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**REPORT OF THE OECD SPECIAL SESSION ON CHEMICAL ACCIDENT PREVENTION,
PREPAREDNESS AND RESPONSE AT TRANSPORT INTERFACES**

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris 1995

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**REPORT OF THE OECD SPECIAL SESSION ON
CHEMICAL ACCIDENT PREVENTION, PREPAREDNESS
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Environment Directorate

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris 1995

Also published in the Environment Monograph series:

Environment Monograph No. 66, *Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection*

Environment Monograph No. 93, *Report of the OECD Workshop on Chemical Safety in Port Areas*

Environment Monograph No. 95, *Report of the OECD Workshop on Small and Medium-sized Enterprises in Relation to Chemical Accident Prevention, Preparedness and Response*

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ENVIRONMENT MONOGRAPHS

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Foreword

This Environment Monograph presents the report of the Special Session held at the OECD in Paris on 30 November and 1 December 1993 to consider issues related to chemical accident prevention, preparedness and response at transport interfaces. The OECD's Expert Group on Chemical Accidents agreed that this report should be published, so that the Special Session documents could be widely circulated. The Joint Meeting of the Chemicals Group and the Management Committee of the Special Programme on the Control of Chemicals subsequently recommended that the report be derestricted. It is being made public under the authority of the Secretary-General.

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Introduction

This Environment Monograph contains documents from an OECD Special Session held to consider issues related to chemical accident prevention, preparedness and response at transport interfaces. The Special Session was held on 30 November and 1 December 1993 in Paris, in conjunction with a regular meeting of the OECD Group of Experts on Chemical Accidents. The purpose of the Special Session was to provide national experts with the opportunity to exchange information and experience, and reach conclusions, on "best practice" for improving chemical safety at transport interfaces.

It is important to note at the outset that the Special Session consisted of only one and one-half days of discussion. Furthermore, although experts on transportation issues participated in the Special Session, it did not have the range or number of experts that normally take part in the workshops held periodically as part of the OECD Accidents Programme. Given the limitations of time and expertise, the Expert Group recognised that the conclusions reached should be considered as preliminary.

The Special Session was one of a series of activities planned by the OECD Expert Group on Chemical Accidents related to the transport of hazardous goods, with a view to developing guiding principles concerning accident prevention, preparedness and response at the interface of various transport modes.¹ At such interfaces dangerous goods are transferred from one transport mode to another, transferred within one transport mode from one piece of transport equipment to another, or stored temporarily awaiting transfer between transport modes. The guidance will complement the existing OECD Guiding Principles,² which focus on fixed installations.

Included in this Environment Monograph are the Conclusions of the Special Session, i.e. those points raised during discussions for which there was a general consensus among the participants. Also included is the Discussion Document prepared for the Special Session by Ernst Berger of the Swiss Federal Office of Environment, Forests and Landscape. This document has been revised to take into account comments made at the Special Session.

It should be kept in mind that the documents in this Environment Monograph have not been endorsed by, and do not necessarily reflect the views of, the OECD or its Member countries.

¹ Interface issues were addressed at the 1992 Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection, and at the 1993 Workshop on Chemical Safety in Port Areas. The reports of these two Workshops have been published as OECD Environment Monographs No. 66 and 93, respectively. See the list of Environment Monographs in footnote 3 below.

² See Environment Monograph No. 51, *Guiding Principles for Chemical Accident Prevention, Preparedness and Response: Guidance for Public Authorities, Industry, Labour and Others for the Establishment of Programmes and Policies related to Prevention of, Preparedness for, and Response to Accidents Involving Hazardous Substances*, published in 1992.

OECD work on chemical accidents

This is one of a series of Environment Monographs that have been published as part of the OECD Environment Programme's work on improving chemical accident prevention, preparedness and response.

OECD work related to chemical accident prevention, preparedness and response began in 1988, following a call by Ministers and other high-level officials at the OECD Conference on Accidents Involving Hazardous Substances. To supervise this work a group (now called the Expert Group on Chemical Accidents) was established. The Expert Group includes national experts and representatives of relevant international organisations. Representatives of industry, labour organisations and other interested groups take part in the work of the Expert Group.

The objectives of the OECD's Chemical Accidents Programme include: the exchange of information and experience; the analysis of specific issues of mutual concern in Member countries; and the development of guidance materials related to chemical accident prevention, preparedness and response. As a contribution to meeting these objectives, seven Workshops and two special sessions have been held since 1989.³

Each of the Workshops has provided an opportunity for exchange of information and experience among the participants, who have included representatives of public authorities, industry, labour, public interest groups, academia, and other international organisations, including experts from non-OECD countries. In addition, the output from the Workshops has been used as a basis for the development of guidance documents and, in particular, the 1992 OECD *Guiding Principles for Chemical Accident Prevention, Preparedness and Response*. Supplementary guiding principles will be prepared taking into account the outcome of the Workshops held since 1991 and of the 1993 Special Session.

The Expert Group on Chemical Accidents decided that this Environment Monograph should be published, in order that the Special Session documents could be circulated widely. The Expert Group would welcome feedback on these documents from as many interested parties as possible. Comments received will be taken into

³ See Environment Monograph No. 28, *Workshop on Prevention of Accidents Involving Hazardous Substances: Good Management Practice*, hosted by the Federal Republic of Germany (held in Berlin, 1989); Environment Monograph No. 29, *Workshop on the Provision of Information to the Public and on the Role of Workers in Accident Prevention and Response*, hosted by Sweden (held in Stockholm, 1989); Environment Monograph No. 30, *Workshop on the Role of Public Authorities in Preventing Major Accidents and in Major Accident Land Use Planning*, hosted by the United Kingdom and the Netherlands, supported by the Commission of the European Communities (held in London, 1990); Environment Monograph No. 31, *Workshop on Emergency Preparedness and Response and on Research in Accident Prevention, Preparedness and Response*, hosted by the United States and Canada, co-sponsored by the United Nations Environment Programme (held in Boston, 1990); Environment Monograph No. 44, *Workshop on Prevention of Accidents Involving Hazardous Substances: The Role of the Human Factor in Plant Operations*, hosted by Japan (held in Tokyo, 1991); Environment Monograph No. 66, *Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection*, hosted by Sweden, sponsored by the OECD Road Transport Research Programme in co-operation with the OECD Environment Directorate (held in Karlstad, Sweden, 1992); and Environment Monograph No. 93, *Workshop on Chemical Safety in Port Areas*, hosted by Finland, co-sponsored by the International Maritime Organization and the United Nations Environment Programme (held in Naantali, Finland, 1993).

account in the development of guidance materials, so that they can be as practical and up-to-date as possible.

Anyone wishing to comment on the documents contained in this publication should directly contact their country's representative to the OECD Expert Group on Chemical Accidents. A list of Heads of Delegations to the Expert Group will be found at the end of this Monograph. Those persons who come from a country which is not included in that list are requested to send their comments to:

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Introduction

Cette Monographie sur l'environnement contient des documents provenant d'une session spéciale consacrée à l'examen de questions associées à la prévention, à la préparation et à l'intervention en matière d'accidents chimiques survenant à l'interface de divers modes de transports. Cette session spéciale s'est tenue à Paris, le 30 novembre et le 1^{er} décembre 1993, à l'occasion d'une réunion ordinaire du Groupe d'experts de l'OCDE sur les accidents chimiques. Cette session devait offrir aux experts nationaux la possibilité de procéder à un échange d'informations et d'expérience, et de parvenir à des conclusions sur les «meilleures pratiques» susceptibles d'améliorer la sécurité chimique à l'interface de divers modes de transports.

D'emblée, il est important de noter que la Session spéciale n'a comporté qu'une journée et demie de discussions. En outre, si des spécialistes des questions relatives aux transports ont participé à la Session Spéciale, celle-ci n'a pas compté autant d'experts dans tous les domaines de compétence que lors des ateliers qui se tiennent périodiquement dans le cadre du Programme de l'OCDE sur les accidents chimiques. Par conséquent, compte tenu des contraintes de temps et de compétences, le Groupe d'experts reconnaît que les présentes conclusions doivent être considérées comme préliminaires.

La session spéciale s'insère dans une série d'activités prévues par le Groupe d'experts de l'OCDE sur les accidents chimiques à propos du transport des marchandises dangereuses, dans la perspective de l'élaboration de principes directeurs relatifs à la prévention, à la préparation et à l'intervention en matière d'accidents survenant à l'interface de divers modes de transports¹. À de telles interfaces, les marchandises dangereuses sont transférées d'un mode de transport à l'autre, transférées d'un type de matériel à un autre sans changer de mode de transport ou stockées temporairement en attendant le transfert à un autre mode de transport. Les orientations dégagées viendront compléter les actuels Principes directeurs de l'OCDE², qui portent sur les installations fixes.

¹ Les problèmes d'interface ont été examinés lors du séminaire de 1992 sur les stratégies pour le transport routier de marchandises dangereuses : sécurité et protection de l'environnement, ainsi qu'au cours de l'atelier consacré en 1993 à la sécurité chimique dans les zones portuaires. Les comptes rendus de ces deux réunions de travail ont été publiés en tant que Monographies de l'OCDE sur l'environnement, n° 66 et 93 respectivement. Voir la liste des Monographies sur l'environnement dans la note 3 ci-après.

² Voir la Monographie sur l'environnement n° 51, *Accidents chimiques, principes directeurs pour la prévention, la préparation et l'intervention : Orientations à l'intention des pouvoirs publics, de l'industrie, des travailleurs et d'autres parties intéressées à l'élaboration de programmes et de politiques relatifs à la prévention, la préparation et l'intervention en matière d'accidents associés à des substances dangereuses*, 1992.

Cette Monographie sur l'environnement contient les conclusions de la session spéciale, c'est-à-dire les questions débattues sur lesquelles les participants sont parvenus à un consensus. Y figure également le document de synthèse établi pour la session spéciale par M. Ernst Berger, de l'Office fédéral suisse de l'environnement, des forêts et du paysage. Ce document a été révisé pour prendre en compte les commentaires formulés lors de la session spéciale.

Il convient de garder présent à l'esprit que les documents figurant dans la présente Monographie sur l'environnement n'ont pas été approuvés par l'OCDE ou par ses pays Membres, dont ils ne reflètent pas nécessairement le point de vue.

Travaux de l'OCDE sur les accidents chimiques

Ce rapport fait partie d'une série de Monographies sur l'environnement publiées dans le cadre des travaux du Programme de l'OCDE sur l'environnement qui visent à améliorer la prévention, la préparation et l'intervention en matière d'accidents chimiques.

Les travaux de l'OCDE relatifs à la prévention, à la préparation et à l'intervention en matière d'accidents chimiques ont débuté en 1988, à la suite d'un appel lancé par les ministres et autres représentants à haut niveau lors de la Conférence de l'OCDE sur les accidents liés aux substances dangereuses. Pour superviser ces travaux, il a été créé un groupe (appelé maintenant Groupe d'experts sur les accidents chimiques) qui réunit des experts nationaux et des représentants d'organismes internationaux compétents en la matière. Des représentants de l'industrie, du monde du travail et d'autres groupes intéressés participent également aux travaux du Groupe d'experts.

Le Programme de l'OCDE sur les accidents chimiques vise notamment à faciliter l'échange d'informations et d'expérience, à analyser des problèmes spécifiques d'intérêt commun dans les pays Membres et à mettre au point des documents d'orientation relatifs à la prévention, à la préparation et à l'intervention en matière d'accidents chimiques. Dans le cadre des efforts visant à remplir ces objectifs, sept ateliers et deux sessions spéciales ont été organisés depuis 1989³.

³ Voir Monographie sur l'environnement n° 28, *Atelier sur la prévention des accidents chimiques liés aux substances dangereuses – Bonnes pratiques de gestion*, accueilli par la République fédérale d'Allemagne (Berlin, 1989) ; Monographie sur l'environnement n° 29, *Atelier sur la communication d'informations au public et le rôle des travailleurs dans la prévention des accidents et l'intervention*, accueilli par la Suède (Stockholm, 1989) ; Monographie sur l'environnement n° 30, *Atelier sur le rôle des pouvoirs publics dans la prévention des accidents graves et dans l'aménagement du territoire en fonction des risques d'accidents graves*, accueilli par le Royaume-Uni et les Pays-Bas, avec l'aide de la Commission des Communautés européennes (Londres, février 1990) ; Monographie sur l'environnement n° 31, *Atelier sur la préparation et l'intervention en cas d'urgence ainsi que sur la recherche dans les domaines de la prévention des accidents, la préparation et l'intervention en cas d'urgence*, accueilli par les Etats-Unis et le Canada, co-parrainé par le Programme des Nations Unies pour l'environnement (Boston, 1990) ; Monographie sur l'environnement n° 44, *Workshop on the Prevention of Accidents Involving Hazardous Substances – The Role of the Human Factor in Plant Operations* (anglais seulement), accueilli par le Japon (Tokyo, 1991), Monographie sur l'environnement n° 66, *Report of the OECD Workshop on Strategies for Transporting Dangerous Goods by Road : Safety and Environmental Protection*, accueilli par la Suède, parrainé par le Programme de l'OCDE de

Toutes ces réunions ont fourni aux participants, qui comprenaient des représentants des pouvoirs publics, de l'industrie, du monde du travail, de groupes de défense des intérêts du public, de l'université et d'autres organisations internationales, ainsi que des experts de pays non membres, l'occasion de procéder à un échange d'informations et d'expérience. En outre, les résultats de ces réunions de travail ont servi de base pour la mise au point de documents d'orientation, et notamment du document établi par l'OCDE en 1992 et intitulé *Accidents chimiques : Principes directeurs pour la prévention, la préparation et l'intervention*. Des principes directeurs complémentaires seront établis à la lumière des conclusions des ateliers tenus depuis 1991 et de la session spéciale de 1993.

Le Groupe d'experts sur les accidents chimiques a décidé que cette Monographie sur l'environnement devait être publiée afin d'assurer une large diffusion aux documents de la session spéciale. Le Groupe d'experts souhaiterait connaître les réactions à ces documents du plus grand nombre possible de parties intéressées. Les commentaires qu'il recevra seront pris en compte pour la mise au point de documents d'orientation aussi pratiques et à jour que possible.

Toute personne désireuse de formuler des observations à propos des documents figurant dans la présente publication devra contacter directement le représentant de son pays auprès du Groupe d'experts de l'OCDE sur les accidents chimiques. On trouvera la liste des chefs de délégation auprès du Groupe d'experts à la fin de la présente Monographie. Les personnes dont le pays ne figure pas sur cette liste sont invitées à adresser leurs commentaires à :

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coopération dans le domaine des recherches en matière de routes et de transports routiers, en coopération avec le Groupe d'experts sur les accidents chimiques (Karlstad, Suède, 1993) ; et Monographie sur l'environnement n° 93, *Atelier sur la sécurité chimique dans les zones portuaires*, accueilli par la Finlande, co-parrainé par l'Organisation maritime internationale et le Programme des Nations Unies pour l'environnement (tenu à Naantali, Finlande, 1993).

Conclusions of the Special Session

I. Introduction

1. The OECD Expert Group on Chemical Accidents has been considering issues related to chemical safety at the interface of various modes, as part of their work programme on improving chemical accident prevention, preparedness and response. It has been recognized that transport interfaces pose special problems that are not adequately addressed in other fora. Furthermore, there is a concern that chemical safety problems at transport interfaces may be increasing.

2. In particular, the Expert Group has been working towards the development of internationally agreed guidance for public authorities, industry, workers and other interested parties. As a basis for the guidance, a series of workshops and related activities have been held bringing together experts in the field. As part of this process, this Special Session of the Expert Group was held to consider a number of issues concerned with the transport interfaces that had not already been addressed at two earlier workshops.¹

3. It is expected that the output of the discussions related to chemical safety at transport interfaces, including the conclusions of this Special Session and two previous workshops, will be used in the development of guiding principles to supplement the existing OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response (1992), which currently focus on fixed installations. The supplementary text will address the issues associated with the transfer points where dangerous goods are transferred as part of transportation by sea, inland waterways, rail, road, air and/or pipeline.² The transfer could be involved in the transport of either bulk chemicals or packaged chemicals.

4. These conclusions reflect the discussions of the Special Session, modifying text presented in the Discussion Document. They focus only on those aspects of the discussions relating to transport interfaces, other than port areas. They do not include those aspects of

¹ The two related workshops addressed "Strategies for Transporting Dangerous Goods by Road: Safety and Environmental Protection" (hosted by Sweden in Karlstad, 1992) and "Chemical Safety in Port Areas" (co-sponsored by OECD, IMO and UNEP and hosted by Finland in Naantali, 1993). The Conclusions of the two workshops are included in the workshop reports, published as OECD Environment Monographs No. 66 and 93, respectively.

² It should be noted that issues related to the transport of hazardous substances by pipeline were not included in the scope of discussions at the Special Session, except to the extent that they might involve the transfer from a pipeline to another form of transport.

transport interfaces that also apply to fixed installations, to the extent that these are already included in the existing Guiding Principles.

5. For purposes of this work, transport interfaces are those areas where dangerous goods are transferred from one transport mode to another (e.g. from rail to road), transferred within one transport mode from one piece of equipment to another (e.g. from one truck to another truck), or stored temporarily during transfer between transport modes. Thus, transport interfaces involve loading and unloading operations, temporary holding or keeping of dangerous goods during direct cargo transfer, and handling of damaged vehicles or spilled dangerous goods. It is up to each country to decide which specific areas are considered transport interfaces for these purposes.

6. Transport interfaces are in general more complicated than fixed installations with respect to organisational aspects of chemical accident prevention, preparedness and response. For example, there are numerous parties concerned with transfer operations and it is not always clear how responsibilities should be allocated among these parties. These parties include, for example, the person in control of the interface,³ the operators of the transport facilities, shippers and transporters of dangerous goods, and the various public authorities at all levels responsible for the different transport modes meeting at the interface point.

7. These conclusions apply to both new and existing interface facilities. However, it should be recognized that there may be differences in applying the guidance set out in these conclusions to new and existing facilities. New requirements and recommendations are more easily applied to new facilities.

8. It was recognized that significant progress has been made in harmonizing international agreements and recommendations relating to the transport of dangerous goods by different transport modes. However, it was noted that there remain a number of gaps which should be addressed, especially between sea, rail and road transport, and that potential clashes in regulatory requirements should be avoided. In this regard, further efforts towards harmonization should be supported based on the work of the UN ECOSOC. For example, it was noted that there is a need to develop harmonized criteria for ecotoxic effects and for technical requirements for transport containers, and that opportunities for exceptions or deviations from recommendations should be reduced. This would reduce the possibility that problems would be created at interface points.

9. Furthermore, a need was recognized for further co-ordination of the various international committees dealing with regulations or recommendations for transport of dangerous goods. It was also noted that such regulations and recommendations should be prepared in such a way as to be easily transformed into national laws, thus avoiding the

³ The term "manager" is used in this text to indicate the party in control of or responsible for the transport interface. This may be the owner of the interface or any party responsible for the operation of all or part of the interface facility, including contractors. The manager could be a private party or a public authority.

discrepancies introduced by different parties in the implementation of the regulations and recommendations.

II. General Conclusions

10. The manager of an interface facility should establish clearly defined boundaries for the facility.

11. Risk assessments should be undertaken at transport interfaces to determine the likelihood of accidents involving dangerous goods, and the nature and possible consequences of such accidents. These assessments should include consideration of scenarios of likely accidents. Risk assessments provide a basis for priority setting and allow public authorities to determine which interfaces should be subject to various regulations and policies concerning chemical accident prevention, preparedness and response. The risk assessments also should be utilized in land-use planning decisions.

12. It was recommended that storage at interfaces should be kept to a minimum, to the extent that this is consistent with increased safety, and that regulations concerning storage of dangerous goods should apply in such situations.

13. Safety-related considerations should be given highest possible priority when they come into conflict with other interests such as, for example, fiscal or administrative regimes.

14. At present, there is a tendency to operate transport interfaces in a rather one-sided manner, with most of the attention focused on only one of the transport modes. In order to avoid gaps in safety, interface managers, enforcement organisations, public authorities and other stakeholders should work together and assume responsibility for the safe conduct of the operation of all modes of transport active at the interface.

III. Legal and Regulatory Matters

15. There should be a national "framework" law or policy, providing a harmonized approach to all modes of transport of dangerous goods. This framework should clearly indicate the safety goals that should be achieved and provide general guidance on the allocation of roles and responsibilities among the concerned parties. It should identify a public authority responsible for oversight and co-ordination. Furthermore, it is necessary to ensure that there are no gaps or clashes in regulatory requirements, or in the allocation of responsibilities, as the dangerous goods move from one transport mode to another.

16. The international agreements and recommendations related to the transport of dangerous goods provide a good basis for harmonized regulation of various transport modes. In particular, the agreements and recommendations related to classification, packaging, labelling and documentation during transport should apply also to the dangerous goods during their handling at transport interfaces. The international "regulations" should be considered a minimum standard, and additional requirements may be appropriate, for example at an interface handling particularly dangerous cargo.

17. Legal requirements applicable to transport interfaces should set goals to be achieved, rather than being prescriptive. This will allow parties to determine the most effective ways to achieve the goals. These requirements should provide for continuous improvements in safety to reflect changes in safety-related technology and other developments.

18. A duty should be imposed on the parties involved in the operation of a transport interface, including the operators of the transport equipment and the manager of the interface, to co-operate in order to protect human health and the environment. Furthermore, these parties should be required to co-operate with public authorities to allow the authorities to carry out their duties including, for example, preparedness planning and provision of information to the public.

19. A concern was expressed that transfer points are being used as storage facilities, for example when there are issues of ownership of the goods or when the customer wants to delay receipt for legal or economic reasons. Public authorities in each country should determine at what point the holding of dangerous goods becomes "storage" for purposes of applying storage regulations.

20. The need for state-of-the-art standards related to the construction and operation of dangerous goods storage facilities should be recognized, and the development of such standards be considered an important undertaking. It was recognized that the storage regulations could be flexible, with requirements differing depending on the nature of the goods and the length of time involved.

21. Land-use planning requirements should not, in general, be different for transport interfaces than for fixed installations. However, the relationship of the different stakeholders, and the local site conditions, may be more complex than in the case of fixed installations.

IV. Roles and Responsibilities of Stakeholders

22. The accident-free transport of dangerous goods depends upon a full commitment from all parties in the distribution chain to safe operation, and upon adherence to safety regulations. The importance of the liaison among the various parties potentially involved in the event of an accident was stressed. In this regard, the roles and responsibilities of the different stakeholders should be clearly defined. The allocation of roles and responsibilities may differ among countries and among transport interfaces within one country.

23. The manager of a transport interface should take all appropriate safety measures to reduce the risk of harm to workers and the public, and of damage to the environment, caused by a chemical accident. These measures should aim both at preventing accidents and at mitigating the consequences of any accidents which do occur. The measures should take into account current technological developments and be reasonably practicable.

24. For transport interfaces where major chemical accidents may happen, a safety report should be required, tailored to the level of the hazard potential of the site. The safety report should provide information on hazards, possible consequences of accidents, available technical and organisational safety measures, and on- and off-site emergency planning. Such a safety report provides a basis for safety management and response arrangements by the interface manager and provides a basis for off-site emergency planning, for provision of information to the public, and for discussions about risks. In addition, each country can decide whether the safety report should be the basis for more formal safety documentation (e.g. a safety case or safety management system), showing that the necessary safety arrangements have been put into place and comply with safety requirements, for example as part of a licensing process.

25. The manager of the interface should provide clear instructions for the technical operation at the interface, e.g. for handling of containers (stacking) and handling of loading/unloading pipeline systems. In addition, these instructions should include rules concerning who has access to the site and who controls the various operations. This is particularly important because of the many operators involved, potentially including subcontractors, and because the work force may fluctuate depending on the amount of cargo to be handled.

26. The manager of the interface should ensure that he is in a position to take informed decisions on safety, based on competent advice concerning chemical safety from, for example, an employee or consultant with the relevant knowledge and experience. Consideration should be given to having a designated "safety" or "risk prevention" officer with relevant education and specified duties, in particular for larger transport interfaces or where the risks of a major accident are relatively high.

27. The manager should strive towards a well-trained stable work force, recognizing that at transport interfaces there often is a need for short-term, temporary labour depending on the volume of cargo. Towards this end, the manager should take into account the difficulties associated with developing an awareness and a safety culture where handling of dangerous goods may not be a regular activity (see Section VII below).
28. The workers' active participation should be sought in the setting-up of the organisational safety measures.
29. The manager should undertake to have independent audits of his facilities, to help ensure that appropriate safety measures are in effect and that all employees follow established safety procedures and understand what steps should be taken in both normal and abnormal conditions.
30. Transporters should notify the interface operator, in advance, of any particularly dangerous cargo intended for transit, handling or temporary holding at the interface.
31. Transporters loading, unloading or transferring dangerous goods at an interface should ensure that all paperwork is properly passed along from or to the next responsible party in the transportation chain, and that the handover of the goods is well-documented.
32. Transporters should, to the extent reasonably practicable, review the safety of interfaces. Where problems are observed, the transporters should assist the manager to resolve the problems, or avoid using the interface where such problems increase significantly the risk of a major accident.
33. Public authorities should establish a clear delineation of the respective responsibilities of concerned authorities. Public authorities with different or overlapping jurisdictions should co-operate to harmonize and streamline regulations in order to facilitate their application.
34. Public authorities should recognize the need to communicate with the large variety of interested stakeholders in the development of the off-site emergency preparedness plan.
35. Public authorities should set clear priorities for control and enforcement, including safety inspections, based on the level of risk posed by the transport interfaces. Inspections provide the means to gather information concerning the safety of the interface area, to work with the manager to develop means to improve safety, and to check compliance with safety requirements.
36. The chemical industry has an essential role to play and should exercise influence in the safety of transport interfaces, consistent with the Responsible Care and Product Stewardship principles. For example, to the extent possible, chemical companies should

award contracts to transporters on the basis of, among other things, their safety performance. In this regard, the choice of transporters should not be based just on their meeting international requirements, but also on their ability to safely move dangerous goods.

V. Emergency Preparedness and Response

37. For transport interfaces where major chemical accidents may happen, co-ordinated on-and off-site emergency preparedness plans should be produced. The manager of the interface has the responsibility for preparing the on-site emergency preparedness plan in conjunction with emergency and health services (private and/or public). The on-site emergency plan should be co-ordinated with local off-site emergency preparedness plans which, in turn, should be co-ordinated with regional and national plans. The establishment of these off-site emergency plans should be initiated by the relevant public authorities and prepared in conjunction with the manager of the transport interface, other relevant authorities, public services and other stakeholders as appropriate. All such emergency preparedness plans should be kept up-to-date.

38. Preparedness planning should ensure that there is adequate access for response personnel in the event of an accident, recognizing that some interfaces such as marshalling/switching yards may be in remote locations. In addition, there should be available at the transport interface the immediate response materials and equipment suggested by the preparedness plan, recognizing that there may be only intermittent risks of accidents.

39. The different stakeholders (managers, subcontractors, transporters, public authorities, etc.) should take part in exercises carried out periodically with the emergency services on the basis of the emergency preparedness plans.

40. The need for improved information for first responders in the event of an accident was emphasized. For example, it was recommended that more refined information be contained on placards and that information be readily available concerning the type, characteristics, and quantity of the dangerous goods in containers (e.g. whether the containers are full). In addition, consideration should be given to the possibility of developing an internationally harmonized system to provide more refined information to first responders about dangerous goods.

41. There should be the possibility at interfaces to handle substandard equipment on the transport units (ships, railroad cars, trucks, etc). To handle leaking containers, trucks, railroad cars, etc., as well as in the case of fire at the interface, there should be an easily accessible area where damaged vehicles, containers or packages can be safely deposited. These areas should be equipped with facilities for fire-fighting and for the retention of water-pollutant liquids.

VI. Technical Aspects

42. Records should be kept of information relating to dangerous goods arriving at transport interfaces which could cause major accidents including, at least, the quantities and the classification of the goods as well as the location of the goods at the interface. This information is readily obtainable from the transport documents and should be used to provide a continuously updated inventory of the goods in temporary keeping areas. The information should be made available to various stakeholders for purposes of improved chemical safety. More advanced systems, such as electronically based dangerous goods control systems, could be used at interfaces with major hazard potential, recording critical safety-related information. Such systems could be integrated into larger information and control systems providing information on movement and segregation requirements in the interface areas, as well as on emergency response.

43. The equipment and software used at transport interfaces should be suitable for their purposes, and be compatible with the current technical standards. Since the greatest risks at transport interfaces arise from the loading/unloading operation, this is of particular concern with regard to related equipment, for example cranes, pumps, flexible hoses, pipelines and instrumentation for monitoring them, automatic overflow indicators, and automatic shutdown systems.

44. The manager should ensure that all the on-site equipment used to load/unload and handle dangerous goods is appropriately serviced and controlled. This is particularly important because the equipment may belong to different subcontractors. The manager should require reports from the operators of the equipment on the site, at regular intervals, confirming that they are complying with all requirements regarding the monitoring and servicing of such equipment. The manager should investigate any apparent problems with the transport documentation or with the transport equipment, to the extent that such problems may affect safety.

45. Appropriate instrumentation should be established at interfaces to monitor the transportation equipment and cargo for safety problems before they leave the interface area.

46. Chemical accidents and, as appropriate, near-misses should be reported to the relevant interface management and public authorities. The reporting, recording and analysis of information concerning the accidents and near-misses should provide feedback to permit improvements in safety measures. Therefore, information concerning accidents and near-misses should, as appropriate, be shared among others responsible for safety at transport interfaces. It should be made clear who has the responsibility for reporting accidents. Existing records seem to indicate that there has been significant under-reporting of accidents at transport interfaces.

47. Significant chemical accidents at transport interfaces should be investigated by an independent unit or commission, with particular focus on how the operation of the interface affected the cause or effects of the accidents.

VII. Competence, Training and Education

48. Training and education of the workforce, including subcontractors, should be focused on ensuring the competence of all employees to carry out their responsibilities. Training and education programmes should therefore include provision of all information necessary for safety including, for example, the classification of dangerous goods, errors likely to be made, defects likely to be found in transport vehicles and equipment, and appropriate response actions in case of a chemical accident.

49. Appropriate training and education programmes can be characterized as having three components: general awareness training, function-specific training, and safety training. In this regard, training and education programmes for personnel working at transport interfaces should provide knowledge of the safety practices and regulatory provisions for all modes of transport active at the interface. The programmes should also provide training to allow workers to carry out their specific responsibilities in a safe manner.

50. Training and education programmes should be cross-disciplinary (involving multiple organisations), allowing workers at interfaces to learn from the other stakeholders (for example, from transporters and responders). These programmes should also be interdisciplinary, to the extent that it is valuable for workers to understand the responsibilities of the other parties involved.

51. Training and education activities should take into account potential complications because of the great number of rules and regulations pertaining to the transport of dangerous goods and the fact that the handling of dangerous goods is likely to be a limited part of the responsibility of workers. In addition, the training and education activities should take into account the fact that temporary workers and subcontractors are often employed at interfaces.

52. It is important to test the competence of workers, using exercises to see how they would respond to a variety of unexpected circumstances.

VIII. Communication

53. All parties involved in the operation of a transport interface, in particular the manager and the transporters, should communicate and co-operate closely to agree on the division of roles and responsibilities. This is essential for the safe operation of the interface facility, helping to ensure that there are no gaps in the responsibility for the control of the dangerous goods and that all administrative requirements for the handover of such goods are observed. In this regard, it should be kept in mind that there could be problems in communication due to the differing languages or cultures of the various parties.

54. The public potentially affected in the event of an accident at a transport interface should be informed in an appropriate manner about the activities at the interface and what to do in the event of an accident, including an indication of warning signals. Communication of information to the public should be the joint responsibility of the public authority and the manager of the interface who has access to the information needed. While significant progress has been made recently in communication with the public about hazardous installations such as chemical manufacturing facilities, it appears that few comparable efforts have been made with respect to transport interfaces. Such communication may be more difficult than with other fixed installations, since the risks associated with a given transport interface are more complicated to assess. It should be noted that the local community around an interface may not be involved to the same extent economically in the operation of the interface as they would be in the operation of a fixed installation, which may affect their perception of the risk.

Conclusions de la session spéciale

I. Introduction

1. Dans le cadre de son programme de travail visant à améliorer la prévention, la préparation et l'intervention en matière d'accidents chimiques, le Groupe d'experts de l'OCDE sur les accidents chimiques a examiné les problèmes soulevés par la sûreté chimique à l'interface des divers modes de transport. Les participants ont reconnu que les interfaces des modes de transport posent des problèmes spécifiques qui ne sont pas abordés de façon adéquate dans d'autres enceintes. Qui plus est, il est à craindre que les problèmes de sûreté chimique qui se posent aux interfaces des modes de transport se multiplient.

2. Le Groupe d'experts s'est notamment attaché à mettre au point des orientations, approuvées au niveau international, à l'intention des pouvoirs publics, de l'industrie, des travailleurs et des autres parties intéressées. Une série de réunions de travail et d'activités connexes réunissant des experts en la matière ont été organisées pour jeter les bases de ces orientations. C'est dans ce contexte que la présente session spéciale du Groupe d'experts a été tenue pour examiner un certain nombre de problèmes relatifs aux interfaces des modes de transport, problèmes qui n'avaient pas encore été abordés lors des deux réunions de travail précédentes¹.

3. Il est prévu que les résultats des délibérations relatives à la sûreté chimique aux interfaces des modes de transport, notamment les conclusions de la présente session spéciale et des deux précédentes réunions de travail, servent à l'élaboration d'orientations destinées à compléter les Principes directeurs de l'OCDE en vigueur sur la prévention, la préparation et l'intervention en matière d'accidents chimiques (1992), principes qui sont axés, pour le moment, sur les installations fixes. Le texte complémentaire traitera les problèmes associés aux lieux où des marchandises dangereuses sont transférées dans le cadre de leur transport par mer, sur les eaux intérieures, par chemin de fer, par la route, par aéronef et/ou par pipeline². De tels transferts peuvent intervenir au cours du transport de produits chimiques, qu'ils soient en vrac ou emballés.

¹ Ces deux réunions de travail ont traité des «Strategies for Transporting Dangerous Goods by Road : Safety and Environmental Protection» (accueillie par la Suède à Karlstad, 1992) et de la «Sécurité chimique dans les zones portuaires» (co-parrainée par l'OCDE, l'OMI et le PNUE, et accueillie par la Finlande à Naantali, 1993). Les conclusions de ces deux ateliers figurent dans les comptes rendus de ces réunions – Monographies sur l'environnement n° 66 et 93 respectivement.

² Il convient de noter que les problèmes associés au transport de substances dangereuses par pipeline ne figuraient pas parmi les sujets examinés lors de la session spéciale, sauf dans la mesure où il pouvait s'agir du transfert de telles substances d'un pipeline vers un autre mode de transport.

4. Les présentes conclusions provisoires reflètent les délibérations de la session spéciale, d'où une modification du texte présenté dans le document d'orientation. Ces conclusions ne concernent que les passages des délibérations relatifs aux interfaces des modes de transport, autres que les zones portuaires. Elles ne traitent pas les aspects des interfaces de transport que l'on retrouve également dans les installations fixes, puisque ceux-ci sont déjà abordés dans les principes directeurs en vigueur.

5. Aux fins de la présente étude, les interfaces des modes de transport sont les zones où des marchandises dangereuses sont transférées d'un mode de transport à un autre (du rail à la route, par exemple), transférées d'un type de matériel à un autre sans changer de mode de transport (d'un camion à un autre, par exemple) ou stockées temporairement en attendant le transfert à un autre mode de transport. Ainsi, une interface de modes de transport suppose des opérations de chargement et de déchargement, la détention ou la garde temporaire de marchandises dangereuses au cours d'un transfert direct de cargaisons, ainsi que la prise en charge de véhicules endommagés ou de marchandises dangereuses déversées. Il incombe à chaque pays de déterminer les zones précises qui sont considérées comme interfaces de transport à ces diverses fins.

6. Ces interfaces sont, en général, plus complexes que des installations fixes, pour ce qui est des questions d'organisation de la prévention, de la préparation et de l'intervention en matière d'accident chimique. Ainsi, de nombreux acteurs interviennent dans les opérations de transfert et la façon dont les responsabilités doivent être réparties entre eux n'est pas toujours évidente. Ces acteurs comportent, par exemple, la personne responsable de l'interface³, les exploitants des installations de transport, les chargeurs et transporteurs de marchandises dangereuses, ainsi que les différentes autorités publiques de tous niveaux responsables des divers modes de transport qui se rencontrent à l'interface.

7. Les présentes conclusions s'appliquent aussi bien aux installations d'interface nouvelles qu'à celles qui existent déjà. Cependant, on admettra qu'il peut y avoir des différences dans l'application des orientations contenues dans les présentes conclusions à des installations nouvelles et anciennes. De nouvelles prescriptions et recommandations s'appliqueront plus aisément à des installations nouvelles.

8. De l'avis général, des progrès sensibles ont été réalisés dans l'harmonisation des accords et des recommandations, établis au niveau international, concernant le transport de marchandises dangereuses par des différents modes de transport. On a cependant constaté qu'il restait un certain nombre de lacunes à combler, notamment entre les transports par mer, rail et route, et qu'il fallait éviter les conflits qui risquaient d'apparaître entre des dispositions réglementaires différentes. Il convient, à cet égard, d'encourager la poursuite des efforts visant à l'harmonisation, dans l'optique des travaux du Conseil économique et social des

³ Le terme « responsable » est utilisé dans le présent texte pour désigner la personne chargée de la gestion ou responsable de l'interface de transport. Il peut s'agir du propriétaire de l'interface ou de toute autre intervenant responsable du fonctionnement de l'ensemble ou d'une partie des installations, y compris les entreprises contractantes. Ce responsable peut être une personne privée ou une autorité publique.

Nations Unies. On a remarqué, par exemple, qu'il fallait mettre au point des critères harmonisés relatifs aux effets écotoxiques et aux normes techniques imposées aux conteneurs de transport, et limiter les cas où l'on pouvait dévier de ces recommandations ou accorder des dérogations. Ceci devrait réduire les problèmes qui pourraient se poser aux interfaces.

9. Les participants ont, en outre, reconnu qu'il était nécessaire de coordonner davantage les divers comités internationaux qui s'occupent de réglementations ou de recommandations relatives au transport de marchandises dangereuses. Il a également été noté que de telles réglementations et recommandations doivent être établies de telle façon qu'elles puissent être facilement traduites en des lois nationales, ce qui éviterait les discordances résultant de l'intervention d'acteurs différents dans la mise en oeuvre des réglementations et recommandations.

II. Conclusions générales

10. Le responsable d'une installation d'interface doit définir clairement les limites de cette installation.

11. Des évaluations des risques doivent être réalisées aux interfaces des modes de transport afin d'établir la probabilité d'accidents liés à des substances dangereuses, ainsi que la nature et les conséquences éventuelles de tels accidents. Ces évaluations doivent prendre en considération les scénarios d'accidents qui plausibles. Elles sont à la base de la détermination des priorités et permettent aux pouvoirs publics d'identifier les interfaces qui doivent être soumises aux diverses réglementations et mesures concernant la prévention, la préparation et l'intervention en matière d'accidents chimiques. Enfin, ces évaluations des risques doivent également entrer en ligne de compte dans les décisions relatives à l'aménagement du territoire.

12. Il a été recommandé de maintenir au minimum le stockage aux interfaces, dans la mesure où cela est compatible avec une meilleure sécurité, et de respecter, dans ces circonstances, les réglementations relatives au stockage de marchandises dangereuses.

13. Les considérations relatives à la sécurité doivent jouir de la plus haute priorité lorsqu'elles entrent en conflit avec d'autres intérêts comme des régimes fiscaux ou administratifs, par exemple.

14. A l'heure actuelle, la tendance est à utiliser les interfaces de transport d'une façon plutôt unilatérale, en ce sens que pratiquement toute l'attention porte sur un seul mode de transport. Pour combler les lacunes en matière de sécurité, les responsables des interfaces, les services chargés de faire respecter les règlements, les pouvoirs publics et les autres acteurs doivent oeuvrer ensemble et faire en sorte que tous les modes de transport qui se croisent à l'interface fonctionnent en toute sécurité.

III. Questions d'ordre juridique et réglementaire

15. Il doit exister, au niveau national, une «loi-cadre» ou une stratégie d'encadrement permettant la prise en charge harmonisée de tous les modes de transport de marchandises dangereuses. Un tel cadre doit indiquer clairement les objectifs à atteindre en matière de sécurité et donner des orientations générales pour la répartition des rôles et responsabilités parmi les parties concernées. Il doit aussi désigner l'autorité publique responsable de la supervision et de la coordination. En outre, on doit faire en sorte que les dispositions réglementaires, ou la répartition des responsabilités, ne présentent ni lacunes ni contradictions, lorsque les marchandises dangereuses passent d'un mode de transport à un autre.

16. Les accords et recommandations établis au niveau international pour le transport de marchandises dangereuses constituent une bonne base pour l'harmonisation des réglementations concernant les divers modes de transport. En particulier, les accords et recommandations relatifs à la classification, à l'emballage, à l'étiquetage et aux documents nécessaires au cours du transport doivent également s'appliquer aux marchandises dangereuses lors de leur manipulation aux interfaces de transport. Les «réglementations» internationales doivent être considérées comme une norme minimale et des dispositions complémentaires pourraient se justifier, par exemple, sur une interface prenant en charge des cargaisons particulièrement dangereuses.

17. Les prescriptions légales applicables aux interfaces de transport doivent fixer les objectifs à atteindre plutôt que donner des consignes précises. Ainsi, les parties intéressées pourront choisir les moyens les plus efficaces de remplir ces objectifs. Ces prescriptions devront prévoir une amélioration continue de la sécurité, reflètent l'évolution technologique dans le domaine de la sécurité et dans d'autres.

18. Les parties impliquées dans le fonctionnement d'une interface de modes de transport, notamment les exploitants de matériels de transport et le responsable de la place, ont le devoir de collaborer pour assurer la protection de la santé humaine et de l'environnement. En outre, ces diverses parties doivent coopérer avec les pouvoirs publics pour permettre aux autorités de remplir leurs fonctions en matière, notamment, de planification des mesures d'urgence et d'information du public.

19. Certains experts ont exprimé la crainte que les points de transfert servent d'installations de stockage lorsque, par exemple, des problèmes se posent quant à la propriété des marchandises ou que le client souhaite en retarder la réception pour des raisons juridiques ou économiques. Dans chaque pays, les pouvoirs publics doivent établir à quel moment la détention de marchandises dangereuses devient du «stockage» afin d'appliquer les règlements en la matière.

20. Il convient d'admettre que la construction et l'exploitation des installations de stockage de marchandises dangereuses doivent faire l'objet de normes fondées sur les connaissances les plus récentes et que mise au point de ces normes est une tâche importante. D'autre part, il a été reconnu que les réglementations en matière de stockage pouvaient être assouplies, avec des dispositions variables suivant la nature des marchandises et la durée envisagée.

21. Les dispositions relatives à l'aménagement du territoire ne doivent pas, en général, être différentes pour les interfaces de moyens de transport et pour les installations fixes. Toutefois, les relations entre les différents acteurs et les caractéristiques locales risquent d'être plus complexes que dans le cas d'installations fixes.

IV. Rôles et responsabilités des différents acteurs

22. Pour que le transport de marchandises dangereuses se déroule sans accident, il faut que toutes les parties intervenant dans la chaîne de distribution s'engagent sans réserve à la faire fonctionner sans danger et à respecter les règles de sécurité. On a souligné l'importance des relations entre les diverses parties qui peuvent être impliquées dans un accident. A cet égard, les rôles et les responsabilités des différents intervenants doivent être clairement définis. La répartition de ces rôles et responsabilités peut être différente d'un pays à l'autre et d'une interface de transport à l'autre au sein d'un même pays.

23. Le responsable d'une interface de transport doit prendre toutes les mesures de sécurité appropriées pour réduire le risque d'atteinte aux travailleurs et au public et de détérioration de l'environnement à la suite d'un accident chimique. Ces mesures doivent viser, à la fois, à prévenir les accidents et à atténuer les conséquences de tous ceux qui se produiraient. Elles doivent, en outre, refléter les derniers progrès technologiques et être raisonnablement applicables.

24. Pour les interfaces de moyens de transport où de graves accidents chimiques risquent de se produire, un rapport de sécurité doit être obligatoire, et adapté au niveau de danger potentiel du site. Ce rapport doit fournir des informations sur les dangers, sur les conséquences éventuelles des accidents, sur les mesures applicables en matière de sécurité technique et organisationnelle et sur la planification de mesures d'urgence sur le site et à l'extérieur. Un tel rapport de sécurité définit le cadre dans lequel le responsable de l'interface gérera la sécurité et organisera l'intervention, ainsi qu'un cadre pour la planification des mesures d'urgence à l'extérieur du site, pour l'information du public et pour l'examen des risques éventuels. En outre, chaque pays peut décider si ce rapport de sécurité doit être à l'origine d'une documentation de sécurité plus formelle (par exemple, un dossier de sécurité ou un dispositif de gestion de la sécurité), montrant que les dispositions de sécurité nécessaires ont été prises et qu'elles sont conformes aux prescriptions en la matière, dans le cadre d'une procédure d'autorisation, par exemple.

25. Le responsable de l'interface doit donner des instructions claires relatives au fonctionnement technique de l'interface, s'agissant, par exemple, de la manutention de conteneurs (gerbage) et de l'utilisation de systèmes de conduites pour le chargement ou le déchargement. En outre, ces instructions doivent comporter des règles précisant qui a accès au site et qui y contrôle les différentes opérations. Ceci est particulièrement important en raison du grand nombre d'exploitants impliqués, avec éventuellement des sous-traitants, et aussi parce que les effectifs peuvent fluctuer en fonction du volume de cargaison à manipuler.

26. Le responsable de l'interface doit s'assurer qu'il est en mesure de prendre en toute connaissance de cause des décisions relatives à la sécurité, sur la base d'un avis compétent en matière de sûreté chimique émanant, par exemple, d'un employé ou d'un consultant possédant les connaissances et l'expérience nécessaires. Il faut envisager de désigner un préposé à la «sûreté» ou à la «prévention des risques», ayant une formation adéquate et des responsabilités précises, notamment dans les grandes interfaces de transport ou lorsque les risques d'un accident majeur sont relativement élevés.

27. Le responsable doit s'efforcer de constituer une équipe stable et bien entraînée, étant entendu que sur les interfaces de transport il faut souvent, suivant le volume des cargaisons, recourir à une main-d'oeuvre temporaire pour une période brève. A cet égard, le responsable doit tenir compte des difficultés qu'il risque de rencontrer pour sensibiliser son personnel et lui inculquer une culture de sécurité, alors que la manipulation de marchandises dangereuses peut ne pas être une activité régulière (voir la section VII ci-après).

28. Il faut faire en sorte que les travailleurs participent activement à la mise en place de mesures de sécurité structurelles.

29. Le responsable doit soumettre ses installations à des contrôles indépendants pour s'assurer que les mesures de sécurité appropriées ont été prises et que tous les employés se conforment aux procédures de sécurité établies et connaissent les dispositions à prendre dans des conditions aussi bien normales qu'exceptionnelles.

30. Les transporteurs doivent informer à l'avance l'exploitant de l'interface de toute cargaison particulièrement dangereuse devant y transiter, y être manipulée ou y être détenue temporairement.

31. Les transporteurs qui chargent, déchargent ou transfèrent des marchandises dangereuses sur une interface doivent s'assurer que toute la documentation écrite est bien fournie par le responsable précédent, ou transmise au suivant, le long de la chaîne de transport, et que la remise des marchandises s'accompagne bien des documents nécessaires.

32. Les transporteurs doivent, dans toute la mesure du raisonnable, étudier la sécurité aux interfaces. Lorsqu'ils constatent des difficultés, ils doivent aider le responsable de l'interface à les surmonter ou s'abstenir d'utiliser celle-ci si ces difficultés accroissent sensiblement le risque d'un accident majeur.

33. Les pouvoirs publics doivent délimiter clairement les responsabilités respectives des autorités concernées. Les autorités dont les domaines de compétence diffèrent ou se chevauchent doivent coopérer pour harmoniser et rationaliser les réglementations afin d'en faciliter l'application.

34. Les pouvoirs publics doivent admettre qu'il leur faut être en contact avec les nombreux acteurs concernés par l'élaboration du plan d'intervention d'urgence à l'extérieur du site.

35. Les pouvoirs publics doivent définir clairement les priorités en matière de contrôle et de mise en oeuvre, s'agissant notamment des inspections de sécurité, en fonction du niveau de risque présenté par les interfaces de transport. Les inspections donnent les moyens de réunir des informations sur la sécurité de la zone d'interface, d'oeuvrer avec le responsable pour trouver les moyens d'améliorer cette sécurité et de vérifier la conformité aux prescriptions de sécurité.

36. L'industrie chimique a un rôle essentiel à jouer et doit exercer une influence sur la sécurité des interfaces de transport, conformément aux principes de gestion responsable et de suivi des produits. Par exemple, les entreprises chimiques doivent, dans la mesure du possible, accorder des contrats aux transporteurs sur la base, entre autres, de leurs performances en matière de sécurité. A cet égard, le choix d'un transporteur ne doit pas être fondé uniquement sur son respect des dispositions internationales, mais aussi sur son aptitude à déplacer des marchandises dangereuses en toute sécurité.

V. Préparation aux situations d'urgence et intervention

37. Pour les interfaces de transport où des accidents chimiques majeurs risquent de se produire, il faut établir des plans d'urgence internes et externes coordonnés. Le responsable de l'interface doit préparer le plan d'urgence interne en concertation avec les services d'urgence et de santé (privés et/ou publics). Le plan d'urgence interne doit être coordonné avec les plans d'urgence externes locaux, qui doivent eux-mêmes être coordonnés avec les plans établis au niveau régional et national. La mise au point de ces plans d'urgence externes doit être lancée par les autorités compétentes et poursuivie en concertation avec le responsable de l'interface de transport, les autres autorités compétentes, les services publics et d'autres partenaires, le cas échéant. Tous les plans de préparation aux situations d'urgence doivent être maintenus à jour.

38. La planification des mesures d'urgence doit garantir que le personnel d'intervention peut accéder aux lieux de façon adéquate en cas d'accident, compte tenu du fait que certaines interfaces, comme les gares de triage, peuvent être situées dans des lieux écartés. En outre, le matériel et les équipements d'intervention immédiate indiqués dans le plan de préparation doivent être disponibles sur l'interface, étant entendu que les risques d'accident peuvent n'être qu'intermittents.

39. Les différents acteurs (responsables des interfaces, sous-traitants, transporteurs, pouvoirs publics, etc.) doivent prendre part aux exercices réalisés à intervalles réguliers avec les services d'urgence, conformément aux plans d'intervention d'urgence.

40. Comme cela a été souligné, il est indispensable d'améliorer l'information destinée aux premiers intervenants en cas d'accident. Par exemple, il a été recommandé de placarder des informations plus précises et de rendre facilement accessibles les informations concernant la catégorie, les caractéristiques et la quantité de marchandises dangereuses présentes dans les conteneurs (indiquant, par exemple, si les conteneurs sont pleins). En outre, il faut étudier la possibilité de mettre au point un dispositif harmonisé au niveau international capable de fournir aux premiers intervenants des informations plus précises sur les marchandises dangereuses.

41. Dans les interfaces, il doit être possible de manipuler des équipements ne répondant pas aux normes sur les unités de transport (bateaux, wagons, camions, etc.). Pour la manipulation de conteneurs, de camions, de wagons, etc., qui présentent des fuites, ainsi que dans le cas d'incendie sur l'interface, il faut prévoir une zone facilement accessible où des véhicules, des conteneurs ou des paquets endommagés peuvent être déposés en toute sécurité. Ces zones doivent être équipées pour la lutte contre l'incendie et pour la rétention de liquides susceptibles de polluer l'eau.

VI. Aspects techniques

42. Il faut conserver trace des informations relatives aux marchandises dangereuses arrivant sur des interfaces de transport et susceptibles de provoquer des accidents majeurs, c'est-à-dire consigner au moins les quantités et la classification des marchandises, ainsi que leur emplacement sur l'interface. Ces informations sont faciles à réunir à partir des documents de transport et doivent servir à tenir un inventaire mis à jour en permanence des marchandises présentes dans les zones de garde temporaire. Ces informations doivent être accessibles aux divers acteurs afin d'améliorer la sûreté chimique. Des systèmes plus perfectionnés, comme des dispositifs de contrôle électronique des marchandises dangereuses, pourraient être utilisés sur des interfaces à haut risque pour enregistrer des informations essentielles en matière de sécurité. Ces systèmes pourraient être intégrés à des dispositifs plus vastes d'information et de contrôle fournissant des prescriptions en matière de déplacement et d'isolement dans les zones d'interface, ainsi que sur l'intervention en cas d'urgence.

43. Le matériel et les logiciels utilisés sur les interfaces de transport doivent être adaptés à leurs fins et compatibles avec les normes techniques en vigueur. Puisque les risques les plus élevés aux interfaces de transport sont associés aux opérations de chargement et de déchargement, cette remarque s'applique tout particulièrement aux équipements correspondants, comme les grues, les pompes, les tuyaux flexibles, les conduites et les instruments de contrôle de ces appareils, les indicateurs automatiques de trop-plein, et les systèmes d'arrêt automatique.

44. Le responsable doit faire en sorte que tous les équipements utilisés sur le site pour charger, décharger et manipuler des marchandises dangereuses soient correctement entretenus et vérifiés. Ceci est particulièrement important car ces équipements peuvent appartenir à différents sous-traitants. Le responsable doit demander aux exploitants des équipements sur le site d'établir, à intervalles réguliers, des rapports confirmant qu'ils respectent toutes les dispositions relatives à la surveillance et à l'entretien de tels équipements. Ce même responsable doit étudier tout problème qui semblerait se poser au niveau des documents ou du matériel de transport, dans la mesure où de tels problèmes pourraient retentir sur la sécurité.

45. Des instruments appropriés doivent être installés aux interfaces de façon à déceler les problèmes de sécurité qui pourraient se poser au niveau du matériel de transport et de la cargaison avant qu'ils ne quittent la zone d'interface.

46. Les accidents chimiques et, le cas échéant, les accidents évités de peu, doivent être signalés aux responsables compétents de l'interface et aux pouvoirs publics. La notification, l'enregistrement et l'analyse des informations relatives aux accidents et aux accidents évités de peu doivent donner lieu à un retour d'expérience permettant d'améliorer les mesures de sécurité. C'est pourquoi les informations relatives aux accidents et aux accidents évités de peu doivent être partagées, le cas échéant, avec d'autres responsables de la sécurité aux interfaces de transport. Il faut indiquer clairement qui est responsable de la notification des accidents. Les données dont on dispose semblent indiquer que les accidents survenus à des interfaces de transport sont loin d'être suffisamment notifiés.

47. Les accidents chimiques sérieux intervenant aux interfaces de transport doivent être analysés par une équipe ou une commission indépendante, qui s'attachera notamment à la façon dont le fonctionnement de l'interface a retenti sur la cause ou les effets des accidents.

VII. Compétence, formation et éducation

48. La formation et l'éducation du personnel, sous-traitants compris, doivent viser essentiellement à ce que tous les employés aient les compétences nécessaires pour assumer leurs responsabilités. Les programmes de formation et d'éducation doivent donc prévoir la transmission de toutes les informations nécessaires à la sécurité, y compris, par exemple, la classification des marchandises dangereuses, les erreurs qui risquent d'être commises, les défauts qui risquent d'être constatés dans les véhicules et le matériel de transport, ainsi que les mesures d'intervention appropriées en cas d'accident chimique.

49. Les programmes appropriés de formation et d'éducation se caractérisent par trois composantes : formation générale à la vigilance, formation spécifique à la fonction assurée, et formation à la sécurité. A cet égard, les programmes de formation et d'éducation du personnel travaillant sur des interfaces de transport doivent inculquer la connaissance des pratiques de sécurité et des dispositions réglementaires relatives à tous les modes de transport intervenant à l'interface. Ces programmes doivent également comporter une formation permettant aux travailleurs d'assurer leurs responsabilités spécifiques en toute sécurité.

50. Les programmes de formation et d'éducation doivent être pluridisciplinaires, faire appel à de multiples organismes et permettre à ceux qui travaillent dans les interfaces de profiter de l'expérience des autres acteurs (par exemple, les transporteurs et les services d'intervention d'urgence). Ces programmes doivent être interdisciplinaires dans la mesure où il est utile que les employés comprennent les responsabilités des autres parties concernées.

51. Les activités de formation et d'éducation doivent tenir compte des problèmes complexes qui pourraient se poser en raison du grand nombre de règles et règlements s'appliquant au transport des marchandises dangereuses et du fait que la manipulation de marchandises dangereuses ne représente vraisemblablement qu'une partie limitée des tâches incombant aux travailleurs. En outre, ces activités doivent prendre en considération le fait que des travailleurs temporaires et des sous-traitants sont fréquemment employés sur les interfaces.

52. Il est essentiel de tester la compétence des travailleurs en procédant à des exercices visant à vérifier comment ils réagissent à toute une gamme de circonstances imprévues.

VIII. Communications

53. Toutes les parties concernées par le fonctionnement d'une interface de transport, en particulier le responsable et les transporteurs, doivent communiquer et coopérer étroitement de façon à se mettre d'accord sur la répartition des rôles et des responsabilités. Cela est indispensable pour que les installations de l'interface fonctionnent en toute sécurité et contribue à assurer qu'il n'y a pas de discontinuité dans la responsabilité du contrôle des marchandises dangereuses et que toutes les procédures administratives nécessaires au transfert de telles marchandises sont respectées. A cet égard, on gardera présent à l'esprit que les différences de langage ou de culture des divers acteurs pourraient être à l'origine de problèmes de communication.

54. Les populations qui pourraient être touchées lors d'un accident intervenant sur une interface de transport doivent être informées de façon adéquate des activités poursuivies sur cette interface et de ce qu'il faut faire en cas d'accident, et avoir notamment connaissance des signaux d'alerte. La communication d'informations à ces populations doit relever de la responsabilité conjointe des pouvoirs publics et du responsable de l'interface, qui ont accès aux informations nécessaires. Si les communications avec le public se sont sensiblement améliorées récemment au sujet des installations dangereuses, comme les usines chimiques, il semblerait que peu d'efforts aient été faits pour les interfaces de transport. La communication peut être plus difficile pour celles-ci que pour d'autres installations fixes, puisque les risques associés à une interface de transport donnée sont plus compliqués à évaluer. On notera que les collectivités locales voisines d'une interface peuvent ne pas être concernées économiquement de la même façon par le fonctionnement de cette interface qu'elles le seraient pour une autre installation fixe, ce qui peut modifier leur perception du risque.

Discussion Document

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1. Introduction

1.1 Background

One of the objectives of the 1992-1994 OECD chemical accidents work programme is to expand the *Guiding Principles for Chemical Accident Prevention, Preparedness and Response* [1]¹ – currently addressing fixed installations only – to transport interfaces.² At such interfaces, dangerous goods are being transferred from one transport mode to another, transferred within one transport mode from one piece of transport equipment to another, or stored temporarily during transfer between transport modes.

To start elaborating on the issues of chemical accident prevention, preparedness and response at transport interfaces, a Workshop on Chemical Safety in Port Areas was organized by OECD, IMO and UNEP³ from 18-21 October 1993 in Finland [2]. During a previous Workshop on Strategies for Transporting Dangerous Goods by Road, organized by OECD from 2-4 June 1992 in Sweden [3], safety issues of road transport of dangerous goods were discussed. However, the question of transferring dangerous goods between trucks or between trucks and other transport modes at transport interfaces was not considered in detail then.

In order for a consensus on the envisaged additional Guiding Principles to be reached by the end of 1994, it was decided to have – in addition to the two workshops – a Special Session where experts should exchange information and experience on, and reach conclusions on "best practice" for improving chemical accident prevention, preparedness and response at transport interfaces.

The Special Session was scheduled from 30 November to 1 December 1993, in conjunction with the December 1993 meeting of the Expert Group on Chemical Accidents.

1.2 Objectives

To facilitate discussions at the one and a half day Special Session, the present discussion document was prepared by Switzerland.⁴ Its overall objective is to address chemical safety at transport interfaces. Particular attention was given to the transport interfaces in connection with rail, road and air transport. Firstly, the relevant issues relating to the chemical accident prevention, preparedness and response at transport interfaces are identified (Section 2). Secondly, draft conclusions are formulated for consideration by the

¹ The numbers in square brackets refer to the list of references in Appendix A.

² Appendix B contains a glossary of the most often used terms.

³ Appendix C contains a list of acronyms.

⁴ The Swiss Ordinance on the Protection against Major Accidents [4,5] breaks new ground by including transport routes in its scope, because serious damage to the public and the environment may arise not only from chemical plants but also from the transport of dangerous goods. The experience gained with the elaboration and application of the regulation has been used in preparing this discussion document. Practical guidelines for transport routes on which dangerous goods are transported are published by the Federal Office of Environment, Forests and Landscape (FOEFL) [6].

Special Session to aid in the later elaboration of the additional Guiding Principles by the OECD Expert Group on Chemical Accidents (Section 3). Recognizing that many of the principles relating to fixed installations also apply to transport interfaces, the paper focuses on those aspects of transport interfaces which differ from fixed installations.

The topic treated in this document covers a broad field because transport interfaces may vary widely in type, size and importance. There are many stakeholders, and each one may weigh the relevant issues raised and the draft conclusions stated depending on his involvement in the operation of the interface. It is nevertheless hoped that the document will help in setting the stage for a fruitful discussion. The document does not claim to be definitive and complete.

2. Major issues at transport interfaces

This section identifies the issues of main concern regarding chemical accident prevention, preparedness and response at transport interfaces:

- How should the scope of the additional Guiding Principles be defined (Section 2.1)?
- What are the relevant legal and regulatory issues (Section 2.2)?
- What are the roles and responsibilities of the many stakeholders (Section 2.3)?
- What are the appropriate organisational and technical safety measures (Section 2.4)?
- What are the relevant issues regarding communication, training and education (Section 2.5)?

2.1 Scope

The transport of dangerous goods⁵ originates from fixed installations, where hazardous substances are being produced and processed, and then continues on transport routes like railways or roads to other fixed installations. The dangerous goods may change transport modes at stationary transfer points like harbours, railway stations, terminals for intermodal transport between rail and road, truck terminals, airports, etc. For these facilities the term "transport interface"⁶ is used here.

⁵ The term "dangerous goods" is well defined and used consistently in the transportation and shipping industry. It covers – for all practical purposes – what is meant in [1] by hazardous substances. The only exception is that the regulations on the classification of "dangerous goods" may not cover the purely ecotoxicological substances.

⁶ The term "interface" should not be understood in the narrow legal sense to define the dividing line between transport and loading/unloading operations. The term is used in a broader sense to describe the site where all the activities of a transfer point such as arrival and unloading, temporary storage as well as loading and dispatching of the dangerous cargo take place.

In defining the scope of the additional Guiding Principles, a clear definition of what constitutes a transport interface is necessary. This also includes all the transport modes considered which lead to and from an interface. Furthermore, the question has been raised whether interfaces at fixed installations (e.g. loading/unloading areas at chemical plants) as well as interfaces in connection with pipeline transportation of hazardous substances should be included in the scope.

Chemical accidents at interfaces arise primarily from a loss of containment of the dangerous goods, due to inadequate packing and securing, mishandling during unloading/loading operations, traffic accident, etc. The release of a large chemical hazard potential without sufficient safety measures to contain its effects could lead to a *major accident*. Hence, how does the likelihood of causing a major accident at transport interfaces influence the scope? The likelihood of a major accident depends on such factors as the size and complexity of the transport interface, the chemical hazard potential present, the safety measures available and the surrounding environment. Transport interfaces range from small loading/unloading facilities handling packaged goods to major facilities, where substantial quantities of bulk dangerous cargo may be handled. The chemical hazard potential is primarily a function of the amount and the physico-chemical properties of the dangerous goods handled at the interface. The surrounding environment is characterised by its exposure, i.e. the possible extent of harm to human health and damage to the environment.

The issues to which draft conclusions have been developed in Section 3.1 are thus as follows:

- How are transport interfaces defined?
- Which transport modes – leading into transport interfaces – should be considered in developing guidance?
- To what extent is such guidance applicable to loading/unloading facilities at fixed installations?
- To what extent is such guidance applicable to interfaces in connection with pipeline transportation of hazardous substances?
- Do we have to distinguish between transport interfaces where the likelihood of causing a major accident is negligible and those where it is not?

2.2 Legal and regulatory issues

Over the years several international organisations have, through international agreements, established standards for the transportation of dangerous goods in transit, i.e. by sea (IMDG Code) [7], inland waterways (ADN) [8,9], rail (RID) [10], road (ADR) [11] and air (TI) [12]. These standards have been adopted into national law by the signatory states of the respective international agreements. Both the IMDG Code and the technical instructions for air transport of dangerous goods (TI) are practically applied worldwide. The ADN, RID and ADR regulations apply mostly in European states. It is clear that similar regulations for transport of dangerous goods exist in other parts of the world (e.g. the United States [13]).

Parallel to these activities the United Nations' Committee of Experts on the Transport of Dangerous Goods has issued *Recommendations on the Transport of Dangerous Goods* (the so-called "Orange Book") [14].⁷ They define the classes of dangerous goods and contain provisions regarding general packing requirements, labelling of packages, transport documents and special technical recommendations (excluding handling of bulk liquid dangerous cargo). The "Orange Book" is becoming the definitive guideline for the setting of worldwide standards on the safe carriage of dangerous goods by sea, inland waterways, rail, road and air.

Because the transport of dangerous goods leads directly into transport interfaces, those responsible for their safe management and operation are confronted with a variety of legal and regulatory issues. These issues, in regard to which draft conclusions have been developed in Section 3.2, are thus as follows:

- Have the separate developments of the international agreements for the different transport modes led to regulatory conflicts or gaps?
- Are there major problems with the enforcement of standards for the transport of dangerous goods?
- What are the legal bases that apply to the dangerous goods being unloaded/loaded – or temporarily stored – at transport interfaces?
- What kind of legal requirements need to be considered at transport interfaces regarding the protection of the workers, the public and the environment from chemical accidents, as well as regarding land-use planning?

2.3 Issues of stakeholders' roles and responsibilities

Stakeholders who have responsibilities in varying degrees for chemical accident prevention, preparedness and response at transport interfaces are primarily those involved in the transportation chain of dangerous goods. This chain begins with the manufacturers of hazardous substances, involves distributors and packers, the transporters, the interface owners including workers, and ends with the receiver (customer) of the shipment.

Besides those directly involved in the transportation chain, the public authorities play an important role in accident prevention, preparedness and response, and the public living in the surrounding area needs to be included in the information and decision processes.

Hence, the issues to which draft conclusions have been developed in Section 3.3 circle around the question: What are the roles and responsibilities of the many stakeholders, in particular:

- the interface owners, subcontractors, and the workers including their representatives (Section 3.3.1)?

⁷ The transport of radioactive substances is excluded from the UN Recommendations on the Transport of Dangerous Goods, but regulated instead by the IAEA [15]. The international organisations mentioned harmonize their standards for the transport of radioactive substances with the recommendations of the IAEA.

- the "users" of the interface, i.e. the manufacturers and their customers, the distributors, the transporters, etc. (Section 3.3.2)?
- the public authorities as possible owner of the interface, competent authority, coordinator of the emergency response services, etc. (Section 3.3.3)?
- the public living in the surrounding area of a transport interface (Section 3.3.4)?

2.4 Issues of safety measures

The issues presented in this section focus on those on-site safety measures which are notably different from those for fixed installations. Organisational as well as technical safety measures are designed to either:

- improve the safe handling of dangerous goods at transport interfaces (i.e. chemical accidents prevention),⁸ or
- become active when a chemical accident occurs and therefore mitigate its consequences (i.e. chemical accident preparedness and response).⁹

In view of the large number of stakeholders involved, the handling of dangerous goods among a large amount of other goods and the complex situation regarding communication, it is of particular importance that appropriate *organisational* as well as *technical* safety measures exist at transport interfaces.

The issues of main concern, in regard to which draft conclusions have been developed, in Section 3.4 are:

- multiplicity of owners and operators;
- irregular nature of the operations, which at peak times puts a stress on technical and qualified human resources;
- awareness of the workers regarding safety matters, which may be lower than at fixed installations;
- recording the inventory of dangerous goods at the interface;

⁸ An efficient safety measure to prevent chemical accidents, especially major accidents, is the reduction of the chemical hazard potential. The quantities of certain dangerous goods transported to the interface could, for example, be limited. One could even consider banning the transportation of a certain very dangerous good. It is obvious that such measures are not within the competence of the transport interface owner. In addition, transporters (e.g. railway companies) may be subjected to an obligation to transport. One of the possible solutions lies with the chemical industry, in that the production and processing of less hazardous substances for transportation would reduce the chemical hazard potential transported by the different transport modes.

⁹ A clear distinction between the two types of measures (prevention versus preparedness and response) is not always possible.

- monitoring and servicing of the equipment;
- preparing emergency response plans;
- reporting and investigating of accidents;
- safety of cargo transfer equipment (e.g. pumps and flexible lines to handle liquid bulk cargo, cranes to handle containers of all sizes, equipment to handle packaged dangerous goods);
- improvement of equipment to mitigate consequences of equipment failure.

2.5 Issues of communication, training and education

Given the international nature of transport, especially at large interfaces, differences in language, culture, laws and practices are likely to affect the communication during handling at transport interfaces. An important issue is therefore how to ensure that information is properly passed between stakeholders at an interface.

Training and education is generally more difficult at a transport interface, due among other reasons to the many rules and regulations pertaining to the transport of dangerous goods and the involvement of other stakeholders, especially the transporters, in chemical safety at the site of the interface.

3. Draft conclusions

The draft conclusions presented in this section are for consideration by the Special Session. The revised conclusions will be a basis for later development of additional Guiding Principles by the OECD Expert Group on Chemical Accidents. The draft conclusions relate on the one hand to the scope and nature of the principles to be developed, and on the other hand to their content.

3.1 Scope

Transport interfaces should be defined as an area where dangerous goods are being transferred from one transport mode to another (e.g. from rail to road), transferred within one transport mode from one piece of transport equipment to another (e.g. from truck to truck) or stored temporarily¹⁰ during transfer between transport modes.

The scope of the additional Guiding Principles should include all transport interfaces where dangerous goods are being transferred during transportation by sea, inland waterways, rail, road and air.

¹⁰ What is meant by "temporary storage of dangerous goods at a transport interface" is explained in Section 3.2.

Fixed installations (e.g. chemical plants, tank farms) are the senders and/or receivers of transported dangerous goods and most likely have their own on-site loading/unloading facilities. **Although the conditions at these on-site facilities are usually different from those existing at transport interfaces, much of the additional guidance developed for the latter may also apply to the former.**

Many smaller pipeline systems – which connect plants where hazardous substances are produced or stored with transport interfaces – are used at these interfaces to load/unload bulk liquid dangerous cargo. **They belong to the technical loading/unloading equipment at the interface and play an important part in the safe handling of bulk liquid dangerous cargo.**¹¹

The additional Guiding Principles should address chemical accident prevention, preparedness and response at transport interfaces regardless of their likelihood to cause a major accident. Hence, all interfaces from small to large ones should be included in the scope. Another choice would not be consistent with the approach chosen for the Guiding Principles for fixed installations. The draft conclusions are based on average conditions at interfaces. Special situations may need additional measures resulting from detailed risk assessments.

However, special care should be taken to show how small and medium-sized transport interfaces – where the likelihood of major accidents is negligible – could best use the guidance developed to improve chemical safety. Criteria should be developed which help in estimating what the likelihood of a major accident at an interface could be.¹²

3.2 Legal and regulatory matters

Dangerous goods in transit:

The UN/ECOSOC provisions [14] regarding the definition of classes of dangerous goods, the packing requirements, the labelling of the packages, and the transport documents will be incorporated into the standards of the international agreements on the transport of dangerous goods and come into force as national legislation of the signatory states by 1 January 1995. Thus, the harmonization of the international standards for the transport of dangerous goods on the basis of the "Orange Book" [14] (excluding the special technical recommendations) will be completed practically worldwide for sea and air transport and, in Europe, for transport by inland waterways, rail and road. **Therefore, the continuity of the**

¹¹ Pipelines used in such systems are generally small in diameter, are limited in extent and operate at low pressures. On the other hand, the oil and natural gas industry uses pipelines to transport hazardous substances over long distances. These pipelines generally have large diameters and operate at high pressures. Auxiliary facilities (interfaces) are tank farms, liquefaction plants, pump stations, etc. In most countries these pipelines are subjected to very stringent safety regulations. The international agreements covering the transport of dangerous goods do not apply. Issues relating to accident prevention, preparedness and response in regard to such systems should be dealt with in another context.

¹² It is beyond the scope of this document to elaborate on such criteria. They should be based, however, on the frequency of movements as well as the amount and the classification of the dangerous goods handled at the site.

regulatory requirements for classification, packing, labelling and transport documents between different transport modes at the interface is given.

However, the harmonization of the special technical recommendations, which presently show a number of relevant gaps especially between sea, rail and road transport, should be continued and advanced as much as possible.

Through this process of harmonization, the enforcement of the standards for the transport of dangerous goods will be simplified. **The effort should now be concentrated on the enforcement of these standards.**

Legal requirements at interfaces:

In order to determine which legal requirements apply, the boundaries of the different parts of an interface should be clearly established. **The "true" interface should be that part where loading and unloading, temporary holding or keeping of dangerous goods during direct cargo transfer, handling of damaged vehicles or spilled dangerous goods take place.**

The temporary holding or keeping of dangerous goods means that these goods are held over a short period of time on the interface during transfer activities. The ownership of the goods should not change during temporary holding.

For reasons of continuity, the international regulations for the transport of dangerous goods should also apply to the dangerous goods during their handling at the transport interface. However, these international agreements and recommendations should be considered a minimum standard, and additional requirements may be appropriate for example at an interface handling particularly hazardous cargo.

Temporary or intermediate storage (possibly including storage fees) of dangerous goods in storage areas or warehouses goes beyond the temporary holding or keeping. **Facilities where dangerous goods are temporarily stored over a longer period of time or even repacked, handled or processed should be treated like fixed installations.**

Most OECD countries have regulations which establish the requirements for major accident prevention, preparedness and response at hazardous installations [e.g. 16]. **The safety requirements of such regulations should in principle also be applied to transport interfaces where the likelihood of major accidents is not negligible.** For temporary storage areas, these requirements should apply if the area falls within the scope of the regulation due to the amount of the hazardous substances stored.

The legal requirements for worker protection, protection of the environment, land-use planning, etc. should not be different for transport interfaces than for fixed installations. However, the relationship of the different stakeholders and the local site conditions – which should be clearly established for successful land-use planning – may be more complex than for fixed installations. For example, transport routes leading to and coming from the transport interfaces should also be considered.

3.3 Roles and responsibilities of stakeholders

The accident-free transport and handling of dangerous goods at transport interfaces depends upon a full commitment from everyone in the distribution chain to safe operation and to the adherence to the safety regulations. **Therefore, the roles and responsibilities of the different stakeholders should be clearly defined. This should be done through close communication and co-operation of the different parties involved.**

3.3.1 Transport interface owners and workers

Safety management:

A responsible management of chemical accident prevention, preparedness and response is organised on three levels. There is a strategic level where basic siting and development decisions are being made which also influence safety. On the tactical level a safety policy provides the framework for the safe operation of the facility. On the operational level, the necessary safety measures are implemented and controlled.

For fixed installations the three levels can usually be located within the same company. At transport interfaces, the responsibilities may be distributed between the different parties involved in the operation (or they may even overlap). **Therefore, the responsibilities for the different levels of safety management should be clearly established among the different parties involved in the operation of an interface.**

Safety policy:

The owners of a transport interface should take all appropriate safety measures to reduce the risk of harm to the workers and the public, and of damage to the environment, caused by a chemical accident. These measures aim both at preventing accidents and at mitigating the consequences of accidents. They have to take into account the current technological development¹³ and be reasonably practical.¹⁴

Safety report:

For transport interfaces where major chemical accidents may happen, a safety report – tailored to the level of hazard potential at the site – should be required. The safety report should provide information on hazards, possible consequences of accidents, detailed description of the available technical and organisational safety measures including

¹³ Consistent with the current technological development are safety measures which have been implemented or tested with success at some transport interfaces and which can be transferred to other interfaces. Hence, the current state of technological development comprises more than the acknowledged technical standards. It comprises the present, accessible knowledge of available safety measures in the specialised field.

¹⁴ See Appendix B for explanation of "reasonably practical".

on- and off-site emergency planning, and the results from the assessment of the risks of the transport interface for workers, the public and the environment. It is a tool for management to set objectives of safety performance, to identify the areas needing particular improvement, to measure compliance with the safety goals, and to provide a basis for an adequate follow-up of the safety measures taken. In certain countries competent authorities may also use the safety report as a basis for the formal licensing process.

3.3.2 Manufacturers, distributors, transporters

The chemical industry is providing with its Responsible Care Programme [17,18] a framework for good safety practices. By managing products through all stages of their life cycle, including customer use and disposal, the Programme intends to improve the safety for health and the environment. The Programme also provides a framework for manufacturers, distributors and transporters in their efforts for improved safety of the transport of dangerous goods. As first experiences with the Responsible Care Programme show, customer-controlled transportation is a serious challenge. As far as manufacturer-controlled transportation is concerned, the chemical industry can influence safe transport by awarding contracts to distributors and transporters, among other things on the basis of their safety performance. As mentioned previously, a reduction of the chemical hazard potential during transport of dangerous goods could also be achieved by producing less hazardous substances for transportation.

3.3.3 Public authorities

The roles and responsibilities of public authorities are not basically different for transport interfaces than for fixed installations. There are some particular points to be considered, however. Different public authorities may act, for example, as owner of the interface, competent authority, or co-ordinator of the emergency response services, the land-use planning process and the information dissemination to the public. **If this is the case, particular attention should be given to a clear definition of the respective responsibilities and to the fact that public authority responsible for oversight and co-ordination should be clearly identified.** For transport interfaces where major accidents could happen, attention should be given to a setting of clear priorities for control and enforcement. Because transport interfaces border on (public) transport routes, the public authorities should be particularly involved in the preparation of on- and off-site emergency preparedness plans and the provision of information to the public.

3.3.4 Public information, community awareness

Public information and community awareness are not basically different for transport interfaces than for fixed installations. Compared with fixed installations, however, it may be more difficult to communicate to the public what the risks associated with a given transport interface are, because the assessment of the risks is more difficult. Furthermore, these risks do not only exist at the transport interfaces, but also on the transport routes leading to the interfaces. Finally, the local community around an interface (e.g. railroad switching/marshalling yard, airport) may not be as involved economically in the operation of the interface as the community around a fixed installation, which may affect the perception of the risk.

The public in the vicinity of a transport interface – having the potential of causing major accidents – should be informed in an appropriate manner about the activities at the interface.

3.4 Safety measures

3.4.1 Organisational aspects

The additional Guiding Principles should pay particular attention to the organisational aspects of chemical accident prevention, preparedness and response, because organisational safety measures are likely to be very cost-effective.

Organisational rules for interface operation:

- **The owners should establish clear rules as to who has access to and controls which operations on the site.** This is particularly important because of the many operations done by different operators, and because the work force may fluctuate depending on the amount of cargo to be handled.
- The interface owners should provide clear prescriptions as to the technical operations at the interface, for example handling of containers (stacking), handling of loading/unloading pipeline systems.
- The owners should strive toward a well-trained stable work force and thereby take into consideration the difficulties associated with developing awareness and safety culture where handling of dangerous goods may not be a regular activity.
- The workers' active participation should be sought in the setting-up of the organisational safety measures.
- The interface owners should ensure that transporters loading, unloading or transferring dangerous goods at the interface have passed all the paperwork along from or to the next responsible parties in the transportation chain, and that hand over of the goods is well documented.
- The interface operator should be notified in advance of any particularly dangerous cargo intended for transit, handling or temporary holding at the interface.

Inventory of dangerous goods at site:

- **Records should be kept at least of the quantities and the classification of the dangerous goods arriving at transport interfaces which could cause major accidents because a substantial amount of dangerous goods is being handled.** This information is readily obtainable from the transport documents and

should be used to provide a continuously up-dated inventory of the goods in the temporary keeping area.¹⁵

Monitoring and servicing of equipment:

- **The owners should ensure that all the on-site equipment used to load/unload and handled dangerous goods is appropriately serviced and controlled.** This may be particularly important because the equipment may belong to different subcontractors.
- The owners should require from the operators on the site to deliver at regular intervals reports confirming that they are complying with all requirements regarding the monitoring and servicing of such equipment.
- The owners should establish at the interfaces appropriate instrumentation for monitoring the transportation equipment and cargo for safety problems before they leave the interface area.
- The owners should also make sure that the transporters' equipment to transport dangerous goods complies with safety regulations. A report similar to the above, at least from the major transporters often using the interface, could be envisaged.

Emergency preparedness plans:

- **For transport interfaces where major chemical accidents may happen, a separate on-site and off-site emergency preparedness plan should be produced in addition to the safety report.**
- The owners should take the lead in preparing the on-site emergency preparedness plan in conjunction with the emergency services (private and/or public). Such plans should be kept up to date. The emergency services should make sure, that they obtain all the information needed to protect the people from harm and the environment from damage in an emergency.
- The establishment of off-site emergency plans should be initiated by the public authorities, and prepared in conjunction with the owners of transport interfaces.
- The different stakeholders (owners, subcontractors, transporters, public authorities) should take part in exercises carried out periodically with the emergency services on the basis of these plans.

¹⁵ More advanced systems such as electronically based dangerous goods control systems could be used at interfaces with major hazard potentials. In addition to the above information, they record – as far as available – UN Number, chemical name, CAS Number, names of company of origin and customer as well as more detailed information on the dangerous properties (safety codes) of the dangerous goods. Such systems could be integrated into larger information and control systems providing information on segregation requirements in storage areas and emergency response.

- The emergency preparedness plans should ensure that there is adequate access for the emergency services in the event of an accident, recognising that some interfaces such as switching yards may be in remote locations.
- Both the details of such plans and the frequency of such exercises should depend on the importance of the interface.

Reporting of accidents:

- The owners should record chemical accidents (including near-misses) so that this information can be reviewed and lessons learnt from it.
- Significant chemical accidents at the transport interfaces should be investigated by an independent unit or commission with particular emphasis on how the operation of the interface affected the cause and the effects of the accident and what lessons can be learnt from the analysis.

3.4.2 Technical aspects

Siting:

- The siting of a new transport interface should take into consideration the necessary safety distances to the public outside the transport interface and provide for an easy access, from several directions, for the emergency services.

Technical safety measures:

- **The equipment used should be compatible with the current technical development.** This is of particular concern with regard to cranes (improved stability for loading/unloading operations) and other equipment such as pumps, flexible hoses, pipelines, etc., because the greatest hazards to transport interfaces arise from the loading/unloading operation.

Safe area:

- There should be the possibility at the interface to handle substandard equipment on the transport units (ships, railroad cars, trucks, etc.).
- To handle the cases of leaking containers, trucks, railroad cars, etc. as well as the case of fires at the transport interface, the owners should have an area, easily accessible from all parts of the interface, where damaged vehicles, containers or packages can be safely deposited. These areas have to be equipped with emergency response equipment, in particular with the necessary measures for fire-fighting and the retention of water-pollutant liquids [19].

3.5 Communication, training and education

Communication:

- **The interface owners and the public authorities should have the joint responsibility that rules for communication are defined.** This is particularly important in emergency cases, when one common language should be used. An efficient communication at an interface cannot be resolved by one stakeholder alone.
- Particular attention should be given to the training of an effective communication under abnormal conditions with people using different languages.

Training and education:

- **Training and education of the workforce at the interface is of great importance for chemical safety, because of the great number of rules and regulations pertaining to the transport of dangerous goods.**
- The workers at interfaces should get part of their training with workers from the other stakeholders (especially transporters).
- Training and education should include information on the classification of dangerous goods, errors likely to be made and defects to be found on transport vehicles and equipment.
- Training should be periodically supplemented with retraining as deemed appropriate. A system according to which new workers are "adopted" by one or more experienced workers to follow up on the training for the first months may be useful.
- Through education workers should become more aware of the chemical safety aspects at an interface. The role of labour organisations is particularly important in this respect as they can effectively contribute to improving the awareness of the workers regarding chemical safety.
- The competence of workers should be tested, using exercises to see how they would respond to a variety of unexpected circumstances.

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Appendix B: Glossary

Accident:

Any unplanned, sudden event which causes or is liable to cause injury to people or damage to buildings, plant, material or the environment.

Dangerous goods:

Substances or articles which pose a significant risk to health, safety and property when being transported and which are classified as dangerous goods in the corresponding listings of the international agreements on the transport of dangerous goods by sea, inland waterways, rail, road and air.

Emergency preparedness plan:

A formal written plan which, on the basis of identified potential accidents together with their consequences, describes how such accidents and their consequences should be handled either on-site or off-site.

Employee:

A person who is under a contract of employment with an enterprise, including management.

Hazardous installation:

A fixed industrial plant/site at which hazardous substances are produced, processed, handled, stored, used or disposed of in such a form and quantity that there is a risk of a major accident involving hazardous substance(s) which could cause serious harm to human health or damage to the environment, including property.

Hazardous substance:

An element, compound, mixture or preparation which, by virtue of its chemical, physical or (eco)toxicological properties, constitutes a hazard.

Major accident:

Any unplanned, sudden event which causes or is liable to cause serious injury to people or damage to buildings, plant, material or the environment.

Land-use planning:

Consists of various procedures to achieve general zoning/physical planning, as well as case-by-case decision-making concerning the siting of an installation or of other developments.

Likelihood:

The probability that a considered occurrence will take place.

Management:

Employees at, or owners of, a hazardous installation who have the responsibility and authority to take decisions concerning the operation of an installation, including decisions relevant to safety and, where appropriate, employees at a corporate level in the enterprise having such authority.

Near-miss:

Any unplanned, sudden event which, but for the mitigation effects of safety systems or procedures, could have caused serious injury to people or serious damage to buildings, plant, material or the environment or could have involved a loss of containment possibly giving rise to significant adverse effects.

Public authorities:

Government bodies at national, regional, local and international level with the authority to issue licenses, regulations, standards or other instructions having the force of law.

Reasonably practicable:

All which is possible subject to the qualification that the costs of the measures involved are not grossly disproportionate to the value of the benefits obtained from these measures.

Risk:

The combination of a consequence and the probability of its occurrence.

Risk assessment:

The value judgment of the significance of the risk, identified by a risk analysis taking into account any relevant criteria.

Risk management:

Actions taken to achieve or improve the safety of an installation and its operation.

Safety:

A situation without unacceptable risks. For purposes of this text, "safety" embraces health, safety and environmental protection, including protection of property.

Safety report:

The written presentation of the technical, management and operational information concerning the hazards of a hazardous installation and their control in support of a justification for the safety of the installation.

Transport interfaces:

Loading and unloading areas where hazardous substances are being transferred from one transport mode to another, transferred from one vehicle (equipment) to another within one transport mode, or temporarily stored during the course of transportation.

Appendix C: Acronyms

ADN:	Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ADNR:	Règlement relatif au transport de marchandises dangereuses sur le Rhin
ADR:	Accord européen relatif au transport international des marchandises dangereuses par route
CCR:	Central Commission for the Navigation on the River Rhine
CEC:	Commission of the European Communities
CEFIC:	Conseil européen des fédérations de l'industrie chimique
FOEFL:	(Swiss) Federal Office of Environment, Forests and Landscape
IAEA:	International Atomic Energy Agency
ICAO:	International Civil Aviation Organisation
IKSR:	International Commission on the Protection of the River Rhine
ILO:	International Labour Office
IMDG Code:	International Maritime Dangerous Goods Code
IMO:	International Maritime Organization
OCTI:	Office central des transports internationaux ferroviaires
RID:	Règlement concernant le transport international ferroviaire des marchandises dangereuses
TI:	Technical Instructions for the Safe Transport of Dangerous Goods by Air
UN/ECE:	United Nations Economic Commission for Europe
UN/ECOSOC:	United Nations Economic and Social Council
UNEP:	United Nations Environment Programme
US/DOT:	United States Department of Transportation

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