issa | INTERNATIONAL SOCIAL SECURITY ASSOCIATION

Section on Prevention in the Chemical Industry
Section on Machine and System Safety

Practical assistance for the preparation of an explosion protection document

6/2024

Issued by:

ISSA Section on Prevention in the Chemical Industry

Kurfürsten-Anlage 62
69115 Heidelberg
Germany
Phone: +49 (0) 6221 5108 11002

https://ww1.issa.int/de/prevention-chemistry

ISSA Section on Machine and System Safety

Dynamostrasse 7–11
68165 Mannheim
Germany
Phone: +49 (0) 621 4456-2213

https://www.safe-machines-at-work.org/

Legal Notice

2nd Edition 6/2024
ISBN 978-92-843-0152-2

Download the brochures:

https://ww1.issa.int/de/prevention-chemistry/publications
https://www.safe-machines-at-work.org/explosion-protection/

Practical assistance for the preparation of an explosion protection document

The legislation refers to both the employer and the entrepreneur. The two terms are not completely identical because entrepreneurs do not necessarily have employees. In the context of the present topic, this does not result in any relevant differences, so that these terms are used synonymously.

To facilitate readability, the forms chosen for personal designations (e.g. employer, entrepreneur) apply to both genders in this brochure.

Content

Foreword

This brochure is intended to be a practical assistance for the preparation of the explosion protection document across different national regulations. National regulations may well set higher requirements.

This document focuses on the key points of the explosion protection document. Therefore, not all measures required in individual cases are mentioned. Furthermore, the state of the art and the legal basis may have changed since the publication of this document.

The brochure was carefully prepared by a working group of the ISSA. This does not release readers from the obligation and responsibility to check the information for completeness, timeliness and accuracy.

Thomas Köhler
President of the Section on
Prevention in the Chemical Industry

Jürgen Schulin
President of the Section on
Machine and System Safety

1 Introduction

The high temperatures and pressures associated with an explosion pose an immediate danger to human life or health. In addition, ejected parts caused by the bursting of system components or windows can cause hazards. Due to the sudden onset of the explosion, escape is impossible.

An explosion can also result in economic damage caused not only by the destruction of systems, but also by the inability to deliver and, as a consequence, the loss of customers. Explosions resulting in personal injury and/or damage to property may result in criminal prosecution and loss of reputation.

Legal standards have been drawn up worldwide with the aim of preventing explosions.

The European Directive 1999/92/EC "Directive on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres" and its respective transposition into national law obliges all companies/businesses in the EU in which areas with potentially explosive atmospheres are present to prepare an explosion protection document.

The systematic approach described here is also applicable and useful for companies outside the scope of the Directive.

The explosion protection document must be drawn up before starting work and kept up to date. If the state of the art has developed further or if there have been significant changes, the protection measures must be adapted.

The responsibility for preparing an explosion protection document lies with the employer/entrepreneur/maintainer. In the explosion protection document, they must determine the hazards, classify the potentially explosive areas and document the measures applied.

The explosion protection document must contain at least the following:

- Identified explosion risks and their assessment
- Technical and organizational protective measures taken to achieve the objectives of explosion protection

> **Note:** In practice, it has proven successful to show how appropriate precautions are taken to achieve protection against explosion hazards through the interaction of all measures ("explosion protection concept" – partly required nationally).

- Classification of hazardous areas into zones
- Listing of equipment in non-hazardous areas that is required for or contributes to the explosion-proof operation of equipment located within potentially hazardous areas
- Information on the safe design, operation and maintenance of the workplace and work equipment, including warning devices
- Information on precautions for the safe use of work equipment
- Information on coordination
- Testing

The explosion protection document is part of a general or more comprehensive health and safety documentation. This documentation can also be prepared in electronic form. References to existing approvals and documentation (e.g. operating instructions for machines, operating guidelines, work instructions, approval procedures, site plans) are also part of the explosion protection document.

2 Scope of application

An explosion protection document is required if explosive atmospheres can occur or be present. This also applies if protective measures have been taken to prevent and reduce explosive atmospheres.

Explosives (blasting agents) and chemically unstable substances are not covered by this brochure. Unlike explosive atmospheres, these materials do not require the oxidizing agent of air. Although they can give rise to explosions that can sometimes be very violent, they are not within the scope of European Directive 1999/92/EC.

The technical principles of explosions, definitions of hazardous quantities, zones, ignition sources, etc., are described in other ISSA brochures such as "Guidelines for risk assessment in small and medium-sized enterprises – hazards due to explosions", "Avoiding effective ignition sources in potentially explosive atmospheres".

3 Preparation of the explosion protection document

3.1 General

The explosion protection document must be prepared for all processes and operating conditions, such as the start-up and shutdown of systems and activities. The explosion protection document must also include measures to be taken in the event of foreseeable malfunctions and their elimination.

An explosion protection document is also required if technical or organizational measures are taken to safely prevent hazardous explosive atmospheres.

Approval procedures may be required for activities that are limited in terms of location and time, such as e.g. maintenance, cleaning, servicing, testing, troubleshooting, construction work.

If the employer does not have the necessary expertise in explosion protection, the employer must delegate the preparation of the explosion protection document to an expert in explosion protection and involve other persons if necessary. However, the employer remains responsible for the measures described, required and implemented in the explosion protection document.

Ultimately, the employer must sign the explosion protection document and thus approve it.

In practice, it has been shown that the explosion protection concept is an essential basis for the explosion protection document. The explosion protection concept includes all technical and organizational explosion protection measures.

A clear structure and thus good readability support the comprehensibility of the explosion protection concept. To ensure this, detailed information should be provided in annexes.

3.2 Procedure

First of all, information must be collected on processes, procedures, operating conditions, environment, workplace, work equipment, working materials and activities. This is used to determine and assess explosion hazards and to define and implement explosion protection measures.

For companies with several plants, it may make sense to split up the explosion protection document. It is important to ensure that the respective necessary measures are identified and implemented.

In practice, there are often standardized technical regulations regarding explosion protection for various processes (e.g. public supply of fuel gas, storage facilities for flammable liquids in portable containers, laboratories). These sources can be used and thus serve to simplify matters.

Figure 1: Obtaining information from the documentation

3.3 Content

In practice, the following exemplary structure and contents have proven to be useful.

It also makes sense for points 1 and 2 to be visible on the cover sheet.

1. Specification of the company/operating unit/work area

Location, building, functional unit, production, warehouse, plant, work area

2. Responsible person and document version

2.1 Person responsible for the operation/ operating unit/work area
2.2 Author of the explosion protection document, date of preparation, proof of submission to the employer
2.3 Employer (signature as proof of acknowledgment and release)

3. Description of the structural and geographical conditions

Overview of the location and surroundings of the area under consideration, building plan, site plan, layout plans of the relevant operating and system components, building and system-related ventilation equipment

4. Process description

Process steps, activities, substances used or generated during the process, quantity used or throughput or delivery rate of substances, processing condition of the substances used, pressure and temperature ranges, release sources, extraction systems, ventilation systems, process flow pattern, processing (spraying, splashing, under-mirror filling), reasonably foreseeable disturbances/malfunctions, as well as other things relevant to the respective explosion protection concept.

5. Substance data

Designation of the substances, state (e.g. dusty, granular, liquid, vaporous, gaseous, hybrid mixtures), safety parameters taking into account the ambient conditions (individual case consideration in the event of deviations from atmospheric conditions: pressure, temperature, oxygen concentration or other oxidizing agents) from safety data sheets, databases (e.g. GESTIS/GESTIS-STAUB-EX), reference works, test reports, investigation reports, expert opinions.

Databases and reference works provide orientation, but do not necessarily reflect the operational situation (especially in the case of dusts, it must be taken into account that fire and explosion properties, for example, are significantly influenced by the particle size and distribution and can therefore be process-specific).

Physical substance data and safety-related parameters relevant to explosion protection are, for example:

For flammable liquids and gases:
- Vapor pressure
- Density ratio to air
- Explosion limit, lower and upper
- **Explosion group**
- **Flash point**
- Conductivity
- Limiting oxygen concentration
- **Ignition temperature** (temperature class)

For combustible dusts:
- **Burning class**
- **Explosion limit, lower**
- **Grain size distribution**
- Maximum explosion pressure, K_{St} value
- **Minimum ignition energy**
- **Minimum ignition temperature of a dust layer (formerly: glow temperature)**
- **Minimum ignition temperature of a dust cloud**
- Limiting oxygen concentration
- **Self-ignition behavior**
- Specific resistance

It is important to know the data in bold letters. Depending on the explosion protection concept, further parameters are required.

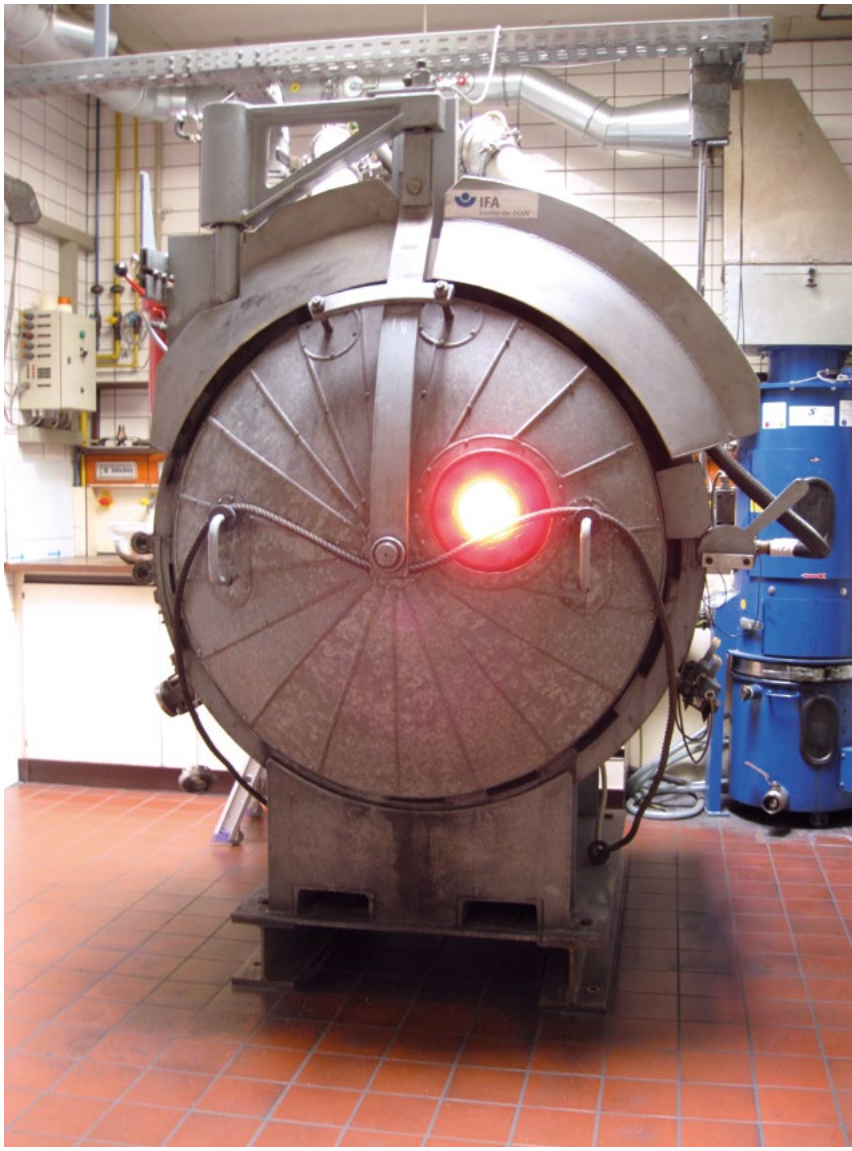

Figure 2: Determination of safety-related parameters for the dust explosion hazard in the 1 m³ apparatus

6. Assessment of the occurrence of hazardous explosive atmospheres

6.1 Explosive atmospheres/mixtures

- Are flammable substances used or do they occur in the course of processing, treatment or process steps?
- Is there a sufficient distribution of flammable substances in air or another oxidizing agent or can such a distribution occur so that the formation of explosive mixtures is possible?
- Can the concentration of flammable substances in the oxidizing agent be within the explosion limits? In the case of flammable liquids under atmospheric conditions, it must be assumed that the lower explosion limit may be exceeded if the flash point is not sufficiently above the maximum processing temperature. A sufficient difference between the flash point and the maximum processing temperature is 15 K or more.

If the answer to the above questions is "no", the occurrence of an explosive atmosphere is not to be expected. This means that no explosion protection document is required, but this result must be documented in the health and safety documentation.

6.2 Hazardous explosive atmospheres/mixtures

If explosive atmospheres are likely to occur, it must be assessed whether they are hazardous.

- Which sources can lead to the dispersion of flammable substances in air or in another oxidizing agent through the release of flammable substances? E.g.
  - Vaporization, splashing or spraying of flammable liquids
  - Swirling up of combustible dusts
- What quantity/volume of flammable substances is released, e.g. due to the process, the activity or as a result of malfunctions?
- Is the quantity/volume of a developing explosive atmosphere so large that the effects of an explosion would lead to a hazard?

> **Remark:**
> Even a quantity that exceeds 1/10,000 of the room volume is considered dangerous by experts, and even smaller quantities for encapsulated volumes. 10 liters of explosive atmosphere are hazardous regardless of the room volume.

- In addition to considering the quantity, it is also necessary to check whether the effects of heat or overpressure pose a hazard to persons or systems, either directly (e.g. risk of burns) or indirectly (e.g. through the spread of ignition, which can lead to a secondary fire or explosion).

If the assessment shows that the occurrence of a hazardous explosive atmosphere is not to be expected, this must be documented. The further steps in sections 6.3 and 7 do not apply.

If the assessment indicates that a hazardous explosive atmosphere is likely to occur, this must be stated in the explosion protection document.

6.3 Zoning

The areas within which hazardous explosive atmospheres may occur or be present must be defined. The local definition and the extent of these zones must be described in the explosion protection document.

Potentially explosive atmospheres are classified according to the probability (duration and frequency) of the occurrence of hazardous explosive atmospheres and divided into zones accordingly. The zone definitions can be found in Directive 1999/92/EC.

If the occurrence of hazardous explosive atmospheres can be prevented by safe technical and/or organizational explosion protection measures, it is possible to reduce the zone or its extent or even eliminate the zone.

A zoning plan can be useful.

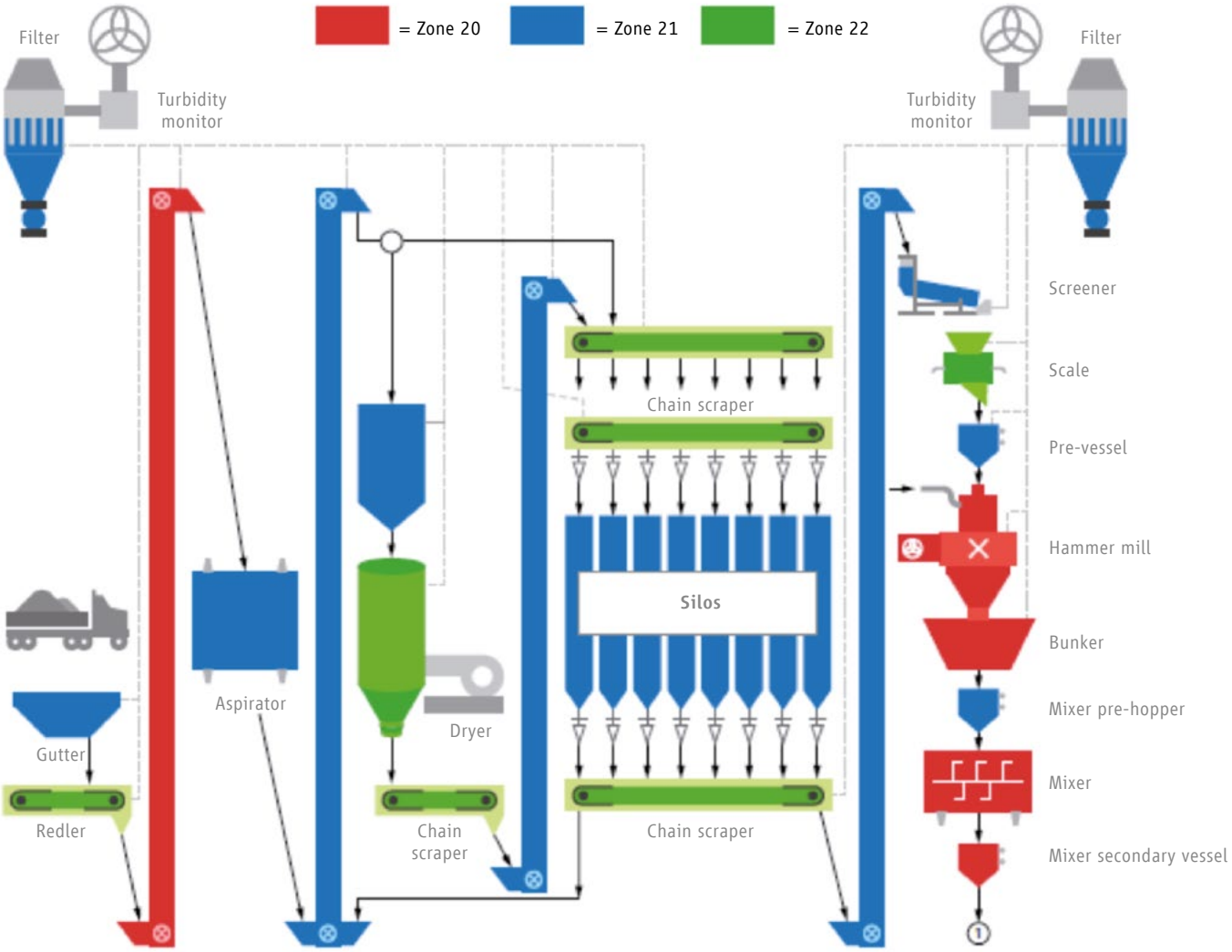

Figure 3: Example of a zoning map (concentrated animal feed plant). The different zones within the plant sections are highlighted in color. (Zones in the vicinity of the plant components are not indicated)

7. Explosion protection measures

It must be documented which preventive explosion protection measures such as

- prevention of the formation of explosive atmospheres, or if this is not possible due to the nature of the activity or process,
- avoidance of ignition of explosive atmospheres, or
- which constructive explosion protection measures, i.e. measures to mitigate the harmful effects of an explosion in order to ensure the health and safety of workers, have been defined.

The explosion protection concept presents the considerations as to how the existing explosion hazards are to be countered. It can be based either on one type of protection measure, e.g. preventing the formation of hazardous explosive mixtures, or on a combination of the above-mentioned protection measures. The presentation must plausibly show how the selected measures interact, that they are effective in protecting against explosions and how they are actually implemented. It must be documented in a comprehensible manner so that it can be conclusively understood by a suitably qualified person for explosion protection.

The effectiveness of the explosion protection measures must be ensured, e.g. through redundant design of the sensors and actuators, testing/monitoring combined with follow-up measures to prevent failure.

If the above-mentioned measures are monitored or controlled by measurement and control technology, the reliability of the measurement and control equipment must also be ensured.

In addition, defined organizational measures and their operational implementation must be described.

7.1 Preventing the formation of explosive atmospheres

The measures taken to prevent the formation of hazardous explosive atmospheres must be documented.

These include, for example

- **Replacing combustible materials** with non-combustible materials
- **Reducing the quantities of combustible materials present as far as possible**
- **Keeping the maximum processing temperature safely below the flash point**
- **Dilution and removal of hazardous explosive atmospheres,** e.g. through targeted extraction or ventilation
- **Reducing the oxygen content below the oxygen limit concentration**
- **Lowering the pressure in appliances**
- **Exceeding the upper explosion limit in equipment**

> **Note:** Exceeding the upper explosion limit does not offer any intrinsic safety, as there is a risk that the concentration will return to the explosion range upon the intake of air.

- Ensuring the **tightness of the equipment** when handling flammable substances in closed equipment in order to avoid explosive mixtures in the vicinity of equipment, or
- **Removal of deposits of combustible dust by wet cleaning or cleaning with a vacuum cleaner,** e.g. at filling or bottling points or in the production of nonwovens.

If technical and organizational explosion protection measures ensure that no hazardous explosive atmosphere is possible, no further measures are required.

7.2 Preventing the ignition of explosive atmospheres

If technical and organizational explosion protection measures do not ensure that the formation of hazardous explosive atmospheres is prevented, measures to prevent the ignition of explosive atmospheres are required.

First of all, ignition sources that are present or arise during the activity, production or process must be identified.

The explosion protection document must contain information on the avoidance of ignition sources.

These include, for example:

- Identification of all existing ignition sources (for further information, see ISSA brochure "Avoiding effective ignition sources in potentially explosive atmospheres")
- Devices or work equipment that can become an ignition source
- Evaluation of the effectiveness of ignition sources, e.g. comparison between the energy of the ignition source and the minimum ignition energy of the substance under consideration or existing surface temperature and ignition temperatures
- Process or work steps in which ignition sources may occur
- Location of ignition sources
- Operating conditions in which the ignition sources occur. This includes the allocation of these operating conditions to regular operation, foreseeable or rare faults
- Measures to avoid ignition sources, e.g.
  - Selection of suitable work equipment
  - Measures against electrostatic discharges
  - Lightning protection
  - Prohibition of smoking and open fires.

For work equipment and devices, creating a list (work equipment list) containing the following information, for example, has proven effective:

- Area or zone in which the respective device is or can be used
- Information on proper installation
- Evaluation of the effectiveness of ignition sources
- Determination of additional protective measures, if necessary due to the evaluation of the effectiveness of the ignition sources.

This list can be part of the explosion protection document, e.g. as an applicable annex. Applicable documents may also include documents such as certificates of conformity, type examination certificates, intrinsic safety certificates and operating instructions for work equipment.

If technical and organizational explosion protection measures ensure that the ignition of hazardous explosive atmospheres is permanently excluded, no further measures are required. If the elimination of all ignition sources cannot be sufficiently ensured, additional measures are required to reduce the effects of an explosion.

7.3 Measures to mitigate the harmful effects of an explosion

If technical and organizational explosion protection measures do not ensure that ignition of explosive atmospheres is not possible, further measures are required.

There are cases in which explosions cannot be completely ruled out. This can apply to mills or conveyor systems, for example, but also to tanks containing flammable liquids. There are various ways of limiting the effects of explosions to a harmless level. This is referred to as "constructive protective measures", for example:

- Design of containers or system components so that they can withstand the maximum explosion pressure (explosion pressure resistant, explosion pressure shock resistant)
- Timely relief of the explosion pressure (rupture disks, relief flaps) so that this does not endanger people or the environment
- Explosion suppression through timely detection of an incipient explosion and rapid injection of extinguishing agents
- Isolation measures, e.g. for explosion pressure resistant interconnected system parts or if the explosion could spread to neighboring system parts that are not protected by design protective measures.

The explosion protection document must contain information on existing design protective measures.

These include, for example:

- System components that are equipped with design measures
- Type of design measures,
- Requirements for design measures, e.g. effectiveness and suitability for the application
- Properties and proper installation of protective systems, e.g. for pressure relief, explosion isolation or explosion suppression
- Annexes to the explosion protection document:
  - Declarations of conformity of protective systems in accordance with EU Directive 2014/34/EU
  - Certificates or test records on the proper installation of system components, such as flame arrester fittings.

Information on substances or safety-related parameters of substances for which the system is designed can be found in the section "5 Substance data".

7.4 Organizational measures

If the protective measures specified in the explosion protection document are supplemented by organizational protective measures, these must be documented in the explosion protection document.

These can be, for example

- **Instruction of employees**
- **Written instructions, e.g.**
  - Operating instructions
  - Work permits
- **Supervision** for certain activities
- **Requirements for employees** who carry out activities that can lead to fire and explosion hazards
- Coordination of **collaboration between employees from different companies**
- **Inspection** rounds and **preventive maintenance**
- **Protective measures during maintenance work**
- **Testing** of systems and work equipment in potentially explosive atmospheres
- Maintenance concept
- **Removal of dust deposits by wet cleaning or cleaning with a vacuum cleaner** in the vicinity of dust-carrying systems, especially at feeding and filling points
- **Marking** of work areas in which explosive atmospheres may occur (potentially explosive area) and safety signs (access restrictions, avoid ignition sources)
- **Training** must be carried out regularly to ensure that the right gestures and practices are adopted
  - in hazard situations
  - in cooperation with external forces
  - and in the event of an evacuation due to a material release or an explosion.

D-W021
Warning of potentially explosive atmosphere

D-P006
No access for unauthorized persons

P003
Fire, naked lights and smoking prohibited

8. Annexes

The explosion protection document may contain or refer to the following documents in the annex, for example:

- Health and safety documentation
- Site plan, fire protection plan, zoning plan
- Safety data sheets, test reports, investigation reports
- Expert opinions
- List of hazardous substances
- Test certificates (e.g. EC or EU type examination certificate)
- Declarations of conformity
- Documentation of the safety instructions
- Operating instructions
- Cleaning plans
- Work permit system
- Documents for a maintenance concept
- Work plans for maintenance and inspection as part of the maintenance concept
  - Documentation of the implementation of maintenance measures
  - Documentation for the coordination of work when different companies work together
- Certificates of proper installation of system components (installer certificates, e.g. for extinguishing agent barriers, gas-tight wall ducts)
- Proof of intrinsic safety

4 Further links

- DGUV Information 213-106 "Explosionsschutzdokument" (Explosion protection document) https://publikationen.dguv.de/widgets/pdf/download/article/3360
- TRGS 720 (July 2020), Gefährliche explosionsfähige Gemische – Allgemeines (Hazardous explosive mixtures – General), GMBl 2020 p. 419-426 [No. 21] (of 24.07.2020)
  Corrected: GMBl 2021 p. 399 [Nr. 17-19] (of 16.03.2021)
- TRGS 721 (October 2020), Gefährliche explosionsfähige Gemische – Beurteilung der Explosionsgefährdung (Hazardous explosive mixtures – assessment of explosion hazard), GMBl 2020 p. 807-814 [No. 38] (of 02.10.2020)
  Corrected: GMBl 2020 p. 1116 [No. 51] (of 21.12.2020)
- TRGS 722 (February 2021), Vermeidung oder Einschränkung gefährlicher explosionsfähiger Gemische (Avoiding or limiting hazardous explosive mixtures), GMBl 2021 p. 399-415 [No. 17-19] (of 16.03.2021)
  Amended: GMBl 2022 p. 196 [Nr. 8] (of 14.03.2022)
- TRGS 723 (Juli 2019), Gefährliche explosionsfähige Gemische – Vermeidung der Entzündung gefährlicher explosionsfähiger Gemische (Hazardous explosive mixtures – avoiding the ignition of hazardous explosive mixtures), GMBl 2019 p. 638-656 [No. 33-34] of 26.08.2019
  Amended: GMBl 2020 p. 815 [No. 38] of 02.10.2020
- TRGS 724 (July 2019), Gefährliche explosionsfähige Gemische – Maßnahmen des konstruktiven Explosionsschutzes, welche die Auswirkung einer Explosion auf ein unbedenkliches Maß beschränken (Hazardous explosive mixtures – Constructive explosion protection measures, which limit explosion effects to a harmless level), GMBl 2019 p. 656-664 [No. 33-34] of 26.08.2019
- TRGS 725 (April 2023), Gefährliche, explosionsfähige Gemische – Mess-, Steuer- und Regeleinrichtungen im Rahmen von Explosionsschutzmaßnahmen (Hazardous explosive mixtures – Measurement and control engineering devices within the framework of explosion protection measures), GMBl 2023 p. 727-742 [Nr. 33-34] (of 05.06.2023)
- TRGS 727 (January 2016), Vermeidung von Zündgefahren infolge elektrostatischer Aufladungen (Avoiding ignition hazards resulting from static charging), GMBl 2016 p. 256-314 [No. 12-17] (of 26.04.2016)
  Corrected: GMBl 2016 p. 623 [No. 31] (of 29.07.2016)

5 ISSA Publication Series

ISSA Section on Prevention in the Chemical Industry

ISSA Section on Machine and System Safety

- Dust explosions – protection against explosions due to flammable dusts, ISSA-32 ISSA Chemistry Section, version 2002, 2nd edition (PDF in English, German and Italian)
- Dust Explosion Incidents, ISSA-43 ISSA Chemistry Section, version 2005, 1st edition (PDF in German and English)
- Identification and evaluation of hazards, determination of measures Part 7 Hazards due to explosions, ISSA-42 ISSA Chemistry Section and Machine and System Safety Section, version 2021, 2nd edition (PDF in German), ISBN 978-92-843-0156-0
- Gas explosions – protection against explosions due to by flammable gases, vapours or mists mixed with air, ISSA-34 ISSA Chemistry Section, version 1999 (under revision)
- Avoiding Effective Ignition Sources in Potentially Explosive Atmospheres, ISSA-40 ISSA Chemistry Section and Machine and System Safety Section, version 2013 (under revision), 1st edition (PDF in German and French), ISBN 978-92-843-7184-6
- Collection of examples "Dust explosion protection on machines and apparatus", Part 1: Mills, crushers, mixers, separators, screening machines, ISSA 38 ISSA Machine and System Safety and Chemistry Sections, version 2021 (PDF in German), ISBN 978-92-843-2182-7
- Collection of examples "Dust explosion prevention and protection for machines and equipment", Part 2: Continuous conveyors, transfers and receivers, ISSA 39 ISSA Machine and System Safety Section and Chemistry Section, version 2014 (in revision, PDF in German and English), ISBN 978-92-843-7182-2
- The PAAG//HAZOP method and other field-proven methods, Risk Assessment in Plant Safety, ISSA-01 ISSA Chemistry Section, version 03/2020, 5th edition (PDF in German), ISBN 92-843-7037-X

National aspects

Germany

In Germany, the provisions of Council Directive 1999/92/EC are transposed:

- by the Ordinance on Hazardous Substances – GefStoffV "Ordinance on Hazardous Substances of 26 November 2010 (Law Gazette I p. 1643, 1644), last amended by Article 2 of the Act of 21 July 2021 (Law Gazette I p. 3115)"
- with regard to the testing obligations imposed by the Ordinance on Industrial Safety and Health – BetrSichV – "Ordinance on Safety and Health Protection in the Provision of Work Equipment and its Use at Work, on Safety in the Operation of Installations Requiring Monitoring and on the Organization of Occupational Health and Safety" of 3 February 2015 (Law Gazette I p. 49), as last amended by Article of the Act of 27 July 2021 (Law Gazette I, p. 3146)

Austria

In Austria, Directive 1999/92/EC is transposed:

- by the Explosive Atmospheres Ordinance – VEXAT: "Ordinance of the Federal Minister of Economics and Labor on the Protection of Workers from Explosive Atmospheres and amending the Construction Workers Protection Ordinance and the Work Equipment Ordinance (Explosive Atmospheres Ordinance – VEXAT)" of 26.07.2004 (Federal Law Gazette II No. 309/2004), last amended on 30.06.2015 (Law Gazette II No. 186/2015).

Contact

Germany

Contact persons are the staff of the responsible accident insurance institutions and the staff of the state occupational health and safety authorities.

Austria

If you have any further questions on this topic, please do not hesitate to contact the AUVA regional office responsible for you.

The ISSA

Providing social security

ISSA, the International Social Security Association is the world's leading umbrella organization for institutions, government agencies and authorities concerned with social security.

In a narrower sense, social security means protection against the consequences of "social risks". In addition to reduction in earning capacity due to occupational accident, occupational disease and occupational disability, this also includes illness, unemployment, assumption of family burdens, ageing and death of employed persons. In a broader sense, social security also includes an active labor market policy, a public education system and a balancing tax policy.

The ISSA was founded in 1927 by 17 European non-governmental organizations as the "International Conference of National Unions of Mutual Benefit Societies and Sickness Insurance Funds". Today, the ISSA has around 350 institutions, government agencies and authorities in more than 150 countries on all continents and is based at the United Nations International Labour Organization (ILO) in Geneva. The substantive work is carried out in 13 specialist committees, including those focusing on occupational accidents and diseases, health benefits and health insurance, employment policy and unemployment insurance, and family benefits and survivors' insurance.

Preventing occupational risks

The "Special Commission on Prevention" plays an important role within the ISSA. It consists of 14 international sections and deals with work-related risks in various sectors such as the chemical industry, mining, electricity and transport industry, but also with cross-cutting issues such as machine and system safety, information and prevention culture. The Special Commission coordinates the joint activities of the International Sections on Risk Prevention and other ISSA prevention activities.

As one of the first sections of the Special Commission, the International Section on Prevention in the Chemical Industry was founded in Frankfurt am Main in June 1970. It is committed to the prevention of occupational accidents and diseases in the chemical and allied industries, particularly in plastics and rubber, paints and coatings, pharmaceuticals and cosmetics, and specialty chemicals and petroleum refining. The chair and secretariat are held by the Berufsgenossenschaft Rohstoffe und chemische Industrie in Heidelberg.

In 1975, the ISSA International Section on Machine and System Safety was founded. Its objective is to increase safety and health protection at work worldwide in the field of machine and system safety. The chair and secretariat are held by the Berufsgenossenschaft Nahrungsmittel und Gastgewerbe in Mannheim.

Chemical Industry | Machine and System Safety | Transportation | Construction Industry | Information | Mining Industry | Agriculture

Communicating expertise

A special thematic focus in the chemical industry is the handling of hazardous substances and the resulting health and explosion hazards. In 1978, therefore, the working groups "Hazardous Substances" and "Explosion Protection" were formed at the Section for Prevention in the Chemical Industry. In order to exploit synergy effects and increase efficiency, the "Explosion Protection" working group merged with the corresponding team of the Section on Machine and System Safety in 2008.

Intensive informal discussions are held in the working groups, and brochures and instructional media are also produced and workshops organized in order to promote an international exchange of experience among experts and to develop target-oriented solutions for selected problems.

In this way, the Section on Prevention in the Chemical Industry and Section on Machine and System Safety want to contribute to a high level of technology that is comparable among industrialized countries and also pass on their knowledge to countries that are still less developed industrially.

Collaboration

Dr. A. Arnold, Mannheim (D)
Dr. H.-J. Bischoff, Mannheim (D)
M. Bloch, Alfortville (F)
Dr. Susanne Causemann, Sankt Augustin (D)
Dr. M. Glor, Allschwil (CH)
Dr. M. Gschwind, Lucerne (CH)
A. Harmanny, Kontich (B)
K. Kopia, Vienna (A)
Dr. Z. Kramar, Ljubljana (SI)
Dr. Oswald Losert, Heidelberg (D)
F. Marc, Paris (F)
M. Mayer, Osterburken (D)
G. Nied, Osterburken (D)
Dr. R. Ott, Meggen (CH)
J. Parra, Münchwilen (CH)
Dr. G. Pellmont, Binningen (CH)
F. Pera, Rome (I)
B. Poga, Heidelberg (D)
Prof. Dr. S. Radandt, Brühl-Rohrhof (D)
B. Sallé, Paris (F)
Dr. M. Scheid, Frick (CH)
R. Siwek, Kaiseraugst (CH)
Dr. K.-W. Stahmer, Sankt Augustin (D)
G. Van Laar, Hamm (D)
M. von Arx, Lucerne (CH)


Health services


Electricity, Gas and Water


Research


Iron and Metal Industry


Culture of Prevention


Education and Training


Trade

issa | INTERNATIONAL SOCIAL SECURITY ASSOCIATION

Section on Prevention in the Chemical Industry
Section on Machine and System Safety

Practical assistance for the preparation of an explosion protection document

Due to high temperatures and pressures, explosions cannot only cause damage to property and production downtime, but can also pose an immediate danger to the life and health of employees and other persons.

For this reason, legal standards have been drawn up worldwide with the aim of preventing explosions. The European Directive 1999/92/EC "Directive on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres" and its respective transposition into national law obliges all companies/businesses in the EU in which areas with potentially explosive atmospheres are present to prepare an explosion protection document. This must identify the hazards, classify the potentially explosive atmospheres and document the measures taken. The systematic procedure used for this and described in the document in a comprehensible manner is also applicable and useful for companies outside the scope of the directive.

This brochure is intended to be a practical assistance for the preparation of the explosion protection document across different national regulations. National regulations may well set higher requirements.

ISBN 978-92-843-0152-2