

# **Safety documentation and its evaluation**

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(VÚBP, v.v.i.)**

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[www.vubp.cz](http://www.vubp.cz)

**Výzkumný ústav bezpečnosti práce, v.v.i.**

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## **Main items of presentation:**

**A. Introduction: Contents of the main safety documentations**

**B. Evaluation of safety documentation and its level**

**C. Help for „major accident prevention area“**

# **A. Introduction: Contents of the main safety documentations**

## *Repeating of main facts:*

### Safety documents:

**group A: safety programme for prevention of major accident + physical protection plan**

**group B: safety report + physical protection plan + internal emergency plan + information for external emergency plan (for designation of emergency planning zone)**

# **Parts of safety documents: „Safety programme for prevention of major accident“ and „Safety report“**

## **Safety programme for prevention (SP)**

- I. Information about establishment or installation**
- II. Risk analysis and risk assessment of major accident**
- III. Fundamentals, aims and policy of major accident prevention**
- IV. Description of safety management system**
- V. Concluding summary**

## **Safety report (SR)**

- I. Information about establishment or installation**
- II. Descriptive, informative and data parts of safety report**
- III. Risk analysis and risk assessment of major accident**
- IV. Description of safety management system**
- V. Descriptive of preventive safety measure to possibility limitation of rise and consequences of major accident**
- VI. Concluding summary**



**Decree No 256/2006 Coll.,**  
**on the details pertaining to the prevention**  
**of major accidents system**

**I. (SP + SR) Information about the establishment**  
**or installation**

- 1. Identification data of the establishment or installation  
(name, address, authorised person)**
- 2. Description of current or planned activity of the  
operator, significant history of the establishment  
or installation, number of the employees**
- 3. *Only in safety report:* Identification of the co-operative  
person in the safety report preparing**

## **II. (SR) Descriptive, informative and data parts of the safety report**

- 1. Description of the establishment or installation (organization of the establishment, maps and plans, main activities, processes, dangerous substances, sources of major accident risks and conditions for its realization, inside and outside services, ...)**
- 2. Description of the environment of the establishment or installation (site and its environment, geographical location; demographic, meteorological, geological and hydrographic data, installations and other activities with major accident hazard potential, specific hazard, ...)**

## **II. (SP) /III. (SR) Risk analysis and risk assessment of major accident (briefly)**

- 1. Inventory of the establishment or installations with dangerous substances**
- 2. Inventory of the dangerous substances and its characteristics**
- 3. Description and estimation of dangerous chemical reaction in case of its undesirable contact or operational conditions**
- 4. Description and estimation of the possible dangerous situations inside of the establishment or installation**
- 5. Description and estimation of the possible dangerous situations outside of the establishment or installation**



- 6. Identification, description, evaluation and selection of the sources of the risk (hazard) for QRA (quantitative risk analysis)**
- 7. Identification a description of the possible major accident scenarios and its causes; selection of the representative major accident scenarios**
- 8. Estimation of the consequences of the representative major accident scenarios and its impacts to the human health and life, livestock, the environment and property**
- 9. Estimation of the probabality of the representative major accident scenarios**
- 10. Evaluation role of human factor concerning major accident hazards**

- 11. List of the used risk analysis methodologies**
- 12. Description of the methodologies, that did not public publish**
- 13. Determination of the level of risk of the major accident representative scenarios**
- 14. Assessment of the risk acceptability of the major accidents**
- 15. Description of measures concerning to unacceptable sources of risk; implementing process for this measures and its audit**
- 16. Description of the permanent auditing of the reducing risk measures effectiveness**
- 17. Estimation of the adequacy of the safety and protection measures concerning major accident risks**

### **III. (SP) + IV. (SR) Fundamentals, aims and policy of major accident prevention**

#### **IV. (SP + SR) Description of safety management system**

*Description of the safety management system – issues:*

- **Organization and personnel concerning major accident prevention**
- **Operational control of the establishment or installation**
- **Management of change in the establishment or installation**
- **Emergency planning**
- **Monitoring performance**
- **Audit and review**

#### **V. (SP) + VI. (SR) Concluding summary**

## **„Way“ of safety documents:**

**Operator A/B (document) → Regional authority (RA) → Ministry of environment (MoE) + interested bodies of state administration + interested municipalities**



**MoE + interested bodies of state administration:  
expression → RA**

**interested municipalities: expression of municipality and public → RA**



**Regional authority shall issue decision →  
operator + ME (for information)**

**\* \* \* \* \***

**MoE ↔ VÚBP, v.v.i. (Occupational Safety Research Institute)  
→ OPPZH department  
(OPPZH – Centre for Evaluation Safety Documents)**



## **B. Evaluation of safety documentation and its level**

- **74 operators in Group A + 110 operators in Group B (March, 2008)**
- **Demands on the operators and others ↑ (legal requirements; outside relations sometimes ↓)**
- **Level of safety documentation ↑, but some shortcomings are still prevailing**
- **Shortcomings are based usually on non-respect of recommendations or deficient knowledge of safety document authors**

## **Imperfections in basic informations on establishment or facility**

**Incomplete description and information of:**

- **establishments or facilities**
- **topography**
- **dangerous substances**
- **technology, operational activities and processes**
- **surroundings**

## Imperfections in risk analysis and risk assessment

### *Common remarks*

- majority of operators are aware that the rising complexity for environmental prevention in the EU, but operator is not always able to fulfil all respected deadlines at the shortest notice
- risk analysis has to secure that **every source of a major hazard have been duly identified and analysed**
- risk study depth should therefore be adequate to the risk evolving from handling with dangerous substances



## *Main imperfections*

- **non-adequate depth of risk analysis**
- **missing dangerous substances**
- **lack of information about dangerous chemical reactions**
- **shortcomings in description of possible dangerous situations „inside“ and „outside“**
- **hazard is not identified and therefore will not be analysed**
- **incomplete identification and assessment of possible scenarios of events and their causations which might lead up to a major accident**

- **problems with probability**
- **human factor**
- **ascertaining risk rate**
- **risk acceptability assessment**
- **monitoring of the preventive safety measures**
- **assessment of adequacy and effectivity of the preventive safety measures**

**Typical shortcomings concerning the principles, aims  
and prevention policy of a major hazard  
and description of safety management system**

- **missing documentary** support of a relevant requirement of safety management system (SMS)
- **missing brief outline** of the focus of a document
- providing general statements on a segment of system measures which lead to a presupposition that one of the following situations is experienced by the operator:

- a) SMS is introduced, but it is wrongly described and supported in safety document,**
- b) SMS is not introduced, but concrete plan with deadlines and responsibilities for its implementation had been drafted, but it is not described and evidenced in safety document,**
- c) SMS is not introduced, future introduction is not envisaged, yet individual safety elements are spontaneously observed by the employees due to their high awareness,**
- d) SMS is not introduced, future introduction is not envisaged and pertinent elements are not fulfilled.**



## **C. Help for „major accident prevention area“**

## **Dreamland story about major accident prevention**

- ♥ **Safety engineering is a respected discipline**
- ♥ **Results of risk analysis are respected**
- ♥ **SMS is adequate to the risk**
- ♥ **Skilled experts in major accident prevention are in right positions**
- ♥ **Land-use planning is effective**
- ♥ **All are adequately informed on major accident prevention**
- ♥ **All cooperate in order to lower the risk reasonably**

## Basic questions from any risk prevention

1. What wrong may happen?
2. What are the effects / consequences and impacts on the recipients and are they acceptable?
3. Are safety measures adequate to this hazard?



*There are various approaches and methodologies...*

*There are data with different scales of reliability...*

*There are not identical objects/facilities...*



***engineering estimates !***

# Some aspects in current major accident prevention

## Operator

- Impacts of legislative regulations and competition
- Higher level of safety ➡ more money
- Some problems with knowledge of risk analysis and risk assessment and accepting of results of risk analysis: need of own experts
- No easy presentation toward the public
- Reflection of learning from unwanted event in the world
- Raising prevention requirements ➡ „ill-humour“
- Methodological guidelines are only recommendations
- Need continually follow the *status quo* in this area



# **Some aspects in current major accident prevention**

## **State administration (regional authorities)**

- **Sufficient knowledge of risks pertinent to territory**
- **Knowledge of principle of risk assessment**
- **Need of information for solution of questions stemming from external emergency plans and land-use planning**
- **Officials should have got possibilities of their training, should enjoy importance of a state official and would be trained in some special questions (e.g. impact assessment on the population, risk acceptance assessment, land-use planning viewed from major hazard prevention)**

# Some aspects in current major accident prevention

## Public

- Daily road accidents are accepted, but a slight leak or an incident in chemical industry is big problem
- Hunger for many products but risk acceptance derived from its production is declining
- Public ? perception, acceptance and tolerance of risk
- Public need appropriate and required information, but: there are information to the public in emergency planning zone, a number of operators are active in this area, but inhabitant does not always take up initiative in this area

## **V. Conclusion**

- **Base of safety engineering: chemical and processing engineering: both theory and practical examples**
- **Safety engineering may not be restricted by a set of „step-by-step“ methodological instructions**
- **Circuit of the problems from the applications of safety engineering on the internet (practical examples or manifestations)**
- **Management of particular involved subjects use this information for a need of outline of the area managed, its requirements, demands and to lead stabilisation expert policy**
- **Officials of the state administration should be periodically trained in this sphere**

- Targeted information should be at the disposal of the lay public
- Improve being informed:  
VÚBP, v.v.i. → information system OSH and major hazards prevention and electronic revised magazine JOSRA (*Journal of Occupational Safety Research and Applications*)
- Development in methodological instructions
- Development in assessment of impact on the environment, in assessment of reliability of human factor and applications of several methods of risk analysis
- Development in the spheres of interest of major hazards prevention with OECD goals



## Contemporary help for interested persons:

- **Methodic instructions of the Ministry of Environment**  
(<http://www.env.cz/osv/edice.nsf/titletree>)
- **Information on web sites**  
(MoE: <http://www.env.cz/AIS/web.nsf/pages/havarie>  
VÚBP, v.v.i. – OPPZH: <http://www.vubp.cz/oppzh.php>)
- **Lectures**
- **Course „Safety management system and emergency planning“ (VÚBP, v.v.v.)**
- **New information web in preparing**

# THANK YOU FOR YOUR ATTENTION



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