

Implementation of the Convention on the Transboundary Effects of Industrial Accidents and Seveso II Directive in the Czech Republic

**Shortcomings and limitations in major hazard prevention
prior to and by implementing an integrated approach**

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- **Legislative development**
- **APELL principles implementation**
- **International Commission for the Protection of the Elbe River**
- **Integrated approach through data mining for emergency planning and response in major hazard prevention**
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Legislative development

OECD (1988): *"Decision-Recommendation of the Council Concerning Provision of Information to the Public and Public Participation in Decision-Making Processes Related to the Prevention of, and response to, accidents involving Hazardous Substances"*

International Labour Organization (1990): *Convention Concerning Safety in the Chemicals at Work*

Helsinki (1992): *Convention on the Transboundary Effects of Industrial Accidents*

Aarhus Convention (1998): *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*

Directive 96/82/EC - SEVESO II (1996): *Council Directive on the Control of Major Accident Hazards Involving Dangerous Substances*

Legislative development

- **CTEIA is transposed by the Coll. of the Int. Pacts No. 58/2002 on the effects of industrial accidents which overrun state boundaries (entered into force on 10th September 2000).**
- **Act No. 59/2006 Coll., on the major accident prevention (in compliance with Seveso II Directive)**
- **Others (such as special Act No. 240/2000 Coll., on crisis management)**

Legislative development

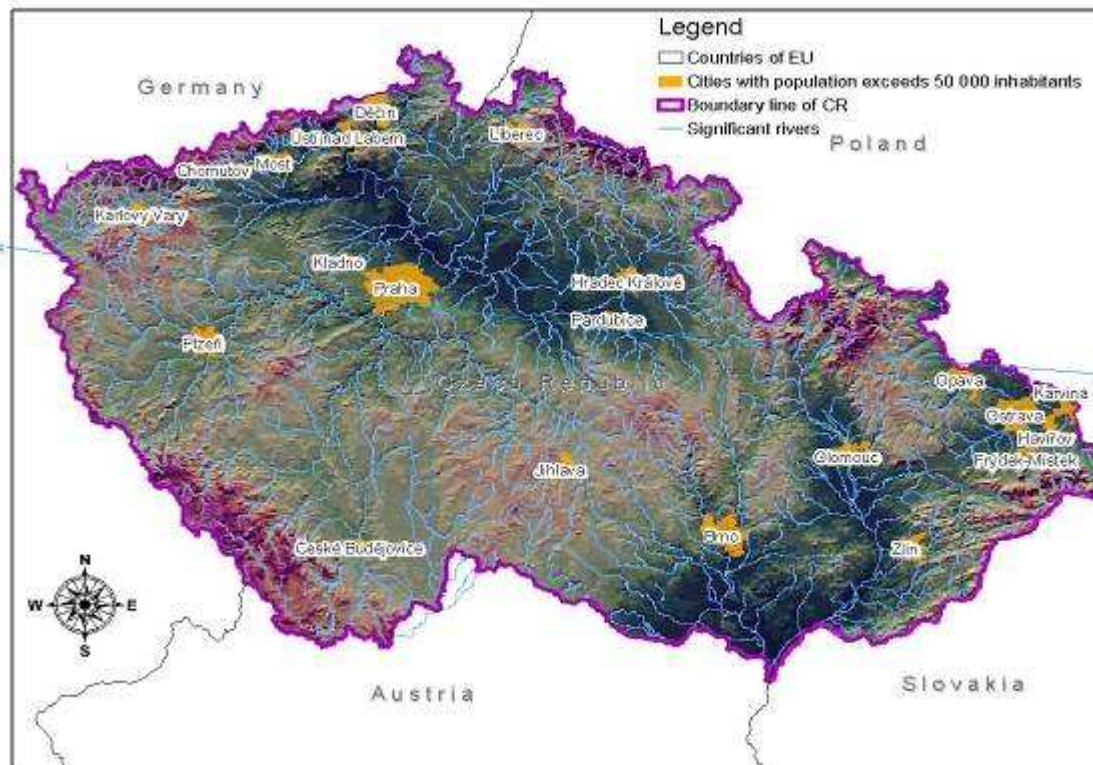
- **Special Czech Act No. 383/2000 Coll. gives the rules for development of external emergency planning in the case of a hazardous facility, which is classified as B.**
- **Border of zone of external emergency planning is generated by a circle with radius $2 \cdot R$ (R depends on the classification of chemicals).**

Notice: R is calculated in compliance with the risk analysis screening method IAEA-TECDOC-727. In special cases another risk analysis method or procedure could be chosen (usually it is highly recommended).

Goals of the Convention

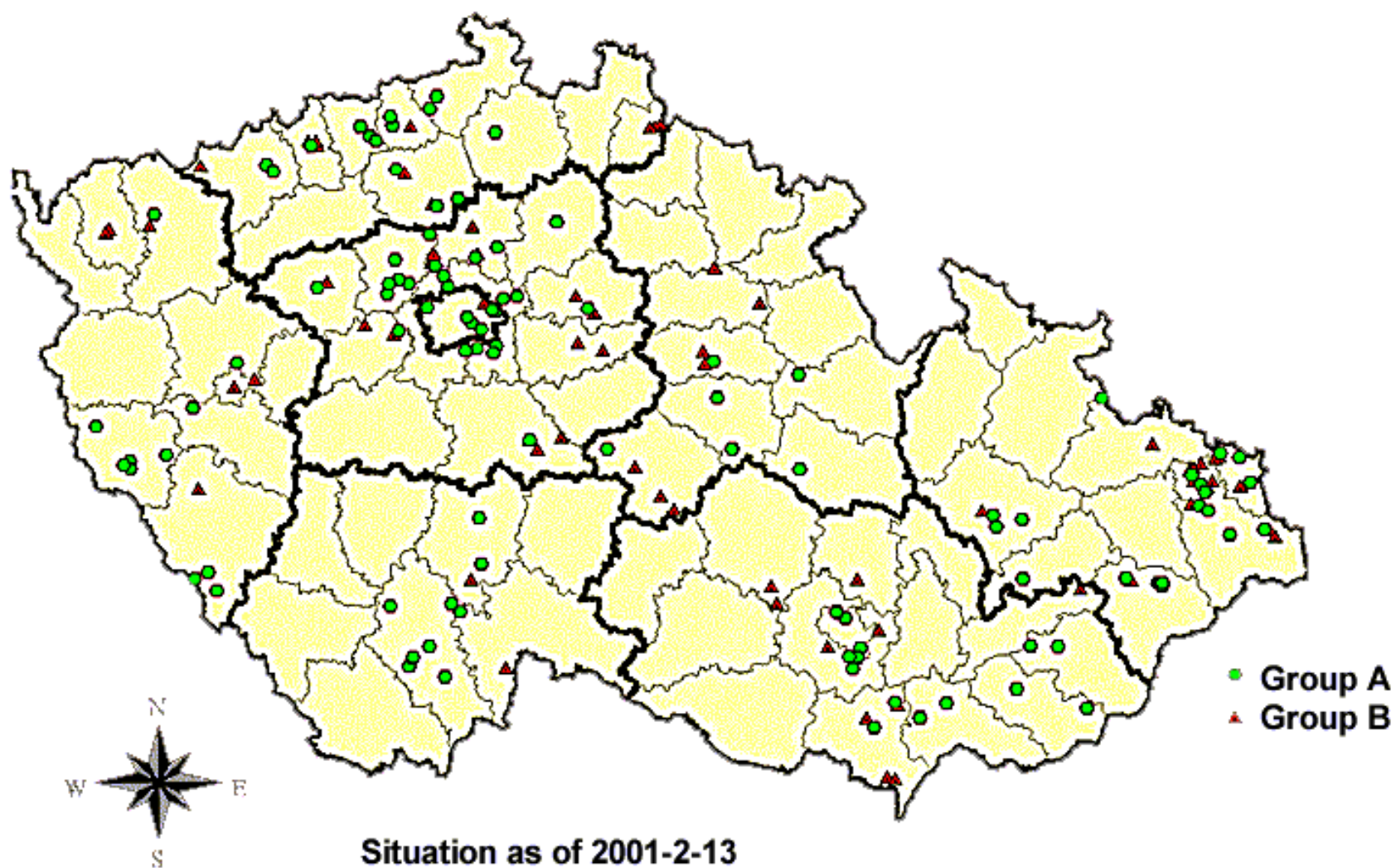
- **Protection of people and environment**
- **Major accident prevention and reducing their potential effects**
- **Reducing the number of and relevance of industrial accidents**
- **Reducing risks**

There exist valid bilateral agreements on cooperation and reciprocal support in major accident and disaster cases between the Czech Republic and its neighbouring states:



Poland
Austria
Slovakia
Germany
Hungary

Facilities territorial distribution according to Major accident prevention act no. 353/1999



APELL PROCESS IN CZECH REPUBLIC



AWARENESS AND PREPAREDNESS FOR EMERGENCIES AT LOCAL LEVEL

APELL PROCESS IN CZECH REPUBLIC

History of APELL in the Czech Republic

Early 90's – first introduction of APELL principles in the Czech Republic

Research Institute of Occupational Health and Safety (VUBP) as national contact point

Ministry of Environment playing a key promoting role

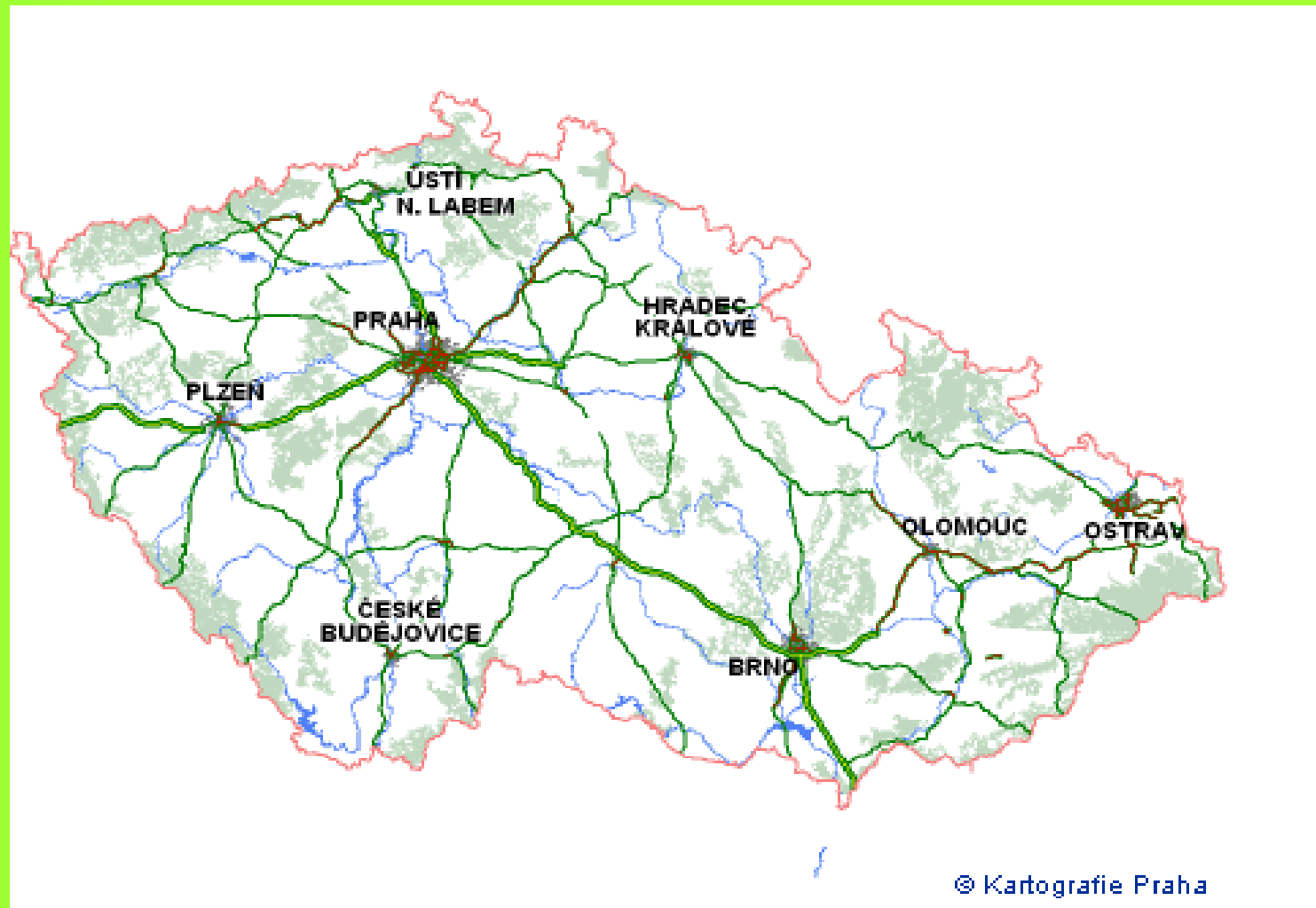
Year 2000 – SEVESO II Directive implemented into Czech legislation as Act No. 353/99 Coll.

APELL PROCESS IN CZECH REPUBLIC

APELL principles implementation

- **Searching for a case studies**
- **Storage of fuels by CEPRO at Loukov was chosen**
- **Original situation: nearly no information exchanged or existing cooperation**
- **Goal: establish cooperation, information exchange and build the mutual confidence of all partners**

APELL PROCESS IN CZECH REPUBLIC

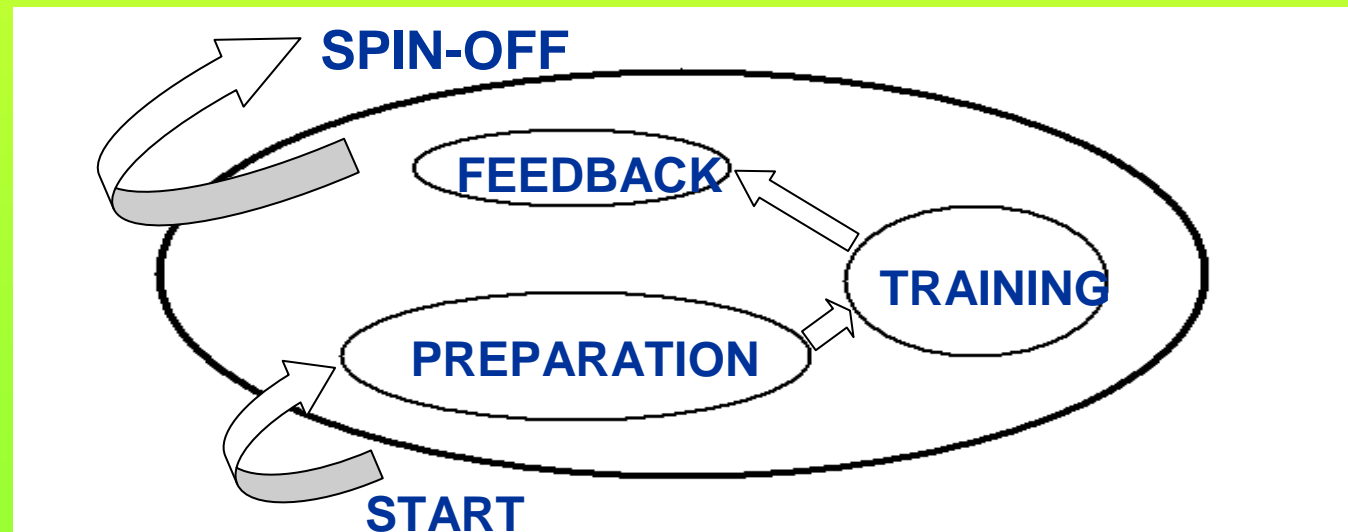


THE GEOGRAPHICAL SITUATION OF LOUKOV AND OSÍČKO

APELL PROCESS IN CZECH REPUBLIC

THE PROCESS

- 1. PREPARATORY STAGE**
- 2. EMERGENCY RESPONSE TRAINING**
- 3. EVALUATION AND FEEDBACK**
- 4. SPIN-OFF AND DISSEMINATION**



APELL PROCESS IN CZECH REPUBLIC

THE PREPARATION STAGE

- **UNDERSTAND LEGISLATIVE AND SOCIETAL CONTEXT**
- **IDENTIFICATE AND MOTIVATE PARTICIPANTS**
- **CONDUCT PUBLIC OPINION RESEARCH IN TWO COMMUNITIES (Loukov, Osicko), INCLUDED SCHOOL CHILDREN**
- **RESULTS:**

63% of people are interested in installation risks

67% have little or no information about risks

74% feel they have little or no information on how to react in case of an accident

APELL PROCESS IN CZECH REPUBLIC

IDENTIFICATION OF PARTICIPANTS



APELL PROCESS IN CZECH REPUBLIC

METHODS OF IMPLEMENTATION

- 1. Participants contacted**
- 2. Open information about APELL**
- 3. Started communication**

- **ČEPRO a.s.**

- **problems of communication between the company and municipalities**
- **preparing the emergency response training**

- **MUNICIPALITIES OSÍČKO, LOUKOV**

- **assess the problems with communication between the company and villages**
- **assisted organisers with communication strategy (especially with questionnaires)**

APELL PROCESS IN CZECH REPUBLIC

INFORMATIONAL LEAFLET TO EACH FAMILY

<h3>ČINNOST SPOLEČNOSTI ČEPRO a.s.</h3> <p>Hlavní činnost je skladování, příjem a výdej pohonných hmot. Jsou zde skladovány také různé rezervy. Hmotnost až 75% celkové skladovací kapacity.</p>	<h3>NEBEZPEČNÉ LÁTKY</h3> <h4>NAFTA</h4> <p>Pro bezpečnost naplnění a při manipulaci musí být zařízeny podle návodu na bezpečnou manipulaci. Je škodlivé pro životní prostředí (voda, půda).</p> <p> OPATŘENÍ</p> <p> OPATŘENÍ</p>	<h3>O VZNIKU HAVÁRIE JE OBYVATELSTVO INFORMOVÁNO</h3> <p>SIRENOU - z ústředí skladu společnosti ČEPRO a.s. - z Číslicového úřadu</p> <p>VLÍŠINJÍM ROZHLASEM - prostřednictvím Českého rozhlasu INFORMAČNÍM VÝROVNÍM SYSTÉMEM - prostřednictvím Osobního úřadu od října 2009</p> <p>Dle vyhlášky č. 136/2009 Sb. (o ochraně před riziky z havárií) musí být obyvatelstvo informováno o vzniku havárie a o opatřeních, která musí být přijata.</p> <h3>POKUD DOJDE K HAVÁRII:</h3> <ul style="list-style-type: none"> - Pokud je havárie poskytnuta první pomoc, zavolat 112 - Pokud je v blízkosti havárie, zavolat 112 nebo 155 - Pokud je v blízkosti havárie, zavolat 112 nebo 155
<h3>JAK JSOU POHONNÉ HMOTY SKLADOVÁNY</h3> <p>Benzín a nafta jsou skladovány v podzemních a nadzemních nádobách. Celková skladovací kapacita je max. 150 000 m³.</p>  <p>Přiém a výdej pohonných hmot se provádí prostřednictvím vodorovných, svislých a nakloněných potrubí.</p> 	<h3>BENZIN</h3> <p>Hmotnost až 75% celkové skladovací kapacity. Je škodlivé pro životní prostředí (voda, půda).</p> <p> OPATŘENÍ</p> <p> OPATŘENÍ</p> <p>OZNAČENÍ</p> <p>OZNAČENÍ</p>	<h3>ZPOZORUJETE-LI HAVÁRII MIMO AREÁL SKLADU:</h3> <p>Napředem jsou sdělovány o havárii na telefonní lince 112 nebo 155.</p> <p>Jestliže havárie na produktivitu, zavolat "záchrannou linku" 800 103 216.</p> <p>Do telefonu zavolat:</p> <ul style="list-style-type: none"> - kde je havárie - o jakou havárie se jedná - jaká je situace - jaká je situace
<h3>BEZPEČNOSTNÍ OPATŘENÍ</h3> <p>Společnost ČEPRO a.s.</p> <ul style="list-style-type: none"> - má vlastní bezpečnostní systém - má vlastní bezpečnostní systém - má vlastní bezpečnostní systém <p>Obec:</p> <ul style="list-style-type: none"> - Obec (až do 1000 obyvatel) - informace o havárii <p>OS:</p> <ul style="list-style-type: none"> - OS (až do 1000 obyvatel) - informace o havárii <p>Bezpečnostní opatření: - vlastní bezpečnostní systém</p>	<h3>KDE MŮŽE DOJÍT K HAVÁRII ?</h3> <ul style="list-style-type: none"> - Areál společnosti ČEPRO a.s. - Produktivní - zodpovídá ČEPRO a.s. - Zákaznické - zodpovídá ČEPRO a.s. - Zákaznické - zodpovídá Česká dráha - Ostatní - zodpovídá dopravce <h3>CO SE MŮŽE STÁT ?</h3> <h4>ÚNIK NAFTY NEBO BENZINU DO ŽIVOTNÍHO PROSTŘEDÍ</h4> <h4>POŽÁR BENZINU POPŘÍPADĚ NAFTY</h4> <h4>VÝBUCH PAR BENZINU</h4>	<h3>JAKÉ JSOU NÁSLEDKY ?</h3> <p>Znečištění vod a půdy - nastává vždy, pokud dojde k úniku</p> <p>Kouř, tepelné účinky</p> <p>Tlaková vlna - nastává velmi zřídka - dosah účinků je max. 100m (rozbitá okna)</p> <p>Havárie uvnitř skladu nepřesáhne hranice areálu.</p>

APELL PROCESS IN CZECH REPUBLIC

THE EMERGENCY RESPONSE TRAINING

- Emergency response training with cooperation of CEPRO, integrated rescue system and municipalities
- Public invited to watch



APELL PROCESS IN CZECH REPUBLIC

Main result

The mutual confidence increased!





International Commission for the Protection of the Elbe River
Mezinárodní komise pro ochranu Labe
Internationale Kommission zum Schutz der Elbe

www.ikse-mkol.org



International Commission for the Protection of the Elbe River





International Commission for the Protection of the Elbe River

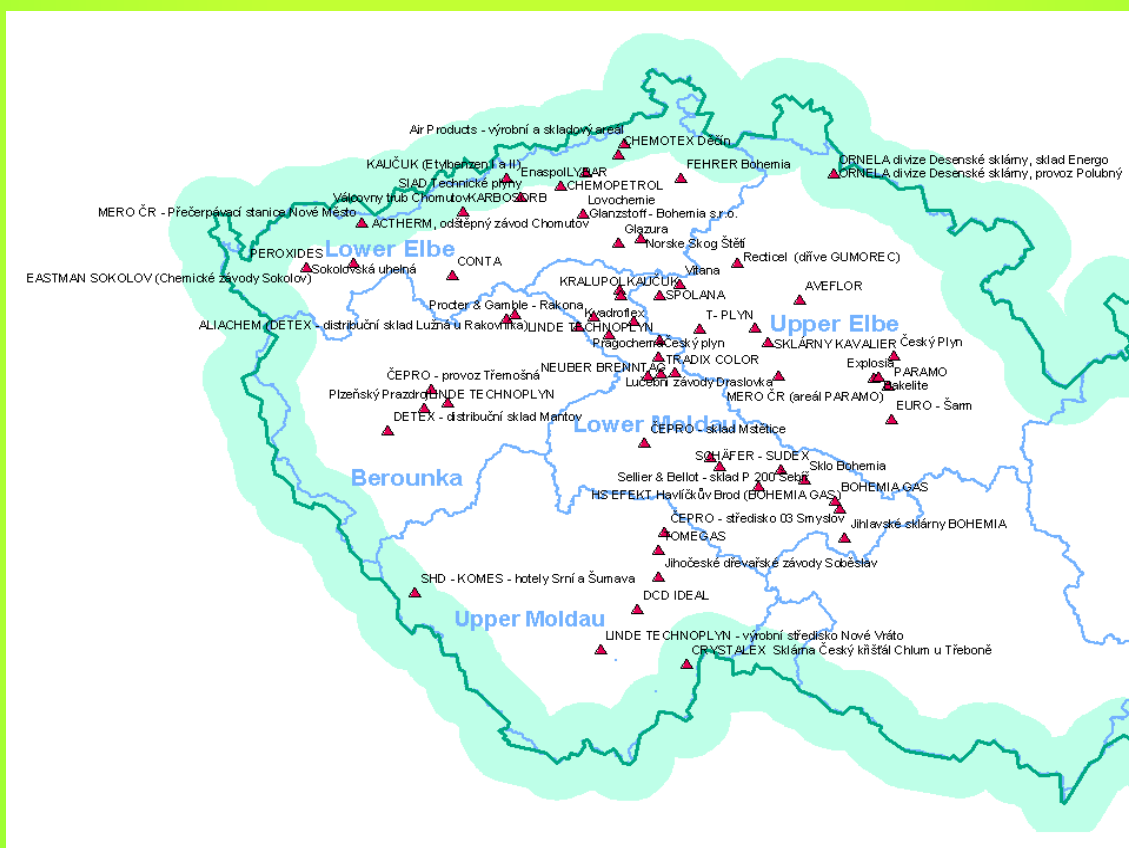
2002 Situation

- 1. End of 2002 - 146 establishments and installations**
- 2. Elbe catchment (including whole Moldau catchment) 90**
 - Lower tiers (A) – 52**
 - Upper tiers (B) – 38**
- 3. Defined segments along the river (ICPE stations)**



International Commission for the Protection of the Elbe River

Czech hazardous instalations in Elbe catchment area





International Commission for the Protection of the Elbe River

Segments along the Elbe River

D-1 Schmilka – right bank

C-1 Valy – right bank

C-2 Lysá nad Labem – left bank

C-3 Obříství – right bank

C-4 Děčín – left bank

C-5 Zelčín – left bank (Moldau)



International Commission for the Protection of the Elbe River

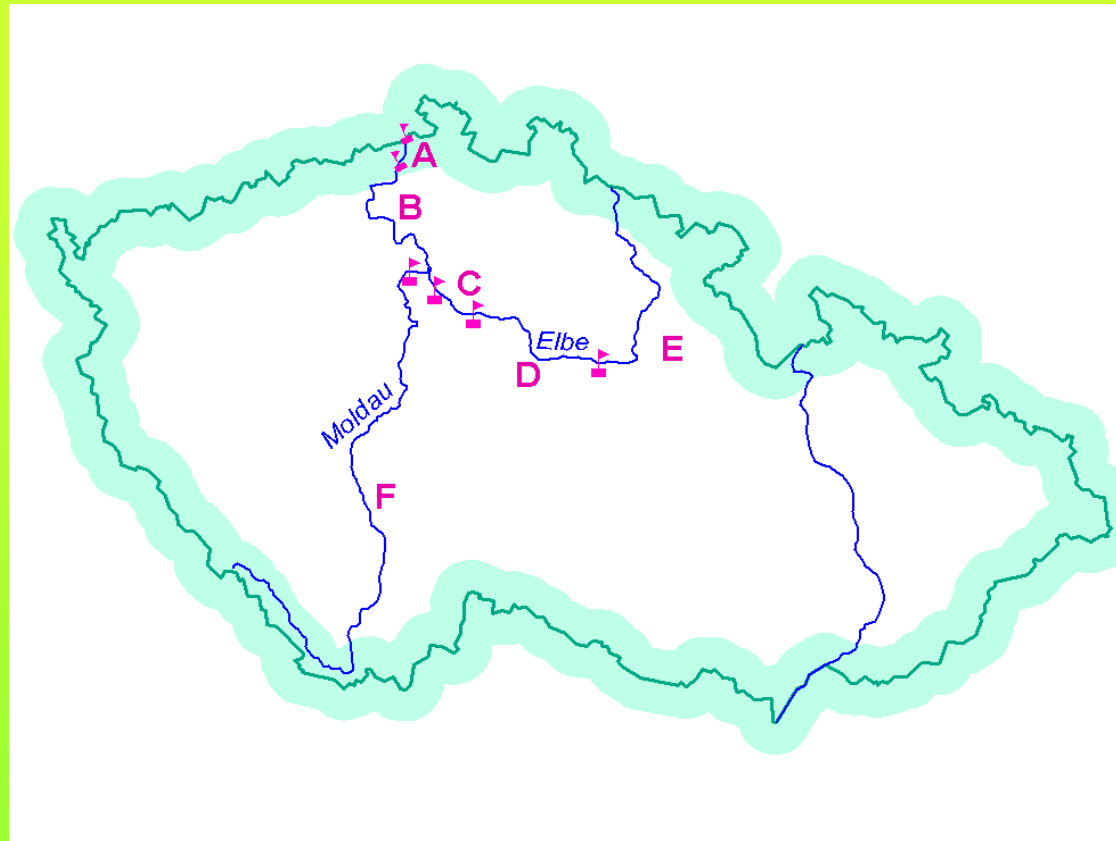
Definition of 6 segments along the Elbe and Moldau

- A - between stations Schmilka a Děčín**
- B - between stations Děčín a Obříství**
- C - between stations Obříství a Lysá nad Labem**
- D - between stations Lysá nad Labem a Valy**
- E - upstream station Valy**
- F - the Lower Moldau**



International Commission for the Protection of the Elbe River

Map of ICPE stations and defined segments

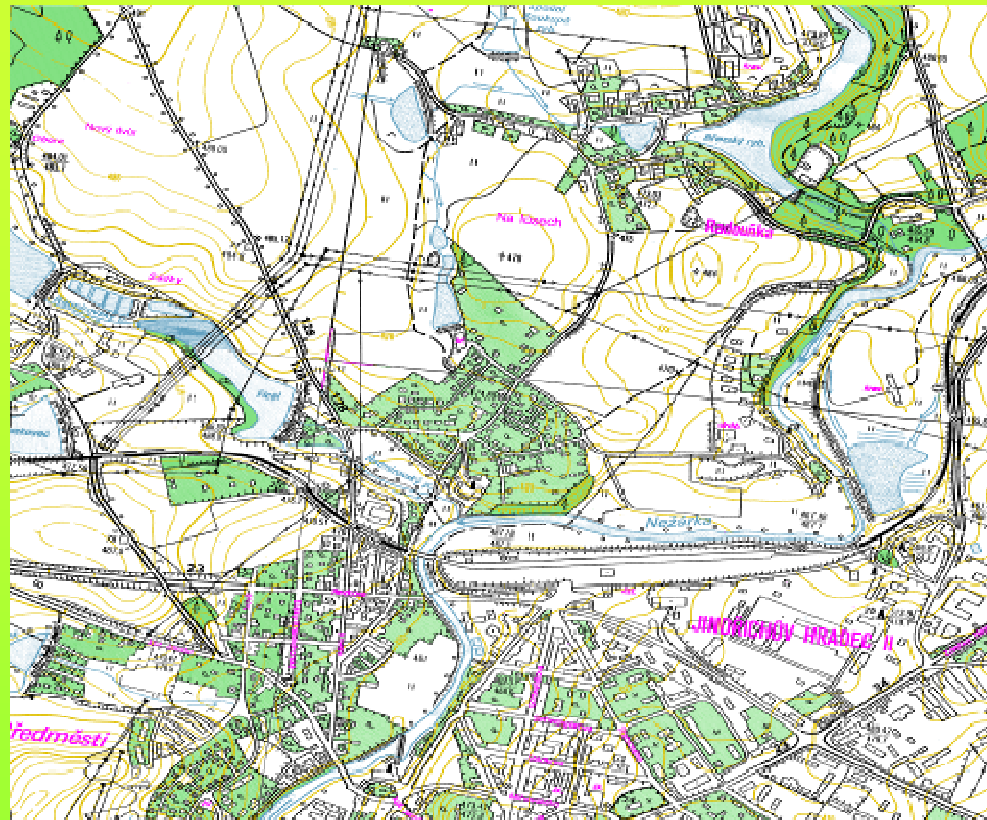


Integrated approach through data mining for emergency planning and response in major hazard prevention

Fundamental base of geographical data of the Czech Republic at a scale of 1:10000 (ZABAGED®)

- **Base paper map of the Czech Republic at 1:10000**
- **Scanning and vectorization**
- **Fundamental base of geographic data at 1:10 000**
- **Orthorectified images**
- **Improved ZABAGED® and a new Base Map of the Czech Republic at 1:10 000**

ZABAGED®



Base paper map of the Czech Republic at 1:10 000

Integrated approach through data mining for emergency planning and response in major hazard prevention

ZABAGED®

Scanning and vectorization

- Scanning of colour segments of the Base Map of the Czech Republic at 1:10 000 with resolution 1024DPI and positional accuracy 0.05 mm
- Coordinate transformation into S-JTSK (national reference coordinates system)
- Semi-automatic vectorization of the digital records regarding geographical features and their topological relationships
- Well topographically coordinated digital records of separate features

Integrated approach through data mining for emergency planning and response in major hazard prevention

ZABAGED®

Fundamental base of geographic data at 1:10 000

The digital topographic model of the territory at the level of details of the Base Map of the Czech Republic at 1:10 000

- The content is formed by 106 types of geographic objects represented by planimetric features and their corresponding descriptive and qualitative attributes
- The altimetric component is formed by a digital spatial vector set of contour lines

Integrated approach through data mining for emergency planning and response in major hazard prevention



Vector
ZABAGED®
+
Orthorectified
images (colour)

Vector
ZABAGED®

Integrated approach through data mining for emergency planning and response in major hazard prevention

Flood Hazard Mapping



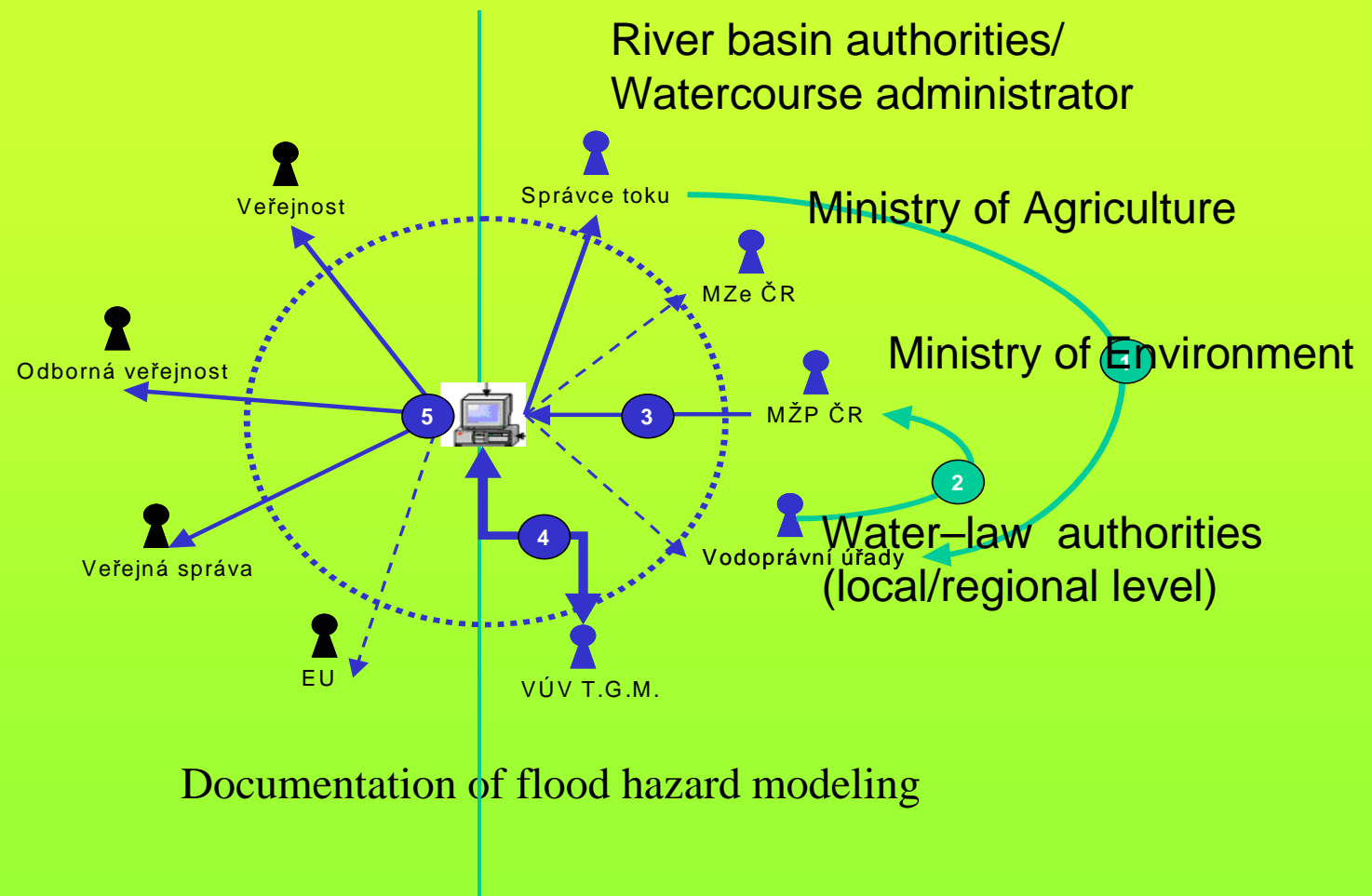
Integrated approach through data mining for emergency planning and response in major hazard prevention

National geoinformational support

- **Documentation of river basin management**
- **Catalogue of river features**
- **Water management data**
- **Digital base of water management data at 1:10 000**
- **Base water management map at a 1:50 000**
- **National database of hydro-ecological data (HEIS)**
- **Documentation of flood hazard modeling**
- **Catalogue of flood plain features**
- **Hazard mapping data**
- **Digital flood hazard data at 1:10 000**

Integrated approach through data mining for emergency planning and response in major hazard prevention

National geoinformational support



Integrated approach through data mining for emergency planning and response in major hazard prevention

Thematic maps

- **Limits of life threatening danger**
- **Limits of disablement**
- **Limits of psychological trauma**

The most relevant data

- **Limit of disablement**
- or**
- **Limit of immediate and severe health damage**

Integrated approach through data mining for emergency planning and response in major hazard prevention

Quality objectives of the zones

- **Must be:**
 - an assessment of the extent of hazardous effects
 - linked to change in adequate behaviour
- **Must:**
 - guarantee that there will be no hazards beyond the limit
 - be specific to the nature of the accident and site characteristics
- **Must not be:**
 - the limits of operational decisions
 - a prediction of fatalities
- **Must not:**
 - guarantee that there will be a hazard everywhere within the limits
 - depend on calculations if they are less reliable than experience

Integrated approach through data mining for emergency planning and response in major hazard prevention

Zone maps are relevant for

- **Fire balls**
- **Explosion**
- **Toxic releases**

Zone maps are not relevant for

- **Toxic release in water**
- **Toxic fumes**
- **Flash fires**
- **Pool fires or jet fires**

Integrated Rescue System in the Czech Republic

Crisis situations and responses

- **An accident occurred and the worst case has already happened**
 - **tactical response**
- **There is a threat of an accident**
 - **strategic response**
- **An accident occurred and the worst case has yet to happen**
 - **tactical and strategic response**

Integrated Rescue System in the Czech Republic

Crisis situations and responses

- **For prevention, mitigation and remediation of accidents consequences (and also in cases of transboundary effects)**
- **Examples in practice:**
- **bilateral training on the Austrian border took place in 2004; simulated a major accident: leak of crude oil from „Mero“ pipeline.); Integrated Rescue System (firebrigade, police, Deconta company, ambulance) participated in the action;**
- **similar action took place in 2005 on the German border.**

Integrated Rescue System in the Czech Republic

Common principles of crisis communication with the public

- Quick and clear instructions are needed before, in and after crisis situation**
- Principles of behaviour in case of an accident**
- Alarm guidance release**
- Nomination of the persons responsible for communication**
- Policy of transparent and open communication**

Integrated Rescue System in the Czech Republic

Crisis communication particulars

Crisis communication step by step in course of the crisis

- **Preventive crisis communication**
- **Communication in time of crisis**
- **Crisis communication in adaptive following phase**

Problems in crisis communication resulting from public participation in major hazard prevention

- **Diverse public expectations on the results of their participation on communication**
- **Diverse risk perception**
- **Confidence**
- **Social barriers**