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WATER AND INDUSTRIAL ACCIDENTS

## DRAFT UNECE SAFETY GUIDANCE AND GOOD PRACTICES FOR CROSS-BORDER CONTINGENCY PLANNING

Note by the secretariat*

1. The Co-Chairman (Hungary) of the Joint Ad Hoc Expert Group on Water and Industrial Accidents (hereinafter, Joint Expert Group) took the lead and prepared the draft guidance and good practices for cross-border contingency planning, as set out in the sections and annexes below. This document was prepared in line with the mandate given by the fourth meeting of the Conference of the Parties to the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention) and the fourth meeting of the Parties to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), held on 15 and 17 November 2006 in Rome, and on 20 and 22 November 2006 in Bonn, Germany, respectively. This document also takes into account the decisions on the activities of the Joint Expert Group, in particular the programme of work as contained in the document ECE/CP.TEIA/2006/9 - ECE/MP.WAT/2006/7 adopted at these meetings. The Joint

* This document has been submitted late for technical reasons.

Expert Group began addressing the subject of establishing guidance for cross-border contingency planning at its ninth meeting (Geneva, 9–10 July 2008). At the same time, it explored the ongoing work carried out under other projects related, inter alia, to cross-border contingency planning, in order to acquaint itself with these projects' results and consider them in terms of its own work (e.g. the project on strategies for implementation of the requirements of the European Union (EU) Water Framework Directive under article 11 (3) (L) for the prevention and reduction of the effects of unforeseeable water pollution by industrial plants, and the work on mutual assistance in the event of accidental pollution incidents carried out under the auspices of the International Commission on the Protection of the Danube River). The Joint Expert Group invited countries to provide their feedback on the draft outline of guidance, in particular: (a) whether transboundary agreements on this subject already exist n their respective countries; (b) whether such guidance would be helpful for countries in improving contingency planning in transboundary context; and (c) what are the needs for future work in this area. Thereafter, it will agree on the most effective way to deliver the requested product. The Working Group is expected to address these issues and provide any other comments to the document, which it deems appropriate (see also ECE/CP.TEIA/2008/8 - ECE/MP.WAT/WG.1/2008/6).

**Annex**

# DRAFT UNECE SAFETY GUIDANCE AND GOOD PRACTICES FOR CROSS-BORDER CONTINGENCY PLANNING

## I. INTRODUCTION

1. This guidance takes into account the needs to: (a) promote active international cooperation among the UNECE member countries before, during and after an extraordinary impact; (b) enhance appropriate policies; and (c) reinforce and coordinate action at all appropriate levels for promoting the prevention of, preparedness for and response to extraordinary transboundary impacts on transboundary water regime shared by the countries.

2. Taking into consideration, inter alia, the provisions and achievements of the Industrial Accidents Convention and the Water Convention, the Code of Conduct on Accidental Pollution of Transboundary Inland Waters, the Directive of the European Parliament and of the Council 2000/60/EC establishing a framework for community action in the field of water policy, and the Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances, the guidance document Council Directive 85/337/EEC of 27 June 1985 was elaborated. The document addresses the assessment of the effects of certain public and private projects on the environment. It was modified by 2003/35/EK and the 97/11/EC, Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001. It currently describes the assessment of the effects of certain plans and programmes on the environment.

3. To assist national authorities and the operators in ensuring adequate safety level at transboundary water courses, the UNECE member countries decided to draw up safety guidance and good practices for cross-border contingency planning.

4. This guidance constitutes a minimum set of requirements to ensure a basic level of cross-border contingency planning. These requirements highlight all the aspects to be considered in achieving an acceptable level of safety, through applying different policies, measures and methodologies.

5. This guidance should be read also in the context of relevant national requirements and existing international guidelines as well as recommendations and standards concerning water pollution using internationally assessable information sources.

6. The guidance consists of two parts: (a) general principles for transboundary contingency planning; and (b) recommendations. The technical and organizational aspects are listed in the three appendices. Examples of good practices are expected to be added at a later stage.

## II. GENERAL PRINCIPLES FOR TRANSBOUNDARY CONTINGENCY PLANNING

7. The UNECE countries should apply the provisions of this guidance to prevent or limit hazards and reduce and eliminate adverse consequences, including those from floods, ice hazards, droughts and accidents involving hazardous substances, with respect to accidents and natural disasters on the water, water regimes and water-related ecosystems in the transboundary river basins.

8. These provisions do not apply to:

(a) Nuclear accidents or radiological emergencies;
(b) Accidents at military installations;
(c) Land-based transport accidents, with the exception of accidents which could cause an extraordinary transboundary impacts on water, water regimes and water ecosystems.

9. The countries should take appropriate legislative, regulatory, administrative and financial measures to implement the provisions of this guidance.

10. States should, by means of exchange of information, consultation and other cooperative measures, develop and implement policies and strategies for reducing the risks of extraordinary transboundary impacts on water, water regimes and water-related ecosystems and improve measures for prevention, preparedness and response, including restoration measures.

11. States should ensure that operators are obliged to take all measures necessary for the safe performance of hazardous activities and for the prevention of accidents, industrial accidents and natural disasters with transboundary effects.

12. Governments should provide leadership and create as few administrative obstacles as possible to facilitating the development and maintenance of harmonized contingency planning.

## III. RECOMMENDATIONS

### A. Recommendations to UNECE member countries

13. UNECE member countries should develop bilateral and multilateral cooperation with upstream and downstream countries sharing the same river basin. They should promote the establishment of bilateral river committees with the neighbouring countries to deal with transboundary water pollution prevention and response.

14. UNECE member countries should identify competent authorities at the national, regional and local levels that are given access to the necessary competences for the tasks foreseen in these

recommendations. Each country should designate a national authority responsible for official communication on its behalf. Each national authority should nominate a focal point.

15. UNECE member countries should initiate a national inventory of potentially polluting installations activities (see Appendix II for potentially hazardous activities) that pose a potential risk to human health or the environment. The inventories should be a prerequisite for the implementation of recommendations and should be mutually exchanged.

16. States should, at the initiative of any State, enter into consultations on the identification of those hazardous activities and potential risks of an extraordinary impact on water, a water regime or a water ecosystem that is reasonably capable of having transboundary impact.

17. UNECE member States should initiate the harmonization of the contingency plans developed by the countries. Countries should endeavour to make contingency plans compatible. Where appropriate, joint contingency plans should be drawn up to facilitate the implementation of adequate response measures. In particular, the countries concerned should inform each other of their contingency plans through the designated authorities.

18. UNECE member States should create a mechanism to promote elaboration of bilateral agreement on mutual cooperation in the case of transboundary pollution events.

19. UNECE member States should initiate active cooperation between neighbouring countries' authorities and responsible organizations.

20. UNECE member States should develop legislative provisions or guidelines concerning safety measures and safety standards, agree on water quality evaluation criteria, harmonize water-quality monitoring systems and develop mutually agreed water-quality objectives based on water uses.

21. Countries should take appropriate measures to establish and maintain adequate emergency preparedness to respond to accidents, industrial accidents and natural disasters. Countries should ensure that preparedness includes measures to mitigate transboundary impacts. These measures might include, but are not limited to, treatment, collection, clean-up, storage, removal and safe disposal of hazardous substances and contaminated material, and restoration.

22. In the event of an accident or natural disaster, or imminent threat thereof, which causes or is likely to cause transboundary impacts, the country of origin should ensure that affected countries are notified, without delay and at the appropriate levels, through alarm and warning systems. Countries should, at regular intervals, test the efficacy of alarm and warning systems and ensure the regular training of personnel involved in such operations.

23. The countries should initiate and cooperate in research and development of methods and technologies for the prevention of, preparedness for and response to accidents and natural

disasters. They should encourage and actively promote scientific and technological cooperation, including research into less hazardous processes aimed at limiting the chance of industrial accidents and preventing and limiting their consequences.

## B. Recommendations to competent authorities

24. Competent authorities should set up general or specific safety objectives.

25. Competent authorities should verify the transboundary contingency planning. Contingency plans should be reviewed regularly at least once in five years, or when circumstances so require, taking into account the experience gained in dealing with actual emergencies.

26. Competent authorities should ensure that potentially hazardous activities/installations should develop internal emergency plans, provide necessary information and cooperate on preparing harmonized external plans.

27. Competent authorities should develop off-site emergency plans in association with community groups, local authorities and rescue services, and should apply them in the event of transboundary accidents.

28. Competent authorities should ensure that internal and external emergency plans are reviewed, tested periodically and, where necessary, revised and updated.

29. Competent authorities should apply methodologies for risk assessment using a step-by-step approach, starting with a basic screening of sites whereby resources are gradually directed towards the sites with the highest risks. The identification of those hazardous activities which require special preventive measures, which may include a licensing or authorization system.

30. Based on the risks identified, competent authorities should make plans for risk-reduction measures and/or monitoring (early warning) for transboundary river basins.

31. Competent authorities should establish and maintain intervention sites for the mitigation of the effects of accidental water pollution.

32. Competent authorities promoting the application of the most appropriate technology in order to prevent industrial accidents and protect human beings and the environment.

33. Competent authorities should promote appropriate education and training of all persons engaged in hazardous activities control.

34. The competent water authority should regularly monitor the status of the transboundary watercourse.

## C. Recommendations to operators of potential water pollution installations/activities (hot spots)

35. All hot spots should have an operational and management plan (operating manual) that is available to all personnel, local inhabitants, government inspectors and other relevant stakeholders. All documents relating to planning, design and construction should be maintained in an accessible way, with records kept permanently for future reference.

36. Operators should draw up and implement internal emergency plans and apply them internally whenever: (a) a tangible risk of major accident has been identified, (b) an uncontrolled event occurs that could lead to a major accident, or (c) a major accident has occurred. Operators should review, test, revise and update the internal emergency plans on a regular basis and in accordance with their national legislation.

37. Operators should cooperate with competent authorities and local communities in preparing the external emergency plans.

38. Operators should establish and maintain intervention sites for mitigation of the effects of accidental water pollution.

39. Operators should train personnel, reinforce and revise their personnel’s knowledge of safety, in particular on how to identify potentially harmful events.

40. Operators should implement environmental audits for their facilities and promote use of environmental management systems.

41. To prevent industrial accidents, operators should provide appropriate education and training of all persons engaged in hazardous activities on site under both normal and abnormal conditions.

## Appendix I

## DEFINITIONS

**1. The explanatory text to the below definitions should be further developed:**

(a) River basin;
(b) Water regime;
(c) Transboundary water commission;
(d) Pollution;
(e) Hazardous substances;
(f) Hazardous activities (listed in annex II)
(g) Risk;
(h) Natural disaster;
(i) Accident;
(j) Industrial accident;
(k) Operator;
(l) Public;
(m) Country of origin;
(n) Affected country;
(o) Alarm Emergency Warning System (AEWS).

## Appendix II

## SAMPLE LIST OF DANGEROUS INSTALLATIONS, CONSTRUCTIONS AND ACTIVITIES[1]

### 1. Waste management

(a) Installations for the incineration, recovery, chemical treatment or landfill of hazardous waste;

(b) Installations for the incineration of municipal waste with a capacity exceeding 3 tons per hour;

(c) Installations for the disposal of non-hazardous waste with a capacity exceeding 50 tons per day;

(d) Landfills receiving more than 10 tons per day or with a total capacity exceeding 25,000 tons, excluding landfills of inert waste;

(e) Installations for the disposal or recycling of animal carcasses and animal waste with a treatment capacity exceeding 10 tons per day.

### 2. Wastewater treatment

(a) Wastewater treatment plants with 10,000 PE (person equivalent) or more.

### 3. Agriculture

(a) Installations for the intensive rearing of poultry or pigs with more than:
- (i) 85,000 places for broiler chickens or 60,000 places for hens;
- (ii) 3,000 places for production pigs (over 30 kg); or
- (iii) 900 places for sows.

### 4. Energy industry

(a) Mineral oil and gas refineries;
(b) Installations for gasification and liquefaction;
(c) Combustion installations with a rated thermal input exceeding 50 MW;
(d) Surface storage of fossil fuels with 100,000 tons or more;
(e) Hydroelectric power station with 20 MW or more capacity.

[1] Based on relevant EU Directives (e.g. Integrated Pollution Prevention and Control, Seveso II) and international environmental conventions (e.g. the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), the UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)).

## 5. Extractive industry

(a) Extraction of petroleum and natural gas for commercial purposes where the amount extracted exceeds 500 tons per day in the case of petroleum, and 500,000 $m^3$ per day in the case of gas;

(b) Open quarry and coal mine with 25 ha or more mining site, or extraction of peat with 150 ha or more mining site;

(c) Extraction of mineral resources with dredger;

(d) Tailing ponds.

## 6. Production and processing of metals

(a) Installations for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes;

(b) Installations for the production of pig iron or steel (primary or secondary fusion), including continuous casting, with a capacity exceeding 2.5 tons per hour;

(c) Hot-rolling mills with a capacity exceeding 20 tons of crude steel per hour;

(d) Application of protective fused metal coats with an input exceeding 2 tons of crude steel per hour;

(e) Ferrous metal foundries with a production capacity exceeding 20 tons per day;

(f) For the smelting, including the alloying, of non-ferrous metals, including recovered products (refining, foundry casting, etc.), with a melting capacity exceeding 4 tons per day for lead and cadmium or 20 tons per day for all other metals;

(g) Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 $m^3$;

(h) Metal ore (including sulphide ore) roasting or sintering installations.

## 7. Mineral industry

(a) Installations for the extraction of asbestos and for the processing and transformation of asbestos and products containing asbestos; for asbestos-cement products, with an annual production of more than 20 000 tons of finished products; for friction material, with an annual production of more than 50 tons of finished products; and for other uses of asbestos, with the utilization of more than 200 tons per year.

(b) Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tons per day or lime in rotary kilns with a production capacity exceeding 50 tons per day or in other furnaces with a production capacity exceeding 50 tons per day;

(c) Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tons per day;

(d) Installations for melting mineral substances including the production of mineral fibres with a melting capacity exceeding 20 tons per day;

(e) Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tons per day, and/or with a kiln capacity exceeding 4 $m^3$ and with a setting density per kiln exceeding 300 $kg/m^3$.

**8. Chemical industry**

(a) Chemical installations for the production of basic organic chemicals, such as:

(i) Simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic);
(ii) Oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins;
(iii) Sulphurous hydrocarbons;
(iv) Nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds or nitrate compounds, nitrites, cyanates and isocyanates;
(v) Phosphorus-containing hydrocarbons
(vi) Halogenic hydrocarbons;
(vii) Organometallic compounds;
(viii) Basic plastic materials (polymers, synthetic fibres and cellulose-based fibres);
(ix) Synthetic rubbers;
(x) Dyes and pigments;
(xi) Surface-active agents and surfactants.

(b) Chemical installations for the production of basic inorganic chemicals, such as:

(i) Gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride;
(ii) Acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids;
(iii) Bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide;
(iv) Salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate;
(v) Non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide.

(c) Chemical installations for the production of phosphorous-, nitrogen- or potassium-based fertilizers (simple or compound fertilizers) with 20,000 tons/year/product or more;

(d) Chemical installations for the production of basic plant health products and of biocides;

(e) Installations using a chemical or biological process for the production of basic pharmaceutical products;

(f) Chemical installations for the production of explosives;

(g) Treatment of intermediate products and production of chemicals;

(h) Installations for the storage of petroleum, petrochemical, or chemical products with a capacity of 200,000 tons or more;

(i) Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with a consumption capacity of more than 150 kg per hour or more than 200 tons per year;

(j) Installations for the production of carbon (hard-burnt coal) or electrographite by means of incineration or graphitization;

(k) Chemical installations in which chemical or biological processing are used for the production of protein feed additives, ferments and other protein substances.

**9. Food industry**

(a) Vegetable raw materials with a finished product production capacity greater than 300 tons per day;

(b) Treatment and processing of milk, the quantity of milk received being greater than 200 tons per day (average value on an annual basis);

(c) Slaughterhouses with a carcass production capacity greater than 50 tons per day;

(d) Animal raw materials (other than milk) with a finished product production capacity greater than 75 tons per day;

**10. Textile, leather, wood and paper industries**

(a) Industrial plants for the production of:

(ii) Pulp from timber or other fibrous materials;

(iii) Paper and board with a production capacity exceeding 20 tons per day;

(iv) Plants for the pre-treatment (operations such as washing, bleaching, mercerization) or dyeing of fibres or textiles where the treatment capacity exceeds 10 tons per day;

(v) Plants for the tanning of hides and skins where the treatment capacity exceeds 12 tons of finished products per day.

**11. Infrastructure projects**

(a) Inland waterways and ports for waterway traffic which permit the passage of vessels of over 1,350 tons;

(b) Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1,350 tons;

(c) Groundwater abstraction or artificial groundwater recharge schemes where the annual volume of water abstracted or recharged is equivalent to or exceeds 10 million $m^3$;

(d) Works for the transfer of water resources between river basins where this transfer aims at preventing possible shortages of water and where the amount of water transferred exceeds 100 million $m^3$ per year;

(e) In all other cases, works for the transfer of water resources between river basins where the multiannual average flow of the basin of abstraction exceeds 2,000 million $m^3$ per year and where the amount of water transferred exceeds 5 per cent of this flow. In both cases, transfers of piped drinking water are excluded;

(f) Dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million $m^3$;

(g) Pipelines for the transport of gas, oil or chemicals with a diameter of more than 800 mm and a length of more than 40 km.

**12. Potential dangerous activities would counted as dangerous if the following perilous substances are more than the given limit (on the basis of the Seveso II Directive (96/82/EC))**

| **Dangerous substance** | **Limit (in tons)** |
|---|---|
| Ammonium nitrate | 2,500 |
| Ammonium nitrate | 5,000 |
| Arsenic pentoxide, arsenic (V) acid and/or salts | 2 |
| Arsenic trioxide, arsenic (III) acid and/or salts | 0.1 |
| Bromine/bromide | 100 |
| Clorine/chloride | 25 |
| Compounds of nickel (nickel monoxide, nickel dioxide, nickel sulfide, trinickel disulfide, dinickel trioxide) | 1 |
| Ethylenimine | 20 |
| Fluorine/fluoride | 20 |
| Formaldehyde (cc ≥ 90%) | 50 |
| Hydrogen | 50 |
| Hydrochloric acid (liquid) | 250 |
| Lead alkylates | 50 |
| highly inflammable liquid gas (containing liquid hydrocarbon gases) and natural gas | 200 |
| Acetylene | 50 |
| Ethylene oxide | 50 |
| Propylene oxide | 50 |
| Methanol | 5,000 |
| 4,4-Methylene-bis (2-chlorine aniline) and/or salts | 0,01 |
| Methylisocyanate | 0.15 |
| Toluoldisocyanate | 100 |
| Carbonyldichloride | 0.75 |
| Arsenic trihydride (arsine) | 1 |
| Phosphorus trihydride (phosphine) | 1 |
| Sulphur dichloride | 1 |
| Sulphur trioxide | 75 |
| Polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) | 0.001 |
| 4-aminobiphenyl and/or salts, benzidine and/or salts, bis (chloromethyl) ether, chloromethyl ether, dimethyl carbonyl chloride, dimethyl nitrosamine, hexamethyl phosphotriamide, naphthylamine and/or salts and 1,3 propane sultone, 4 nitro diphenyl | 0.001 |
| Petrol | 50,000 |

## Appendix III

## SAMPLE LIST OF PROPOSED CONTENT OF HARMONIZED TRANSBOUNDARY ACCIDENTAL POLLUTION PREVENTION AND RESPONSE PLAN

### A. Objective and scope of the pollution prevention and response plan

### B. Definitions

**1. General characteristics of the watershed**

(a) Geography and morphology;
(b) Geology;
(c) Protected natural areas;
(d) Population and economical activities in the watershed;
(e) Flood control;
(f) Pumping stations and flow control.

**2. Characteristic of surface waters**

(a) Hydrogeology;
(b) Quality of groundwater;
(c) Vulnerability classification of groundwater.

**3. Characteristic of surface waters**

(a) Rivers, lakes, reservoirs;
(b) Quality of surface water;
(c) Protection of surface water.

**4. Use of water resources in the watershed**

(a) Use of surface water resources;
(b) Use of groundwater;
(c) Industry;
(d) Agriculture;
(e) Other.

**5. Potential pollution sources**

(a) Criteria and methods used for the identification and prioritization of potential pollution sources;
(b) Inventory of potential industrial pollution sources;
(c) List and characteristics of plants having pollution prevention plans and other potential industrial pollution sources (plants having environmental permits, etc.)
(d) List of substances potentially involved;
(e) Description of possible potential accidents.

**6. Historical experiences of earlier accidental pollution**

(a) List of accidents and lessons learned.

**7. Response to accidental pollution**

(a) Legal requirements applicable to potential polluters;
(b) Enforcement and control.

**7.1. General tasks in response to accidental pollution**

(a) Identification of the accident;
(b) Alarm, warning and reporting;
(c) Assessment of impacts;
(d) Identifying the source of pollution;
(e) Communication;
(f) Monitoring of water quality;
(g) Organization and implementation of response and mitigation actions;
(h) Investigations and sanctions.

**7.2. Organization for response and mitigation**

(a) Response organization;
(b) List of available staff for accidental pollution response;
(c) Levels of alarm and associated warning procedures:
    (i) Procedure, responsibilities;
    (ii) Alarm thresholds;
    (iii) Communication forms;

(d) Communication and cooperation:
    (i) Include communication schemes with key telephone numbers;
    (ii) Communication procedures and standard forms for example for warning, information request, alarm over, etc.;

(e) Cooperation with other experts:
    (i) Include, for example, the list of experts or expert organizations in different fields, with contact information;

(f) Available response materials and equipment;

(g) Response materials and equipment;

(h) List, with indication of the location and map of own material;

(i) List of additional material possibly available from third parties (e.g. other response organizations or industry) and indication of contact persons;

(j) Other infrastructure for mitigation and response.

**7.3. Mitigation and response procedures for different pollution scenarios**

**7.4. Safety and protection of the response staff**

**8. Post-response actions**

(a) Investigation of the causes and effects;

(b) Liability;

(c) Lessons learned;

(d) Remediation methods;

(e) Improvement of prevention, updating and improvement of the pollution prevention and response plan.

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