The Convention on the Transboundary Effects of Industrial Accidents and its implementation - The case of Switzerland

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Loss Prevention, Freiburg, 8 June 2016
... the Sandoz accident

1986 Schweizerhalle

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... the birth of the major accident ordinance in Switzerland ...
Ordinance on Major Accidents – The Swiss approach

Industrial Accident Convention – The International approach

Transboundary cooperation
The Swiss approach
Scope of application

2’400 Chemical establishments
3’600 km railway lines

7’800 km main roads
2’500 km gas and oil pipelines
The Swiss approach

Threshold quantities

<table>
<thead>
<tr>
<th>Classification</th>
<th>TQ(^1) kg CH</th>
<th>TQ(^2) kg Convention</th>
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</thead>
<tbody>
<tr>
<td>Very toxic</td>
<td>200</td>
<td>200’000</td>
</tr>
<tr>
<td>Toxic</td>
<td>2’000</td>
<td>200’000</td>
</tr>
<tr>
<td>Extremely flammable</td>
<td>20’000</td>
<td>50’000</td>
</tr>
<tr>
<td>Very toxic to aquatic organisms</td>
<td>2’000</td>
<td>200’000</td>
</tr>
</tbody>
</table>

1) Threshold Quantities in Switzerland
2) Threshold Quantities in Annex I of the Convention
The Swiss approach

Two step procedure

Step 1
Hazard potential
Summary report
Worst case scenarios

Step 2
Risk study
The Swiss approach

Risk study

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Evaluation criteria

The Swiss approach to evaluation criteria is illustrated with a graph. The x-axis represents fatalities ranging from 0 to 1000, and the y-axis represents probability of occurrence ranging from $10^{-11}$ to $10^4$. The graph is divided into four regions:

1. **No risk study** region, where the probability of occurrence is low and fatalities are minimal.
2. **Transition region** where the probability of occurrence is moderate and fatalities are relatively low.
3. **Acceptable risk** region, where the probability of occurrence is still moderate but fatalities are under control.
4. **Not acceptable risk** region, where the probability of occurrence is high and fatalities are significant.

The graph helps in visualizing the critical thresholds for acceptable risk and the need for action to prevent accidents.
The Swiss approach

*Difference between the deterministic and the probabilistic approach*

Prof. Dr. P. Bützer, *Massnahmen zum Stand der Sicherheitstechnik bei hochaktiven Stoffen*, 2013

Deterministic approach: make the holes as small as possible

Probabilistic approach: Additionally close the holes on a line
The Industrial Accident Convention

Scope of application and instruments

Similarities of the Convention with the Swiss approach:
- Covers chemical establishments
- Refers to the prevention of industrial accidents including measures to reduce the risk of industrial accidents.

Differences between the Convention and the Swiss approach:
- The Convention does not cover railway lines, roads, gas or oil pipelines
- The threshold quantities according to Annex I are much higher and thus the scope of application much smaller
Art. 5 of the Convention

„Parties concerned should, at the initiative of any of them, enter into discussions on whether to treat an activity not covered by Annex I as a hazardous activity. … Whether the Parties concerned so agree, this Convention, or any part thereof, shall apply to the activity in question as if it were a hazardous activity.“
The Industrial Accident Convention

Voluntary extension, an example, release of 12.5 t of chlorine

Calculated with effects from TNO
Switzerland does normally also notify installations below the threshold quantities covered by Annex I according to article 5 and the voluntary extension, if serious transboundary damage cannot be excluded. The background of the notification are consequence calculations.
Transboundary cooperation

Notification of hazardous activities to neighbouring countries

Germany (28)

France (24)

Austria (5)

Italy (0)
Transboundary cooperation

Notification of hazardous activities

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Transboundary cooperation
Consultation with neighbouring countries

• Consultation has taken place with the neighbouring countries.

• In 2012 for example, a consultation has taken place with Austria. During the two meetings, the national and regional levels were involved in the discussions in order to determine their tasks in case of an accident.

It is important that the national and regional levels take both part to the consultation meetings, since the regional levels are responsible for the emergency and first response planning.
Transboundary cooperation
Consultation with neighbouring countries

As to the transboundary collaboration in matter of prevention and preparedness, it is worth mentioning the Agreement between the Swiss Federal Council, the Government of the Federal Republic of Germany and the Government of the French Republic on the transboundary co-operation in the Upper Rhine Area as well as the Agreement on the International Commission for the Protection of the Rhine (ICPR).
Thank you very much for your attention!