Annex I of the Convention and its application for the identification of hazardous activities

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Convention on the Transboundary Effects of Industrial Accidents

17.03.1992 adopted

19.04.2000 entered into force

The Convention lays down a set of measures to protect human beings and the environment against the effects of industrial accidents, and to promote active international cooperation between the contracting parties before, during and after such accidents.

Art.2
Convention

This Convention shall apply to the prevention of, preparedness for and response to industrial accidents capable of causing transboundary effects, including the effects of such accidents caused by natural disasters, and to international cooperation concerning mutual assistance, research and development, exchange of information and exchange of technology in the area of prevention of, preparedness for and response to industrial accidents.

Hazardous Substances
Convention

Article 1 DEFINITIONS

.....

(b) "Hazardous activity" means any activity in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in Annex I hereto, and which is capable of causing transboundary effects;

.....

Results

Conference of the Parties

to the Conventionon the Transboudary Effects of Industrial Accidents

Fourth meeting

Rome, 15–17 November 2006

Review of Annex I to the Convention and its Amendment

Hazardous substances when an where

Industrial accident means an event ….. in an installation, for example during manufacture, use, storage, handling, or disposal, or during transportation ….. (Convention – Art.1)

For the identification of hazardous activities, Parties shall take into consideration the foreseeable possibility of aggravation of the hazards involved and the quantities of the hazardous substances and their proximity, whether under the charge of one or more operators.

Annex I (Part I)

Category	*Threshold Quantity (metric tons)*	
	new	**old**
1. Flammable[2]	50,000	50,000
2a. Highly flammable [3(a) and (b)]	200	200
2b. Highly flammable [3(c)]	50,000	
3. Extremely flammable [4]	50	200 (gases)
4. Toxic [5]	200	500-200
5. Very toxic [6]	20	
6. Oxidizing [7]	200	500-200
7a. Explosive, where the substance, preparation or article falls under Division 1.4 of the GHS criteria [8]	200	200-50
7b. Explosive, where the substance, preparation or article falls under Division 1.1,1.2, 1.3, 1.5 or 1.6 of the GHS criteria [8]	50	
8a. Dangerous for the environment "Toxic to aquatic organisms" [9]	500	
8b. Dangerous to the environment "Very toxic to aquatic organisms" [10]	200	200

Annex I (Part II)

Substance	*Threshold Quantity (metric tons)*	
	new	**old**
Ammonia		500
1a. Ammonium nitrate[11]	10,000	
1b. Ammonium nitrate[12]	5,000	
1c. Ammonium nitrate[13]	2,500	
1d. Ammonium nitrate[14]	50	
2a. Potassium nitrate[15]	10,000	
2b. Potassium nitrate[16]	5,000	
Acrylonitrile		25
3. Chlorine	25	25
4. Ethylene oxide	50	50
Hydrogen fluoride		50
Hydrogen sulphide		50
Sulphur dioxide		250

Annex I (Part II)

Substance	*Threshold Quantity (metric tons)*	
	new	**old**
5. Hydrogen	50	
6. Toluene diisocyanate	100	
7. Sulphur trioxide	75	75
8. Lead alkyls	50	50
9. Phosgene	0.75	0,75
10. Methyl isocyanate	0.15	0,15
11. Liquefied extremely flammable gases (including LPG) and natural gas	200	
12. Petroleum products: gasolines and naphthas; kerosenes (including jet fuels); gas oils (including diesel fuels, home heating oils and gas oil blending streams)	25,000	

Identification of hazardous activities using Annex I

Background Information

- **Company X**

Substance	CAS No	Amount (tonn)
Chlorine	7782-50-5	15
N,N-dimethyl-toluidine, 28%	99-97-8	50
Propylene -imine, 6%	75-55-8	50
Propane, gaseous	74-98-6	50
Isobutane, gaseous	75-28-5	100
Heptane	142-82-5	200

Classification of Substances

- Checking available data
  - Safety data sheet
  - Information systems
- Comparing against hazard criteria
  - National classification of chemicals
  - Annex I entries
    - Named substances
    - Endpoints for categories of substances and preparations
    - Concentration limits for preparations
- Comparing against threshold quantities
  - For the different Part I generic entries
  - Add all substances with the same properties

Classification of Substances

Substance	CAS No	Amount	Classification
Chlorine	7782-50-5	20	Named substance
N,N-dimethyl-toluidine, 0,75%	99-97-8	85	Not classified
Propylene imine, 5%	75-55-8	50	Toxic
Propane	74-98-6	50	Extremely flammable
Isobutane	75-28-5	100	Extremely flammable
Heptane	142-82-5	200	Dangerous for the environment, Highly flammable 2b

Classification of the hazardous activity (1)

- Toxic and very toxic substances
  - A - Propylene imine – above the concentration limits – 50 tonnes on site
  - B - Chlorine – 15 tonnes on site
  - C - N,N-dimethyl-toluidine – below the concentration limits – not classified
  - (A) 200 tonnes threshold, (B) BUT 25 tonnes for Chlorine
  - **Addition of the quantities**
  - 50/200 + 15/25 = 0.85 < 1
  - **The establishment does not qualify as a hazardous activity based on the toxic substances onsite**

Classification of the hazardous activity (2)

- Flammable, explosive and oxidising substances
  - Propane - Extremely flammable gas – 50 tonnes
  - Isobutane - Extremely flammable gas – 100 tonnes
    - Threshold – 50 tonnes
  - Heptane - Highly flammable liquid (2b) – 200 tonnes
    - Threshold – 50 000 tonnes
  - **Addition of the quantities**
    - 50/50 + 100/50 + 200/50000 = 3.004
  - **The establishment does qualify as a hazardous activity**

Transboundary effects are regional effects

- **The relevant articles do not intend to regulate global and trans-European environmental effects such as global warming and acidification.**
- **Only environmental effects which have a regional impact, like air quality and surface water pollution can be considered to be transboundary effects.**

The “effects”

Convention – Art.2: ….. industrial accidents capable of causing transboundary effects, …..
Convention – Art.1: ….. “Effects” means any direct or indirect, immediate or delayed adverse consequences caused by an industrial accident …..

A decision has to be made how big an increase of air or water pollution is considered significant enough to be considered to have “effects”.

Location criteria (I)

Within 15 kilometres from the border, for activities involving substances that may cause a fire or explosion or involving toxic substances that may be released into the air in the event of an accident.

Along or within catchment areas of transboundary and border rivers, transboundary or international lakes, or within the catchment areas of transboundary groundwaters, for activities involving substances that fall under category 3, 4, 5 or 8 of Part I of Annex I to the Convention….

Location criteria (water)

Whether or not such an activity is capable of causing a transboundary effect in such an event should be decided by the competent authority of the Party of origin, preferably in consultation with joint bodies. The decision should depend, among other things, on the existence of river warning and alarm systems and the distance between the location of the hazardous activity and the border

Location criteria (water)

A catchment area of a transboundary river or lake is defined as the whole drainage area of this river or lake with a common outlet

Joint body means any bilateral or multilateral commission or other appropriate institutional arrangements for cooperation between Riparian Parties

The joint ad hoc expert group on water and industrial accidents recommended that this distance should correspond to approximately a flowing period of two days of average flow velocity

Methodology for determining the presence of transboundary effects

A good assessment of the possible environmental effects is required. A methodology for assessing transboundary effects should consist of the use of dispersion models as a test of environmental significance. Based on the data gathered from the assessment, the question whether the activity has transboundary effects can be answered quite easily.

Dispersion models

- **Dispersion of pollutants in surface water can be quite easily calculated.**
- **The calculation of dispersion of pollutants into the air is a different matter.**
- **In recent years several high-quality dispersion models of air pollution have been developed.**

Using worst case scenarios Case Study

Background information

- Chemical plant
- 50 tonnes of chlorine
  - 2 tanks x 15 tonnes
  - 1 production line containing ~20 tonnes
- 2 km from the border

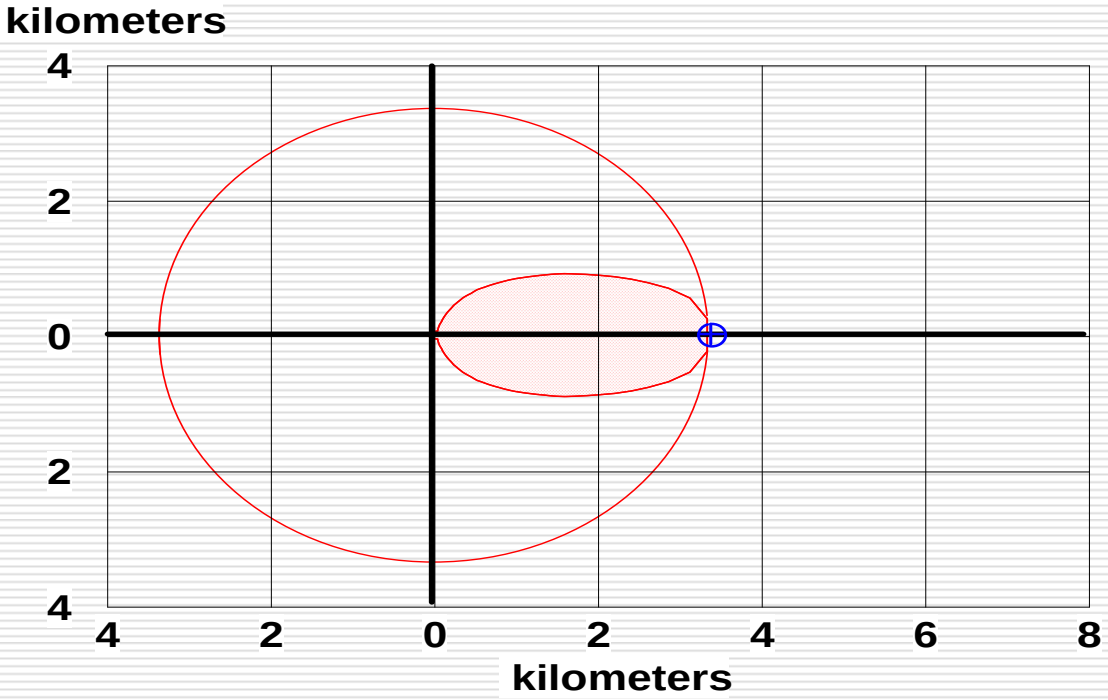
Questions

- What do you consider worst case scenario
  - (low probability-high consequences outcomes with the maximum negative consequences)
- What is the quantity of the chemical involved
- Do you consider it definitely uncapable of transboundary accident

Modeling results

- Standard distances table ~ 1200 m
- RMP*Comp – over 5 km
- ALOHA – 3,3 km

ALOHA modelling



>= 50 ppm

Confidence Lines

Developing worst case scenario

- **Select a scenario**
  - release of the largest amount in a single largest vessel – 20 tonnes of chlorine
  - Consider short release (10 ~ 15 mins)
- **Determine the distance to the endpoint**
  - Using standard distances table
  - Using modelling software
    - Aloha
    - RMP Comp
- **Determine transboundary potential**
  - 2 km from the border
  - Consequences across the border cannot be excluded

The establishment is a hazardous activity

Article 4

IDENTIFICATION, CONSULTATION AND ADVICE

3. The Parties shall, with respect to proposed or existing hazardous activities, apply the procedures se tout in Annex III hereto.

Communication between States

- **The communication between the Country and its neighbouring Countries should take place as early as possible.**

- **It is preferable to have discussions on an informal level before the official notification to the neighbouring country of transboundary environmental effects is given.**

- **MoEFWA will arrange with the Ministry of Foreign Affairs for contacts to be made with the affected Member State(s).**