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Addendum to the OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response (2nd ed.)

Series on Chemical Accidents
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Series on Chemical Accidents

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Paris 2011

Other OECD publications related to Chemical Accident Prevention, Preparedness and Response:

Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection (1993)

Health Aspects of Chemical Accidents: *Guidance on Chemical Accident Awareness, Preparedness and Response for Health Professionals and Emergency Responders* (1994) [prepared as a joint publication with IPCS, UNEP-IE and WHO-ECEH]

Guidance Concerning Health Aspects of Chemical Accidents. *For Use in the Establishment of Programmes and Policies Related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances* (1996)

Report of the OECD Workshop on Small and Medium-sized Enterprises in Relation to Chemical Accident Prevention, Preparedness and Response (1995)

Guidance Concerning Chemical Safety in Port Areas. *Guidance for the Establishment of Programmes and Policies Related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances. Prepared as a Joint Effort of the OECD and the International Maritime Organisation (IMO)* (1996)

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No. 5, Report of the OECD Workshop on New Developments in Chemical Emergency Preparedness and Response, Lappeenranta, Finland, November 1998 (2001)

No. 6, Report of the OECD Expert Meeting on Acute Exposure Guideline Levels (AEGLs) (2001)

No. 7, Report of the Special Session on Environmental Consequences of Chemical Accidents (2002)

No. 8, Report of the OECD Workshop on Audits and Inspections Related to Chemical Accident, Prevention, Preparedness and Response (2002)

No. 9, Report of the OECD Workshop on Integrated Management of Safety, Health, Environment and Quality, Seoul, Korea, 26 - 29 June 2001 (2002)

Internet Publication, Report of CCPS/OECD Conference and Workshop on Chemical Accidents Investigations (2002)

Special Publication, International Directory of Emergency Response Centres for Chemical Accidents (2002, revision of 1st edition published in 1992)

No. 10, Guiding Principles for Chemical Accident Prevention, Preparedness and Response (2003, revision of the first edition published in 1992)

No. 11, Guidance on Safety Performance Indicators for Industry, Public Authorities and Communities, (2003)

No. 12, Report of the OECD Workshop on Communication Related to Chemical Releases Caused by Deliberate Acts, Rome, Italy, 25-27 June 2003 (2004)

No. 13, Report of the OECD Workshop on Sharing Experience in the Training of Engineers in Risk Management, Montreal, Canada, 21-24 October 2003 (2004)

No. 14, Report of the OECD Workshop on Lessons Learned from Chemical Accidents and Incidents, Karlskoga, Sweden, 21-23 September 2004 (2005)

No. 15, Integrated Management Systems (IMS)-Potential Safety Benefits Achievable from Integrated Management of Safety, Health, Environment and Quality (SHE&Q) (2005)

No. 16, Report of the OECD-EC Workshop on Risk Assessment Practices for Hazardous Substances Involved in Accidental Releases, 16-18 October 2006, Varese, Italy (2007)

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No. 20, Report of the OECD-CCA Workshop on Human Factors in Chemical Accidents and Incidents, 8-9 May 2007, Potsdam, Germany (2008)

No. 21, Report of the OECD Workshop on Safety in Marshalling Yards, 15-16 October 2007, OECD, Paris, France (2008)

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This publication was developed in the IOMC context. The contents do not necessarily reflect the views or stated policies of individual IOMC Participating Organizations.

The Inter-Organisation Programme for the Sound Management of Chemicals (IOMC) was established in 1995 following recommendations made by the 1992 UN Conference on Environment and Development to strengthen co-operation and increase international co-ordination in the field of chemical safety. The Participating Organisations are FAO, ILO, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD. UNDP is an observer. The purpose of the IOMC is to promote co-ordination of the policies and activities pursued by the Participating Organisations, jointly or separately, to achieve the sound management of chemicals in relation to human health and the environment.

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or contact:

OECD Environment Directorate,
Environment, Health and Safety Division
2 rue André-Pascal
75775 Paris Cedex 16
France

Fax: (33-1) 44 30 61 80

E-mail: ehscont@oecd.org

FOREWORD

This Addendum has been developed as a supplement to the second edition of the OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response,* published in 2003.

The Addendum takes into account the results of five workshops that were held under the auspices of the OECD Working Group on Chemical Accidents (WGCA) during the period from 2003 – 2007. The WGCA, which manages the OECD Programme on Chemical Accidents, consists of representatives of OECD member countries as well as experts from observer countries, international organisations, industry, labour, and environmental organisations.

The WGCA recommended that this Addendum be forwarded to the Joint Meeting of the Chemical Committee and Working Party on Chemicals, Pesticides and Biotechnology, for consideration as an OECD publication.

This document is being published under the responsibility of the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, which has agreed that it be unclassified and made available to the public.

INTRODUCTION

This Addendum has been developed as a supplement to the second edition of the OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*, published in 2003. It takes into account the results of five workshops that were held under the auspices of the OECD Working Group on Chemical Accidents (WGCA)[1] during the period from 2003 – 2007.

This is not a stand-alone document; it can only be understood in conjunction with the 2nd edition of the *Guiding Principles*, which is available at: www.oecd.org/ehs or www.oecd.org/env/accidents .

To make it easier to identify the new and amended text, any changes are printed in **blue**.

BACKGROUND

The OECD published the first edition of the *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* in 1992 in order to set out general guidance for the safe planning and operation of facilities where there are hazardous substances in order to prevent accidents and, recognising that accidents may nonetheless occur, to mitigate adverse effects through effective emergency preparedness, land-use planning, and accident response. The *Guiding Principles* reflect the collective experience of the members of the WGCA and other experts in the field, and incorporates the conclusions and recommendations of the many workshops and other activities undertaken by the WGCA.

After a decade, the OECD reviewed the *Guiding Principles* and published an updated version in 2003 to:

- take account of national and international experience, as well as technical and policy developments, during the period 1992 – 2002;
- incorporate the results of OECD workshops and special reviews on different issues, held between 1992 and 2002, bringing together a wide range of experts representing various interests and nationalities; and
- expand the scope to include transport interfaces.

In 2005, the WGCA concluded that they should prepare periodic addenda to *the Guiding Principles* in order to capture the results of its workshops. While it is expected that there will be a more comprehensive review and update of the *Guiding Principles* approximately every 10-12 years, the interim addenda provide a way to share key lessons between the comprehensive updates.

The following Addendum is based on the conclusions and recommendations from five workshops:

1. *Communication related to chemical releases caused by deliberate* acts (Rome, Italy, June 2003)
2. *Sharing experience in the training of engineers in risk assessment* (Montreal, Canada, October 2003)
3. *Lessons learned from chemical accidents and incidents* (Karlskoga, Sweden, September 2004)

[1] The WGCA, which manages the OECD Programme on Chemical Accidents, consists of representatives of OECD member countries as well as experts from observer countries, international organisations, industry, labour, and environmental organisations.

4. *Human factors in chemical accidents and incidents* (Potsdam, Germany, May 2007)

5. *Safety in marshalling yards* (Paris, France, October 2007)

ADDENDUM

The following is the Table of Contents from the *Guiding Principles*, amended to take account of the new text in the addendum:

- New subsections or Text Boxes added by this addendum are identified by italics.

- Any section that includes amended or added text is identified by an asterisk (*).

Table of Contents

GOLDEN RULES (pages 21 – 24)[2]

Change to the Golden Rules: under the Role of Industry, the fifth point is amended by adding the word 'organisation' to the first line

- **Be especially diligent in managing change.**
  Any significant changes (including changes in process technology, organisation, staffing, and/or procedures), as well as start-up and shut-down operations and maintenance/repairs, increase the risk of an accident. It is therefore particularly important to be aware of this and to take appropriate safety measures when significant changes are planned – before they are implemented.

PART A: PREVENTION OF CHEMICAL ACCIDENTS

Chapter 1: General Principles (pages 29-32)

Chapter 1 includes an overview of the roles and responsibilities of the various interested stakeholders, recognising that prevention is the concern of a wide range of different parties and there is a need for co-operation among stakeholders. Chapter 1 contains nineteen general principles set out in paragraphs numbered 1.1 to 1.19.

Changes to Chapter 1: Two new paragraphs (1.20 and 1.21) are added

- **Paragraph 1.20**
  Members of all stakeholder groups should be able to communicate effectively to their colleagues and superiors about safety and risk issues. Risk communication should take into account the fact that groups of people in an organisation may have different objectives (which may be conflicting), and that different disciplines may use different terminology when addressing safety and risk issues.

- **Paragraph 1.21**
  Engineers, safety specialists, and others trained in process or chemical safety should help to raise awareness of industry and others (including the public) about issues associated with chemical accident risks and safety.

  - Enterprises, public authorities and other organisations should be receptive to addressing health, safety and environmental concerns identified by engineers and safety specialists, and should encourage engineers and safety specialists to share their concerns.

Chapter 2: Industry (including management and labour) (pages 33 - 65)

Section a: Safety Culture *(pages 33 – 37)*

Changes to Section a:
- *Paragraph 2.a.3 - a new subpoint is added*
- *Paragraph 2.a.7 - a new subpoint is added*

- **Paragraph 2.a.3 – A new subpoint is added**

  Existing paragraph 2.a.3:
  The safety culture should encourage initiative and alertness in the interest of safety.
  (this is followed by three subpoints)

[2] The page numbers indicate where the relevant text can be found in the 2nd edition of the *Guiding Principles.*

New subpoint to 2.a.3:

- Management should promote the idea of "eternal vigilance", as part of the safety culture, to avoid complacency and the belief by managers and other employees that accidents are rare events that won't occur during their tenure.

- **Paragraph 2.a.7 – A new subpoint is added (with four bullets)**

Existing paragraph 2.a.7**:**
Each enterprise should have a clear and meaningful written statement of its Safety Policy agreed, promulgated and applied throughout the enterprise, reflecting the corporate safety culture, containing the overall aims and principles with respect to chemical safety, and incorporating the "zero incident" goal as well as the safety objectives established by public authorities.
(this is followed by four subpoints)

New subpoints to 2.a.7:

- The Safety Policy should address measures to assess and improve the safety culture, and any review of the Safety Policy should take account of the assessment of the safety culture.
  - Assessment of safety culture has proven to be an important tool to promote safety, and should be helpful in setting priorities for audits and inspection programmes.
  - The assessment should address the beliefs and actions of management and other employees. Management/leadership behaviour is a crucial target when assessing safety culture.
  - The assessment of safety culture should go beyond the individual mindset and stated values. It should address group-level phenomena, such as: the beliefs and motivations of employees; social and group dynamics; shared basic assumptions that influence beliefs and behaviour; learning processes; and informal leadership.
  - Assessment techniques need to be tailored to specific enterprises, organisations and groups. Diagnosing deeper layers of safety culture necessitates that the approach used be flexible and analytical.

Section b: Hazard Identification and Risk Assessment *(pages 38-40)*

Changes to Section b:
- *Paragraph 2.b.7 - two new subpoints are added*
- *New Paragraph 2.b.8(bis) is added after 2.b.8*

- **Paragraph 2.b.7 – Two new subpoints are added**

Existing paragraph 2.b.7:
Risk assessments related to hazardous installations should take account of all possible consequences, including environmental consequences (as well as possible health consequences).
(this is followed by six subpoints)

New subpoints to 2.b.7:

- Risk assessments and risk management decisions should take into account the diverse risks at a hazardous installation, as well as the multidisciplinary nature of risks. In this regard, it is important to recognise that some sites have complex technical, organisational, and/or social issues that should be addressed (such as staff shift patterns and language differences among employees). Therefore, qualified and informed professionals from various sectors should be involved, to the extent practical.

- Risk assessments should take into account the possibility of "domino effects" between hazardous installations, and between transport systems and fixed installations.

- **New paragraph 2.b.8(bis) – A new paragraph is added between 2.b.8 and 2.b.9**

  2.b.7(bis): Risk management decisions should be well-documented. This is important for a number of reasons; for example, documentation helps to: support further decision-making; comply with legal requirements; understand what went wrong when an accident occurs; assist with enforcement; and facilitate communications.

Section d: Operation *(pages 46 – 56)*

Section d (existing) contains five subsections:

- Procedures
- Personnel
- Internal communication
- Education and training
- Human factors

Changes to Section d:

- *Paragraph 2.d.7 is moved from "Procedures" to a new subsection in Section i related to "Deliberate Acts".*
- *Paragraph 2.d.34 under "Education and training" is amended.*
- *A Text Box is added which addresses the special considerations related to engineers and safety specialists.*
- *A sixth subsection is added to address "Alarm management" with three paragraphs (2.d.47 – 2.d.49).*

- **Paragraph 2.d.7 related to site security is moved from "Procedures" to a new subsection on "Deliberate Acts" in Section i**.

- **Paragraph 2.d.34 – New text is added to an existing subpoint (related to the subjects to be addressed in an enterprise's education and training programme).**

  Existing paragraph 2.d.34
  Management should take all reasonable measures to ensure that all those employed at a hazardous installation, including temporary employees and contractors, receive appropriate education and training and are competent to carry out their tasks under both normal and abnormal conditions.
  (this is followed by six subpoints)

  Two new bullets in first subpoint of 2.d.34

  - This education and training should address:
    - hazard identification, risk evaluation, and appropriate corrective measures to address safety concerns;
    - risk prevention and mitigation;
    - actions that should be taken in unusual or emergency situations;
    - correct materials handling procedures;
    - human factors and risk communication;

- the role played by people in the context of different aspects of design and operation of the installation, including control (internal and external inspection, audits), maintenance, and management; and
- any special hazards unique to their job.

♦ **After Paragraph 2.d.41: The following text box is added at the end of the subsection on "Education and Training"**

Special Considerations Related to Engineers and other Safety Specialists

Engineers and other safety specialists have a duty to identify safety issues and to provide leadership with respect to safety issues to others in their communities.

Engineers and other safety specialists should be called on to raise the awareness of management and others employees, and educate them with respect to issues concerning safety and risk.

- It is important for engineers and other safety specialists to be able to communicate effectively to their colleagues and to management about safety and risk issues, recognising that others in the enterprise or organisation may have different objectives and use different terminology. Discussions of these issues can help reach appropriate decisions about risks and safety.
- Engineers and other safety specialists should be aware of which forces drive the decision-making process and ensure that good engineering practices with respect to safety, health and the environment are considered appropriately.
- It is important for engineers and safety specialists to be aware of the limits of their own knowledge with respect to their role in the safe siting, design construction, operation, maintenance, and/or decommissioning of hazardous installations. They should seek ways to continue acquiring additional information and training, as appropriate.

Engineers and other safety specialists should recognise the value of showing by example how to make safety a priority.

Managers should recognise the important role of engineers and safety specialists in risk management decision-making and seek input and reasoning as to why a situation may be safe or unsafe.

The training of engineers and safety specialists should, at a minimum, include the concepts of risk and risk management, operational deviations, probability of failure, and failure consequences recognising that specific training programmes will take into account the different educational systems in different localities.

- Engineers and other safety specialists must maintain their level of competence taking into account new technological, legal and other developments. This could be done through in-house training programmes, continuing education courses, on-line and written materials, external training activities, etc.
- Enterprises and other organisations that employ engineers and other safety specialists should support continuing professional development and maintaining their level of competence (including with respect to risk assessment and risk management).

- **New Subsection on "Alarm management"**
  Paragraphs 2.d.47 – 2.d.49 – Three new paragraphs constituting the new subsection

  New Paragraph 2.d.47
  Every hazardous installation should have a clear and well-defined alarm management strategy, as part of its safety management system.

  - Good alarm management will help prepare for unanticipated events by providing: detection of failure(s); identification of problems and causes; and implementation of countermeasures aimed at returning the process to a normal or safe situation.
  - The alarm management strategy should include means to prevent: alarm flooding; overloading of the operator; complacency by the operator when an alarm is triggered; and/or operator(s) ignoring alarms he/she considers to be unimportant.

  New Paragraph 2.d.48
  The alarm management strategy should provide for an effective alarm system, which provides a signal in response to any deviation from the normal situation which requires immediate action.

  - The purpose of an alarm system is to direct the operators' attention towards conditions at the installation requiring timely assessment and/or action.
  - Every alarm presented to the operator should be useful and relevant to the operator. Alarm systems should be designed taking into account the operators' needs.
  - Every alarm should have a defined response and adequate time should be allowed for the operator to carry out this response.
  - The alarm system should be continuously monitored, tested, analysed and improved.

  New Paragraph 2.d.49
  Any overriding or bypassing of alarms should be: assessed as a temporary measure, consistent with the Management of Change process; logged through manual or computer-generated written documentation; regularly re-assessed; and reinstated when the override or by-pass is no longer necessary. The reinstatement should also be documented.

Section f: Modifications (technical and organisational) *(pages 56-57)*

Changes to Section f: New Paragraph 2.f.6 is added, consisting of the first subpoint of existing Paragraph 2.f.2 plus new text.

- New Paragraph 2.f.6
  When a company undergoes a re-organisation or significant personnel changes, the management of safety should be a priority.

  - Procedures should ~~also~~ exist to ensure that changes in management, labour and organisation do not compromise safety (including, for example, changes in corporate structure or financing, downsizing of staff, outsourcing of certain ~~production~~ activities). Such changes should trigger review procedures to ensure safety has not been adversely affected. (*existing text from 2.f.2)*
  - It is important to manage any reorganisation or significant personnel changes with respect to its impact on the corporate safety culture.

Section i: Other Industry Responsibilities *(pages 61-65)*

Section i (existing) contains three subsections:

- Product Stewardship and assistance to other enterprises
- Transfer of technology
- Acquisitions and affiliated operations

Changes to Section i:

- *Paragraph 2.i.4 under "Product Stewardship and assistance to other enterprises" – first subpoint is amended*
- *A fourth subsection is added to address "Deliberate acts" with an introduction and three paragraphs (2.i.19 – 2.i.21). Paragraph 2.i.19 is the former paragraph 2.d.7 with the addition of "arson" in the list of examples of deliberate acts, and the addition of four subpoints. Paragraphs 2.i.20 – 2.i.21 are new text*

- **Paragraph 2.i.4 – First subpoint is amended**

  Existing Paragraph 2.i.4
  Industry/trade associations, local chambers of commerce and other industrial and professional organisations should provide a useful means of disseminating information related to prevention of accidents involving hazardous substances.
  (this is followed by two subpoints)

  Amended subpoint to 2.i.4:

  - Industry/trade associations and industrial/professional/standards organisations should be critical sources of guidance, consultant services, training, and other technical tools, providing a mechanism for channelling the collective experience of their members towards the development of resources which can be made available to both members and non-members.

- **New Subsection on "Deliberate acts"**
  An introduction and paragraphs 2.i.19 – 2.i.21, three paragraphs which constitute the new subsection

  Deliberate acts

  Deliberate acts are defined for purposes of these Guiding Principles *to be actions by individual(s) purposely intended to create harm. This would include: theft, vandalism, sabotage, malfeasance by operators, arson or terrorism. Thus, it does not include actions such as operator errors or violations of rules (caused by, e.g., negligence, lack of intention, mistakes) where the operator did not have the intent to do harm.*

  Both public authorities and management of hazardous installations have roles and responsibilities with respect to security and safety in the prevention of accidents caused by deliberate acts. This subsection focuses on the role of industry, but also addresses some aspects of the authorities' roles. Consideration should be given to which authorities should be involved in addressing chemical accidents caused by deliberate acts. This will generally include agencies responsible for domestic/national or international security and the police, in addition to the various public authorities that are normally involved in chemical accident prevention, preparedness and response. (see also changes to Chapters 3, 5, 7, and 10)

  It is beyond the scope of this document to address the range of issues associated with site security at hazardous installations, which are the concern of national and international security agencies.

However, these Guiding Principles *are relevant to prevention of, preparedness for, and response to accidents involving hazardous substances irrespective of their cause.*

It is important to keep in mind that, in some situations, it may be necessary to balance safety and security concerns where there are competing interests.

Paragraph 2.i.19 – The existing paragraph 2.d.7, adding arson as an example of a deliberate act and adding four new subpoints

Paragraph 2.i.19
Appropriate arrangements should be in place for maintaining the security of a hazardous installation to minimise the possibility of deliberate releases from, for example, terrorist activities, sabotage, vandalism, arson or theft of hazardous substances. The management of the hazardous installation should specify the areas of the installation to which access should be restricted or controlled, and implement measures to maintain control and prevent unauthorised access. *(existing paragraph 2.d.7)*.

- Non-site personnel should be identifiable and should be monitored appropriately.
- Special measures may be needed to protect areas that are particularly hazardous or at risk from interference from unauthorised people.
- Employees should be made aware of the security rules and be involved in their development and implementation.
- A co-ordinated security system for all installations within an industrial complex could help address the difficulty of controlling a large area with a number of independent operators.

- **Paragraphs 2.i.20 – 2.i.21: two new paragraphs are added**

Paragraph 2.i.20
Operators should protect their facilities and transportation modalities with the goal of preventing malevolent activities leading to chemical accidents. Controls should be established for the transportation of hazardous substances, including the setting of routes, to take account of the need to protect against deliberate acts.

- Security for purposes of accident prevention entails not just site security but necessarily extends to the management of chemicals from supply chain sourcing and transportation to the environmentally sound disposal of hazardous wastes. It includes secure operations information systems as well as health, safety and emergency response regimes.

Paragraph 2.i.21
Industry, public authorities and non-governmental organisations should co-operate, and establish partnerships, to enhance the security of hazardous installations, and improve their ability to prevent, detect, and mitigate deliberate acts intended to cause chemical releases, explosions or fires.

Chapter 3: Public Authorities (pages 67 – 77)

Section a: Safety Strategy and a Control Framework *(pages 67-71)*

Changes to Section a: New paragraph, 3.a.22, is added at the end to address international co-operation related to accidents caused by deliberate acts

- **New Paragraph 3.a.22**

  Countries (along with international organisations as appropriate) should exchange information, and assist each other, to improve their capacities to help prevent, prepare for and respond to accidents involving hazardous substances caused by deliberate acts.

  - An effort should be made to improve sharing of information among authorities (within a country and between countries) about the potential for, and response to, accidents that have been caused by deliberate acts.
  - Public authorities, along with other stakeholders, should consider establishing special communication channels for information related to prevention of, preparedness for, and response to accidents caused by deliberate acts, in order to protect confidential information and to support efforts to identify individuals who intend to cause, or have been responsible for, accidents involving hazardous substances.
  - Countries should consider establishing mutual aid agreements to support each others' efforts with respect to accidents caused by deliberate acts.

Section c. Safety Performance Review and Evaluation *(pages 73-77)*

Changes to Section c:
- *Paragraph 3.c.1 – new text is added to the paragraph and the first bullet is amended*
- *Paragraph 3.c.9 – a new subpoint is added*
- *Paragraph 3.c.11 – a new subpoint is added*

- **Paragraph 3.c.1 - new text to main paragraph and first subpoint is edited**

  Existing paragraph 3.c.1, with amendments

  Public authorities should establish appropriate safety performance and review programmes (including inspections) for monitoring the safety of hazardous installations in all phases of their life cycle. This includes planning, siting, design, construction, operation (including maintenance) and commissioning/ closure/demolition. In addition to being a key element of enforcement activities, inspections and related programmes provide a means for: learning how to improve safety management systems; sharing of experience; and promoting industry action beyond minimum requirements.

  - Inspections are a critical element in ensuring the overall safety of hazardous installations by checking to see whether relevant regulations, standards and practices are being met, whether safety managements systems are in place and function appropriately (with respect to technical, organisational, and human factor issues), and whether safety reports are valid. ~~They also provide a means for learning how to improve safety management systems, and can help to promote industry action beyond minimum requirements~~. Another important benefit from inspections is that they provide a basis for public confidence in the safety of hazardous installations.

    (this is followed by four more subpoints)

- **Paragraph 3.c. 9 – A new subpoint is added**

  Existing paragraph 3.c.9

  Public authorities should develop a consistent, standardised approach to planning, executing, and reporting of inspections. This will allow improved understanding of trends over time and facilitate exchange of information and experience.

  (this is followed by three subpoints)

New subpoint to 3.c.9

- Guidance and procedures for inspections should address all relevant aspects, *e.g.*, technical, organisational and human factors.

- **Paragraph 3.c.11 – A new subpoint is added**

Existing paragraph 3.c.11

Public authorities should be given sufficient resources and personnel to carry out their inspection function. Inspectors working for public authorities should receive the training and have the necessary expertise to determine, for example, whether the approaches taken in a hazardous installation will achieve legal requirements.

New subpoint to 3.c. 11

- Inspectors should have the authority needed to fulfil their responsibilities, including the authority to enter installations, to obtain information, and to enforce requirements as appropriate.

PART B: EMERGENCY PREPAREDNESS/MITIGATION

Chapter 5: Emergency Preparedness and Planning (pages 87-102)

Section a: General Principles *(pages 87-92)*

Changes to Section a: New Paragraph 5a.2bis is added between existing paras. 5.a.2 and 5.a.3

- **New Paragraph 5.a.2 (bis)**

Industry, public authorities and others involved in emergency planning should take into account mitigation of, and preparedness for, the possible effects of a chemical release, fire, or explosion caused by a deliberate act(s).

- Existing emergency plans should be reviewed to be sure they address possible consequences of deliberate actions (including, for example, the fact that the accident may cause loss of water and/or power).
- It may be helpful to implement procedures, such as a "security vulnerability analysis" to identify any vulnerable areas and to protect against deliberate acts.

Chapter 7: Communication with the Public (pages 105-108)

Changes to Chapter 7: New Paragraph 7.18 is added at the end of the Chapter

- **New Paragraph 7.18**

Public authorities, along with industry, communities and other stakeholders should address the question of how to balance the need to provide information to the public (in order to promote accident prevention and preparedness) and the need to protect information due to security concerns.

- In this regard, after an accident it is important for the public to be given any information that is needed to undertake appropriate response actions to protect health, property and the environment. Therefore, there may be a need to release some information about the installation and about the nature and quantity of hazardous substances involved in the accident that might have been protected for security reasons before an accident.

PART C: EMERGENCY RESPONSE

Chapter 10: Public Authorities (pages 117-121)

Changes to Chapter 10: New Paragraph 10.22 is added at the end of the Chapter

- **New Paragraph 10.22**
  Countries, with the assistance of international organisations, should train those involved in response to chemical releases caused by deliberate acts in the principles of health risk communication. Materials should be developed to strengthen the capacities of a range of professionals, including public health professionals, emergency responders, medical professionals and others.

PART D: FOLLOW-UP TO INCIDENTS (ACCIDENTS and NEAR-MISSES)

Chapter 14: Incident Documentation and Reporting (pages 131-132)

Section a: General Principles *(page 131)*

Changes to Section a: Paragraph 14.a.1 – a new subpoint is added

- **Paragraph 14.a.1 – A new subpoint is added to the paragraph**

  Existing Paragraph 14.a.1
  Management of hazardous installations, as well as industrial organisations, public authorities, and other stakeholders, should consider how to create a climate that fosters trust and encourages voluntary sharing of information concerning accidents and near-misses, including lessons learned.
  (this is followed by two subpoints)

  New subpoint to 14.a.1
  - Leadership, from the highest levels in enterprises and public authorities, is essential to ensure that lessons are learned from incidents and that appropriate actions are taken as a result.

Chapter 15: Incident Investigations (pages 133-140)

Section a: General Principles *(page 133-137)*

Changes to Section a:
- *Paragraph 15.a.2 – a new subpoint is added*
- *Paragraph 15.a.3 – a subpoint is amended*
- *Paragraph 15.a.11 – two new subpoints are added*
- *Paragraph 15.a.14 – a new subpoint is added*
- *A text box on "Lessons Learned" is added at the end of the Section*

- **Paragraph 15.a.2 – A new subpoint is added**

Existing Paragraph 15.a.2
Protocols should be established for conducting root cause investigations. The protocols should, *inter alia*, identify the roles and responsibilities of the individuals involved in the investigation. The protocols should also specify the steps in the investigation process.
(this is followed by three subpoints)

New subpoint to 15.a.2

- Accident investigation protocols and practices should be periodically reviewed and updated, as appropriate, taking into account the latest developments in the field.

- **Paragraph 15.a.3 – The first subpoint is amended**

Existing paragraph 15.a.3, with amended subpoint
A team should be established for an accident investigation.

- The team should have a diverse membership with participants from different disciplines and with different skills, including members with human factors expertise and those with knowledge of the specific installation subject to the investigation. These could be employees involved with the operation and maintenance of the installation and their representatives.
- All members of the investigation team should have the appropriate knowledge, competency and experience to carry out investigations and to fulfil their identified roles and responsibilities.

- **Paragraph 15.a.11 – Two new subpoints are added**

Existing paragraph 15.a.11
Efforts should be made to promote sharing of the lessons learned from investigations of incidents and to facilitate communication as quickly as possible (for example, by using technology such as the Internet).
(this is followed by two subpoints)

New subpoints to 15.a.11

- Lessons from accidents need to be identified, disseminated and the appropriate actions implemented. It is important to avoid repeat accidents by paying particular attention to lessons that have already been identified from accidents or incidents that occurred either inside the enterprise or elsewhere.
- There is a need to further efforts to learn from past accidents. This can be done, for example, by establishing a process which helps to identify the key issues/lessons in order to analyse trends from investigations (rather than focusing on gathering more lessons).

- **Paragraph 15.a.14 – A new subpoint is added**

Existing Paragraph 15.a.14
Efforts should be made to develop a basic agreed framework and use of a common terminology for preparing investigation reports in order to facilitate sharing information related to investigations.

New subpoint to 15.a.14

- As far as practicable, terminology across sectors should be harmonised at an international level to allow improvements in data sharing, accident investigation techniques and communication of lessons learned.

- **At the end of Section a, the following Text Box is added**

(Note: these paragraphs are based on existing text of the *Guiding Principles*. The purpose of creating the Text Box is to emphasise the importance of learning from past accidents)

Improving the Sharing of Lessons Learned

Industry, public authorities and other stakeholders should improve efforts to promote sharing of lessons learned from accident reports and investigations, and to facilitate communication of these lessons learned as quickly as possible.

- Lessons from accidents need to be identified, disseminated and the appropriate actions implemented. It is important for enterprises to avoid repeat accidents by paying particular attention to lessons that have already been identified from accidents or incidents that have occurred either inside the enterprise or elsewhere.
- Management of hazardous installations, as well as industrial organisations, public authorities, and other stakeholders, should consider how to create a climate that fosters trust and encourages voluntary sharing of information concerning accidents and near-misses, including lessons learned.
- Leadership, from the highest levels in enterprises and public authorities, is essential to ensure that lessons are learned from incidents and that appropriate actions are taken as a result.
- Management should share relevant aspects of investigation reports as widely as possible with other enterprises, public authorities and other interested parties in order to improve safety and inform the public. It is in the best interest of all parties to make the relevant aspects of the investigation reports publicly available, to the extent possible.
- Public authorities should facilitate the sharing of accident reports within industry and, as appropriate, with other interested parties.

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There is a need to better understand how to communicate lessons learned in a way that will result in appropriate actions being taken to reduce the likelihood of similar accidents occurring in the future.

- Efforts should be made to identify barriers to sharing information about lessons learned and to find ways to minimise these.
- Efforts should be made to develop a basic agreed framework and use of a common terminology for preparing investigation reports in order to facilitate sharing information related to investigations.

PART E: SPECIAL ISSUES

Chapter 17: Fixed Installations and Transport (pages 163-174)

Chapter 17 on fixed installations and transport currently has three sections addressing:

a. Transport interfaces
b. Port areas
c. Pipelines

Changes to Chapter 17:

- *Section a – a new subpoint is added to four paragraphs (17.a.1, 17.a.2, 17.a.14 and 17.a.17)*
- *Section d - A fourth section is added to address "Marshalling yards" with an introduction and three paragraphs (17.d.1 – 17.d.3).*

Section a: Transport interfaces (pages 163 – 168)

Changes to Section a:

- *Paragraphs 17.a.1 – a new subpoint is added*
- *Paragraph 17.a.2 – a new subpoint is added*
- *Paragraph 17.a.14 – a new subpoint is added*
- *Paragraph 17.a.17 - a new subpoint is added*

♦ **Paragraph 17.a.1 – A new subpoint is added to the paragraph**

Existing paragraph 17.a.1
The geographical boundaries of transport interfaces that handle hazardous substances should be clearly defined and should include areas where hazardous substances are handled, transported and/or kept temporarily.
(this is followed by four subpoints)

New subpoint to 17.a.1

- Chemical accident prevention, preparedness and response at transport interfaces should be addressed in an integrated way, taking into account chemical safety at the interfaces itself and the safety of all modes of transport that utilise the interface (*e.g.*, high speed trains passing through marshalling yards), as well as the public, environment, and property potentially affected in the event of an accident.

♦ **Paragraph 17.a.2 – A new subpoint is added**

Existing paragraph 17.a.2
The various parties involved with handling hazardous substances at transport interfaces should co-operate to help ensure the safe operation of transport interfaces and to provide for emergency preparedness and response. These parties include operators of transport interfaces, the carriers/transporters for all the modes of transport that utilise the interface, cargo interest, customers, public authorities and others.

New subpoint to 17.a.2

- The roles and responsibilities, with respect to chemical accident prevention, preparedness and response, of all parties involved in and around a transport interface should be clearly defined.

- **Paragraph 17.a.14 – A new subpoint is added**

Existing paragraph 17.a.14
There should be emergency planning at transport interfaces handling hazardous substances, and it should be well co-ordinated with the off-site emergency plan and other relevant plans.
(this is followed by three subpoints)

New subpoint to 17.a.14

- The need for emergency planning should be taken into account during the planning and design of transport interfaces (and any major modifications to existing interfaces) in order to reduce risks through technical/engineering measures.

- **Paragraph 17.a.17 – A new subpoint is added**

Existing Paragraph 17.a.17
At the national level, public authorities should have a consistent approach with respect to the laws and policies – including mechanisms for oversight and co-ordination – relating to all modes of transport. This helps to ensure that there are no gaps or inconsistencies in regulatory requirements, or in the allocation of responsibilities, as hazardous substances move from one transport mode to another.

New subpoint to 17.a.17

- Care should be taken to avoid any contradictions in the various laws and policies that may apply to transport interfaces (which might include national and international rules for transport, legislation concerning hazardous installations, and local laws for land-use-planning).

- ***Section d: Marshalling yards (new section)***

This Section focuses on issues that specifically concern marshalling yards. For purposes of this publication, a marshalling yard is defined as a place in transit and a link in the transport chain; railway marshalling yards are a special sort of station. They have a number of sets of sidings for receiving and preparing (shunting) freight trains and for sorting the rail wagons to destination, with the aim of forming new trains and dispatching these to their destinations. No loading or unloading of hazardous substances takes place at marshalling yards.

Marshalling yards are a subset of transport interfaces and, therefore, all the provisions of the Guiding Principles *(including Section 17.a) apply to marshalling yards. However, because marshalling yards have some special characteristics, as compared to transport interfaces more generally, further guidance is appropriate.*

Paragraph 17.d.1
Procedures should be established to improve safety at marshalling yards by taking action such as separating incompatible substances, limiting the number of wagons that are shunted, and using speed controls when shunting.

- Safety of high speed train carriages through marshalling yards or railway stations, railroads and other modes of transport should be taken into account.

Paragraph 17.d.2
All parties involved in the management and regulation of marshalling yards should have a clear understanding of who is responsible for taking action with respect to chemical accident prevention, preparedness and response, recognising the special characteristics of marshalling yards.

Paragraph 17.d.3
Cargo interests should agree on what is needed for rail cars to be fit for their purpose, specifically with respect to safety standards, maintenance, and end-of-life timing and procedures.

ANNEXES

Annex I: Explanation of Terms Used (page 177-182)

Changes to Annex I: Adding definition of "marshalling yard"

(Existing) Annex I
The terms set out in Annex I are explained for the purposes of the *Guiding Principles* only, and should not be taken as generally agreed definitions or as terms that have been harmonised between countries and organisations. To the extent possible, common definitions of these terms are used.

- **New definition of marshalling yard**

Marshalling yard:

A marshalling yard is a place in transit and a link in the transport chain; railway marshalling yards are a special sort of station. They have a number of sets of sidings for receiving and preparing (shunting) freight trains and for sorting the rail wagons to destination, with the aim of forming new trains and dispatching these to their destinations. No loading or unloading of hazardous substances takes place at marshalling yards.

Annex IV: Selected References (page 197-206)

WEBSITES

OECD Member Countries

Portugal

www.apambiente.pt (Agência Portuguesa do Ambiente - APA)

www.prociv.pt (Autoridade Nacional de Protecção Civil - ANPC)

Sweden

www.msb.se (Swedish Civil Contingencies Agency)

www.av.se (Swedish Work Environmental Authority)

www.naturvardsverket.se (Swedish Environmental Protection Agency)

Switzerland

www.environment-switzerland.ch

Industry Organisations

www.plastkemiforetagen.se (Association of Swedish Chemical Industries)

PUBLICATIONS

General

UK (2006) *A guide to the Control of Major Accident Hazards Regulations 1999 (as amended)* (implementing Seveso II in Great Britain) ISBN 9780717661756 (L111)
http://www.hse.gov.uk/pubns/books/l111.htm

UNEP Flexible Framework for Addressing Chemical Accident Prevention and Preparedness – A guidance Document
http://www.unep.fr/scp/sp/saferprod/pdf/Flexible_Framework_brochure_FINAL_WEB.pdf

Health Aspects

WHO (2009) Manual for the Public Health Management of Chemical Incidents
http://www.who.int/environmental_health_emergencies/publications/Manual_Chemical_Incidents/en/index.html

Emergency Preparedness

UK (1999), *Emergency Planning for Major Accidents – control of Major Accident Hazards Regulations (implementing Seveso II in Great Britain)*, ISBN 9780717616954

LEGAL INSTRUMENTS

EC Directive

Proposal for a new Directive of the European Parliament and of the Council on control of major-accident hazards involving dangerous substances, COM (2010)781 Final, 2010/0377 (COD), Brussels, 21st December 2010 http://ec.europa.eu/environment/seveso/review.htm