technics regarding warehousing, handling, storage and transportation
- Planned and regular training of our employees
- Regular quality supervisions

The management's commitment to quality is an example to be followed by every employee. For this purpose, we ensure that each of our employees is taught, get familiar with the requirements of work fields and has the opportunity to practice them. We have it understood by our employees that everyone is responsible for the quality of their work done, which it is supported by regular supervision. For the purpose of continuous improvement of quality, the conditions of operating quality improving workgroups have been created and their successful operation is supported by an incentive system.

Determining the safety performance indicators

Process description

It is the quality management leader's task to revise the topic of "**Safety policy, objectives**" annually based on the below listed safety performance indicators, to prepare a revision report including evaluation on fulfilment of the objectives for the managing director based on the experiences of the revision and to give recommendations for amendment of the objectives.

Upon his agreeing with the recommendations, the managing director orders them to be realized – if it is necessary, takes care of elimination of the identified deficiencies by changing the recommendation, the responsible person or the date.

Performance indicators for the evaluation of general procedures

1. Is the safety policy made available to
 - The employees,
 - The contractual parties,
 - The concerned external persons (suppliers, customers, authorities, civil population concerned, etc.)?
2. Is the safety policy supervised and up-to-date in line with the worked out processes?
3. Does the safety policy need to be changed or amended with new content elements?
4. Do the leaders actively track the fulfilment of safety action plans and the status of the safety objectives?
5. Is safety on the agenda of regular meetings?
6. Is it obvious that safety is a major factor in inter-company decision making processes?
7. Is it obvious that safety has a priority in situations when a decision must be made between safety and production objectives?
8. Are appropriate resources available for safe operation in budget planning, and promptly accessible in urgent cases?

Evaluation of performance indicators

The quality management leader follows the below process to evaluate the above mentioned performance indicators:

1. The safety objectives need to be modified, it is reasonable to work out a new action plan.
2. The safety objectives do not need to be modified, it is reasonable to revise the action program needed to fulfil the objectives.
3. The safety objectives and action programs have been fulfilled.

General processes

Objective:

The employees must carry out their tasks safely, under regulations.

Preliminaries:

In order to regulate the performance of activities carried out in the Establishment, "Action and Machine Operation Instructions" have been prepared. The instructions contain the following elements:

- Description of tools required to carry out the operation;
- Description of the operation;
- Possible failures and their safe prevention;
- Place and forms of waste materials, instructions for their collection and storage;
- Occupational safety and safety technical regulations, including the requirements of mandatory usage of technological work-clothes and the measures to follow;
- Minimum staff number required for each operation;
- Approvals.

It is the quality management leader's task to record and supervise the procedures of activities carried out in the Establishment.

Determining the safety performance indicators

Process description

It is the quality management leader's task to revise the topic of "**Procedure to perform activities involving dangerous substances**" bi-annually based on the below listed safety performance indicators, to prepare a revision report for the managing director based on the experiences of the revision including the identified deficiencies, recommendations to eliminate them, the responsible person and the date to carry them out.

Upon his agreeing with the recommendations, the managing director orders them to be realized – if it is necessary, takes care of elimination of the identified deficiencies by changing the recommendation, the responsible person or the date.

Performance indicators for the evaluation of general procedures

1. Is there a procedure for each operational activity that requires regulation?
2. Are both the regular and the extraordinary, separate operations covered?
3. Are all the operational periods covered, such as the following:
 - Starting production, normal operation state
 - Change of work shifts
 - Ending production
 - Extraordinary operation states, emergency activities, safety
 - Internal transportation?
4. Are all the aspects covered, such as equipment/tooling (including safety equipment) and the staff involved in processing, handling and storing dangerous substances?
5. Are the conditions for safe operation implemented in the operational instructions or are they synchronized?
6. Is the participation of employees in the development of procedures ensured?
7. Is there an official work clearance system covering the following?
 - Activities exposed to fire threat (welding, cutting, driving vehicles, etc.),
 - Entrance to closed areas,

- Dangerous activities (e.g. opening technologies, removing pumps, instrumental examinations).
- 8. Are the procedures easily accessible to users and other concerned persons?
- 9. Is there a documentation revision system for the procedures?
- 10. Are there measures to ensure that the procedures are corrected in case of improper functioning or are in contradiction with other procedures?
- 11. Is there a system to ensure that the users could get familiar with the changed procedures and that they could learn and practice them?
- 12. Is there a system to update the procedures regularly?

Evaluation of performance indicators

The quality management leader follows the below process to evaluate the above mentioned performance indicators:

1. Highly serious deficiencies, lack of regulation, can lead to cause emergencies involving dangerous substances.
2. Serious deficiencies, lack of regulation, do not cause emergencies involving dangerous substances but the conditions of safe working are not ensured.
3. Less serious deficiencies; do not cause emergencies involving dangerous substances, the conditions of safe working are ensured, but the product quality cannot be guaranteed.
4. Administrative deficiency, no impact on the normal course of operation.

Maintenance

Objective:

To ensure the safe technical conditions of establishments, machines, installations and to supervise their functionality continuously.

Preliminaries:

In order to ensure the safe technical conditions of establishments, machines and installations, maintenance is carried out in line with the criteria set out in the relevant law, standards and other documents (users' manuals). It is the maintenance leader's responsibility to coordinate the maintenance.

Determining the safety performance indicators

Process description

It is the maintenance leader's task to revise the topic of "**Maintenance**" bi-annually based on the below listed safety performance indicators, to prepare a revision report for the managing director based on the experiences of the revision including the identified non-compliances, deficiencies, recommendations to eliminate them, the responsible person and the date to carry them out.

Upon his agreeing with the recommendations, the managing director orders them to be realized – if it is necessary, takes care of elimination of the identified deficiencies by changing the recommendation, the responsible person or the date.

Performance indicators for the evaluation of general procedures

- Is there a methodology to determine the frequency of maintenances (the expected lifespan, based on the producer's instructions or experience, the level of emergency due to the non-functioning machine/installation)?

- Are the maintenance activities regularly documented?
- Was the maintenance activity scheduled for the period under review actually carried out?
- Did any machine/installation failure happen in the period under review?
- Experiences of reviewing the conditions of the establishment.

Evaluation of performance indicators

The maintenance leader follows the below process to evaluate the above mentioned performance indicators:

1. Highly serious deficiencies, the experience non-compliance can lead to cause emergencies involving dangerous substances.
2. Serious deficiencies, the experience non-compliance does not cause emergencies involving dangerous substances but the conditions of safe working are not ensured.
3. Less serious deficiencies; do not cause emergencies involving dangerous substances, the conditions of safe working are ensured, but the product quality cannot be guaranteed.
4. Administrative deficiency, no impact on the normal course of operation.

Controlling changes

Objective:

Controlling changes ensures that such changes do not lead to the increase of existing risks or to new risks.

Preliminaries:

Generally, the usual activity of the Establishment is not characterized by changes. However, the surrounding requirements relating to the activity are constantly changing and getting more severe. The Establishment is always adapting to the external expectations, i.e. pays attention to and follows the relevant legal regulations and aims at meeting the requirements set by its business partners.

In line with that, the documentation system is continuously updated and the legal requirements are met. The employees are always informed and educated about the changes, with the help of external experts if needed.

Determining the safety performance indicators

Process description

It is the quality management leader's task to revise the topic of "**Controlling changes**" bi-annually based on the below listed safety performance indicators, to prepare a revision report for the managing director based on the experiences of the revision including the analysis of changes and the measures taken.

In case of deficiencies, the managing director orders to eliminate the deficiencies by determining the responsible person and setting a deadline.

Performance indicators for controlling changes

1. Is there any change in the legal regulation affecting the Establishment, relating to the technical conditions?
2. Is there any change in the environment?
3. Is there any change in the raw material supply?
4. Is there any change in the production?
5. Is there any change in the storage/warehousing?

6. Is there any change in delivery/transport?
7. Is there any change in the corporate structure and management?
8. Is there any personal change (staff, working hours, outsourcing, etc.)?

Evaluation of performance indicators

The quality management leader follows the below process to evaluate the above mentioned performance indicators:

1. Significant change, the relevant procedure must be changed significantly or a new procedure must be worked out. Due to such a procedure, extraordinary training is necessary.
2. Less significant change, the relevant procedure must only partially be changed; there is a transition period to introduce the change, extraordinary training is not necessary.
3. The change is only administrative.

Identification and evaluation of emergencies relating to major-accidents involving dangerous substances

Objective:

The identification of dangers is to be up-to-date, the evaluation of potential risks is to be carried out constantly.

Preliminaries:

With the help of external experts the Establishment has carried out the identification of the hazardous industrial establishment, explored the major-accident hazards, determined their occurrence frequency, analysed the possible consequences and proved by two methods that the Establishment is not dangerous for the civil population living in its surrounding (means an acceptable and tolerable risk for them).

Nevertheless, the results of the risk analysis are used for the purpose of safety increasing measures in order to decrease the frequency of potential major-accidents and to minimize the damages in case they might occur.

Determining the safety performance indicators

Process description

It is the quality management leader's task to revise the topic of "**Identification and evaluation of emergencies relating to major-accidents involving dangerous substances**" bi-annually based on the below listed safety performance indicators, to prepare a revision report for the managing director based on the experiences of the revision including the identified deficiencies, recommendations to eliminate them, the responsible person and the date to carry them out.

Upon his agreeing with the recommendations, the managing director orders them to be realized – if it is necessary, takes care of elimination of the identified deficiencies by changing the recommendation, the responsible person or the date.

Performance indicators for identification and evaluation of emergencies relating to major-accidents involving dangerous substances

1. Was there any new raw material present qualifying as dangerous substance in the period under review?

2. Did the supply of raw material qualifying as dangerous substance change in the period under review so that a new source of danger should be considered in the Establishment?
3. Did the internal transport of materials qualifying as dangerous substances change in the period under review so that a new source of danger should be?
4. Was a new production started in the period under review?
5. Is the start of a new production expected in the next period?
6. Was there any change in the storage/warehousing of products due to which a new source of danger should be considered?
7. Was there any event in the delivery/transport of products due to which a new source of danger should be considered?

Evaluation of performance indicators

The quality management leader follows the below process to evaluate the above mentioned performance indicators:

1. A new significant source of danger has appeared in the establishment, the extraordinary supervision of risk evaluation is necessary and an authority procedure is required.
2. A new source of danger has appeared in the establishment, the extraordinary supervision of risk evaluation is necessary, but no authority procedure is required.
3. A new source of danger has appeared in the establishment, but no extraordinary supervision of risk evaluation is necessary.

Safety planning, emergency preparation and reaction

Objective:

Preparation for the effects of potential accidents involving dangerous substances.

Preliminaries:

The Establishment analysed the potential dangers in its safety report. Based on the analysis the possible measures and the necessary human and material resources required to carry out such measures were determined in connection with the identified events. These conditions were included in the internal emergency plan.

The following are detailed in the internal emergency plan:

- Emergency management system, responsibilities and competence of the persons and organizations involved in the emergency;
- Alarm order;
- Line of measures;
- Minimal means required to carry out the necessary measures;
- Reporting order in case of operating breakdowns and major-accidents relating to dangerous substances;
- Emergency training and practice;
- Necessary measures to keep the internal emergency plan up-to-date.

Determining the safety performance indicators

Process description

It is the hazardous industrial safety administrator's task to revise the topic of "**Safety planning, emergency preparation and reaction**" bi-annually based on the below listed safety performance indicators, to prepare a revision report for the managing director based on the

experiences of the revision including the identified deficiencies, recommendations to eliminate them, the responsible person and the date to carry them out.

Upon his agreeing with the recommendations, the managing director orders them to be realized – if it is necessary, takes care of elimination of the identified deficiencies by changing the recommendation, the responsible person or the date.

Performance indicators for safety planning

I. The basics of safety planning

1. Is there a source of danger?
2. Does the line of measures consider all the possible events?
3. Is the alarm order up-to-date?
4. Are the lines of measures executable?

II. Management system

1. Is it possible to set up an emergency management system under each and all circumstances?
2. Is it possible to provide it to the rescue team under all circumstances?
3. Have the persons assigned to be members of the rescue team been provided with an operator's order (e.g. the amendment of their job description)?

III. The existence of safety infrastructure

1. Is the need for individual protective equipment in line with the types and quantity determined in the internal emergency plan?
2. Is the usability of individual protective equipment appropriate (expiry, size, etc.)?
3. Is the individual protective equipment immediately distributable in case of an emergency?
4. Is there a reserve supply for the purpose of potential substitution?
5. Is the stock documentation up-to-date?

IV. The industrial infrastructure of fire protection

1. Does the establishment have a fire alarm system (centre, sensors)?
2. Are the systems regularly tested in line with the regulations?
3. Does the establishment have mobile fire extinguishers of the proper type and quantity?
4. Has the periodical technical supervision of fire extinguishers been carried out?
5. Is the pressure of firewater proper?
6. Are the water system taps visible and accessible?
7. Are the fittings and hoses immediately accessible?
8. Are the conditions of fittings and hoses proper? Has the pressure test of hoses been carried out?
9. Are the routes to approach potential fires clean and accessible?

V. Supervision of technical equipment

1. Is the need for technical equipment in line with the types and quantity determined in the internal emergency plan?
2. Is the usability of technical equipment appropriate (expiry, functionality, etc.)?
3. Is the technical usability of equipment out of everyday use appropriate?
4. Is the technical equipment immediately distributable in case of an emergency?
5. Is there a reserve supply for the purpose of potential substitution?
6. Is the stock documentation up-to-date?

V. *Emergency operation point (OP)*

1. Does the location of the OP enable operation even under the most extreme conditions?
2. Is the OP easily approachable; is it suitable to accept in the leading staff and their equipment?
3. Does the OP have communication devices needed for the operation?
4. Does the OP have IT devices needed for the operation?

VI. *Supervision of industrial communication, procedure of alarm*

1. Is there an up-to-date alert plan?
2. Are the persons assigned to alert aware of their tasks to carry out in case of an alarm?
3. Is there a 24-hour (or a separate one for and outside working hours) service to carry out the alert and is the alert plan known to them?
4. Are the places of assembly and the escape routes marked?
5. Are there communication devices necessary to carry out the assigned tasks?
6. Are the communication devices out of everyday use immediately distributable in case of an emergency?
7. Are there alarming devices necessary for alerting the specified persons?
8. Are the concerned persons aware of the system of industrial alert and its signals?
9. Are the alarming devices tested regularly?

VII. *Supervision of training*

1. Does the establishment have rooms, (individual protective and technical) training equipment, materials and educational devices necessary for the preparation?
2. Is there documentation about the preparation that contains the purpose of the training, the methodology and the exercises to be done, etc.?
3. Does the preparation contain appropriate practical training besides the theoretical education? How is the efficiency of the training evaluated?
4. Was the preparation carried out separately for every unit and task?
5. Is there documentation about the participants of the training and generally about the status of the preparation?

VIII. *Criteria for the qualification of training according to the internal emergency plan****Individual protective equipment***

1. The stock inventory of individual protective equipment is in line with the safety report.
2. In case of an emergency the individual protective equipment is distributable immediately.
3. The equipment with an expiry date is not expired.
4. There is individual protective equipment on stock for training purposes.
5. The sizes of individual protective equipment are correct.
6. The individual protective equipment is used properly.

Technical equipment

1. The stock inventory of technical equipment is in line with the safety report.
2. In case of an emergency the technical equipment is distributable immediately.
3. The equipment with an expiry date is not expired.

Industrial communication, alarm

1. The communication devices needed for the alert are at disposal.
2. The alert was executed properly.
3. The rescue leader's instructions are unambiguous.
4. The rescue leader's instructions are easily understandable.

Intervention

1. The selection of the technical equipment to be used is sufficient.
2. The use of technical equipment is sufficient.
3. The lines of measures are sufficient.

Operation point (OP)

1. Does the OP have communication devices needed for the operation?
2. Does the OP have IT devices needed for the operation?
3. Is the documentation required by the internal emergency plan present?

Place of assembly

1. Is the place of assembly designated and marked?
2. Is the place of assembly suitable for fulfilling its function?

Evaluation of performance indicators

The hazardous industrial safety administrator follows the below process to evaluate the above mentioned performance indicators:

1. Highly serious deficiency, the protection system does not work in case of an emergency; the intervention cannot be carried out safely.
2. Serious deficiency, the protection system works only partially in case of an emergency; the intervention cannot be carried out safely.
3. Less serious deficiency, the protection system works in case of an emergency; the intervention can started safely, but it cannot be maintained.
4. Administrative deficiency, in case of a potential emergency the deficiency does not have a direct impact on the protection mechanism.

3 Summary

As of June 2015 the legal regulation of requirements for the safety report of upper-tier hazardous establishments was amended. New requirements were introduced in connection with the description of safety management systems. The interpretation of such new requirements challenged the theoretical experts, the practicing professionals as well as the authorities. In our article we presented through a practical example how we can meet these new legal requirements.

References

- [1] Directive 2012/18/EU Of The European Parliament and of The Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC.
- [2] Government Decree 219/2011. (X. 20.) on the response to major-accidents involving dangerous substances.
- [3] Act CXXVIII. of 2011 on disaster management and certain amendments of relating acts.
- [4] VASS, Gy., Z. MESICS and B. KOVÁCS. Guide to the execution of legal regulations due to the domestic implementation of SEVEO III Directive relating to safety management systems. BM OKF publication, Budapest, December 2015.