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der Donau

Regional Inventory of Potential Accidental Risk Spots

**in the Tisa catchment area
of Romania, Hungary, Ukraine & Slovakia**

*Prepared by the Permanent Secretariat of the ICPDR in cooperation with
ZINKE ENVIRONMENT CONSULTING for Central and Eastern Europe, Vienna
August 2000*

Foreword

The government representatives from Romania, Hungary, Ukraine and Slovakia agreed at a Tetralateral Commission meeting held in Cluj (RO) on 23-24 May, 2000, to prepare national inventories of potential pollution sources (including their mapping) within the Tisa catchment area.

In June, the Permanent Secretariat of the International Commission for the Protection of the Danube River (ICPDR) in Vienna received the national contributions and made an evaluation producing the 1st Regional Inventory of Potential Accidental Risk Spots in the Tisa catchment area of Romania, Hungary, Ukraine & Slovakia, which was issued in July 2000. The objective was to identify those pollution sources, which may pose the most important transboundary accidental risks.

In the 1st Regional Inventory it was indicated that there were still some information gaps existing concerning a complete picture of the risk spots in the Tisa catchment area. Upon the request from the Permanent Secretariat additional information was received from Romania concerning risk spots in the Crisuri and Mures sub-basins. No additional data were obtained from the other countries. Based on this available information, the Regional Inventory of Potential Accidental Risk Spots in the Tisa catchment area of Romania, Hungary, Ukraine & Slovakia was completed by the Permanent Secretariat of the ICPDR.

This inventory and the ranking of the risk spots is based on information supplied by the officially authorised country representatives. This, however, does not indicate that the inventory does cover all sites, which might be the source of accidental environmental pollution or, which could pose a risk to waters in the Tisa catchment area. The completeness of the inventory and the proposed priority ranking should be reviewed by the Tetralateral Commission and the BMTF to assure the implementation of effective measures for future prevention of accidental pollution in the Tisa catchment area.

1. Introduction

Base material

The inventory was prepared using national criteria for activities with hazardous and polluting substances, and by arranging them into a prescribed format table (see Annex 3 of the Cluj Minutes). Priority should have been given to the mining industry. Only Romania responded adequately to this point, while the other countries have only few mining activities in this region.

It was further stated that the AEPWS Expert Group dealing with a “*Methodology for Accidental Risk Inventory*” and the Baia Mare Task Force shall prioritise the most hazardous activities and shall work out recommendations to improve the safety of installations.

All four countries provided the requested lists. However, these lists and their details differ in their completeness of information and volume. Hungary provided over 400 risk spots where most of them do actually not indicate a significant accidental risk; therefore the Hungarian list was substantially reduced. Romania provided equally comprehensive lists of pollution sources, which were not all taken into account in this inventory but reduced to follow the methodology agreed at the Cluj meeting. Therefore unofficial information concerning Romanian tailing ponds mentioned in the 1st Regional Inventory is now left out.

This regional inventory and ranking of accidental risks is based on four national risk evaluations, which in fact give extremely brief information on the kind of risk on each site, which are difficult to judge, especially at an international scale of comparison. However, the list provides the first-ever regional overview of the most risky industrial sites for all four Tisa river basin countries.

Methodology of the Regional Inventory

Based on the national information provided, three categories were chosen for the Tisa Regional Inventory:

- + **High risk spots:** The country information indicates directly or indirectly a high accident risk (existing leakage etc.): Only these spots are indicated below and were chosen for the regional map (attached)!
- + **Lower risk spots:** The information provided to ICPDR states a *certain* risk, or it is *incomplete* (i.e. it does not exclude a potential “risk”): e.g. *medium* or *low risk*, storage of large quantities (> 1,000 t) of hazardous substances etc. These spots are given in the tables below.
- + **Other spots:** The country information provided does not indicate a major accident risk of environmental pollution. These spots are only listed in the national reports but not in this regional inventory.

Note to the numbering of ARS spots:

The numbers given in the present document refer first to the new ARS map number and then to those numbers given in the national inventories (attention: these numbers are not in one

order, there are cases where e.g. number 1 is given twice within one national inventory). This reference will facilitate a comparison of the present evaluation with the national source documents.

2. Evaluation of documents provided by the four governments

2.1. Romania

43 spots storing potentially polluting substances were indicated by the Romanian Ministry for Waters, Forests and Environmental Protection. The regional assessment led to the following classification:

- 24 high risk spots**
- + 19 mining spots (16 tailing deposits/ponds, 3 mines)
 - + 1 metal smelting plant
 - + 1 pharmaceutical plant
 - + 1 pulp & paper plant
 - + 1 pig farm with risky biological ponds
 - + 1 chemical industry (pond)

High Risk Spots in Romania		
ARS Map no.	National number and sub-region	Industry Sector
<i>Somes-Tisa Sub-basin</i>		
1	1. SC TERAPIA SA	Chemical (pharma)
2	2. SC AURUL SA (pond)	Mining
3	3. SM BORSA - Colbu Pond	Mining
4	4. SM BORSA - Novat Pond	Mining
5	5. SM BAIA MARE UP Central Flotation Unit, UP Sasar (pond)	Mining
6	6. SC ALLIED DEALS PHOENIX SA	Metallurgy
7	7. SM BAIA MARE - EM Baia Sprie (pond)	Mining
8	8. SM BAIA MARE - EM Cavnic (pond)	Mining
9	9. EM AURUM - Ilba Sector	Mining
10	10. SM BAIA MARE - EM Herja	Mining
11	11. CMNPN REMIN BAIA MARE - EM Turt (pond)	Mining
12	12. EM AURUM - Nistru Section	Mining
13	13. C.N.M.P.N. REMIN SA BAIA MARE Mining Subsidiary Rodna (pond)	Mining
14	14. SM BAIA MARE - EM Baiut (pond)	Mining
15	15. SC SOMES SA, Dej	Pulp & Paper
16	16. SC COMINEX NEMETALIFERE SA - Mining Subsidiary Aghires (ponds)	Mining
17	17. SC AGROCOMSUIN - SA BONTIDA (biological ponds)	Agric./Pig Farm
<i>Crisuri Sub-basin</i>		
18	2. CNCAF Minvest, SC Devamin SA, Branch Mine Brad - U P Gurabarza, Răbita Pond	Mining
19	4. CNCAF Minvest, SC Devamin SA, Branch Mine Băita - U P Băita, Fânate Pond	Mining
<i>Mures Sub-basin</i>		
20	2. SC BICAPA SA (pond)	Chemical
21	4. E.M. ABRUD (pond)	Mining
22	5. EM Roșia Montană (pond)	Mining
23	7. EM Baia de Arieș (pond)	Mining
24	10. EM Coranda Certej (pond)	Mining

19 other industries appear to have a **lower risk level**:

- + 6 mining spots (5 tailing deposits/ponds, 1 mines)
- + 2 chemical industry plants
- + 4 oil production & processing plants
- + 1 sugar factory (operations halted in 2000!)
- + 3 pig farms
- + 1 chicken farm pit
- + 1 fertiliser plant
- + 1 municipal sewage station

Lower Risk Spots in Romania	
National number and sub-region	Industry Sector
<i>Somes-Tisa Sub-basin</i>	
18. SC ZAHARUL SA	Food
19. SC NUTRISAM SA SATU MARE Hogs farm Moftin	Agric./Pig Farm
<i>Crisuri Sub-basin</i>	
1. CNCAF Minvest, SC Devamin SA, Branch Mine Brad -Sector Mine Barza	Mining
3. CNCAF Minvest, SC Devamin SA EM. Brusturi - U P Luncoara (pond)	Mining
5. SC Bauxita Min SA, Dobresti Pond I	Mining
6. SC Nutrientul SA Ciumeghiu Farm	Agriculture
7. R.A. Apaterm, Cleaning station and biological ponds	Municipal Sewage
8. SC Sinteza SA, Liquid storage	Chemicals
9. SC Suinprod SA, Biological ponds	Agriculture
10. SN Petrom SA, Branch Suplacu de Barcău - Oil field	Oil
11. SN Petrom SA, Branch Suplacu de Barcău - Oil field and Gas Marghita	Oil
12. SC Petrolsub SA	Oil
13. SC Petrol Derna SA	Oil
<i>Mures Sub-basin</i>	
1. SC AZOMUREȘ SA - pond	Agriculture
3. SC UPSOM SA - pond	Chemicals
6. E.M. Iara - pond	Mining
8. EM Zlatna - pond	Mining
9. EM Deva - pond	Mining
11. SC SUIATEST SA Gornești - biological ponds	Agriculture

The complete information about these ARS is given in chapter 3.

2.2. Ukraine

19 spots of potentially polluting sources were indicated by the government, with the numbers 1 to 8 to still be checked again by ministry experts. In the inventory, the WGK values have still to be added. In the regional assessment, for the time being, all spots were included with the following classification:

- 6 high risk spots**
- + 3 pulp & paper plants
 - + 2 oil pipelines
 - + 1 oil treatment plant

High Risk Spots in Ukraine		
ARS Map no.	National number and sub-region	Industry Sector
1	1. Opened joint-stock company “Perechynskiy chemical timber industrial complex”, State	Pulp & Paper
2	2. Opened joint-stock company “Svalyava chemical timber industry complex”, State	Pulp & Paper
3	3. Opened joint-stock company “Velykobychkivsky chemical timber industrial complex”, State	Pulp & Paper
4	6. “Prykarpattrans oilproduct”, Russian Federation	Oil
5	7. “Druzhba“, State	Oil
6	19. Platform 2/1 village Rososh, “Prykarpattrans naftoproduct”, Russian Federation	Oil

13 other industries appear to have lower risk level:

- + 1 ore tailings dam from the metallurgical industry
- + 2 oil stocking companies
- + 10 municipal wastewater treatment plants.

Lower Risk Spots in Ukraine	
National number and sub-region	Industry Sector
4. Fuel depot, “Nafroservice” company, State	Oil
5. Opened joint-stock company “Zakarpatyanaftoproduct- Chust”, State	Oil
8. Zakarpatskyi polymetallic industrial complex, State	Metallurgy
9. Industrial management of water-supply and sewerage company of Uzhgorod, State	Municipal WWTP
10. Industrial management of water-supply and sewerage company of Mukachevo, State	Municipal WWTP
11. Industrial management of water-supply and sewerage company of Chust, State	Municipal WWTP
12. Rayon Industrial management of water-supply and sewerage company of Svalyava, State	Municipal WWTP
13. Industrial management of water-supply and sewerage company of Beregovo, State	Municipal WWTP
14. Industrial management of water-supply and sewerage company of Vynogradovo, State	Municipal WWTP
15. Industrial management of water-supply and sewerage company of Chop, State	Municipal WWTP
16. Industrial management of water-supply and sewerage company of Solotvyno, State	Municipal WWTP
17. Industrial management of water-supply and sewerage company of Tyachiv, State	Municipal WWTP
18. Opened joint-stock company “Rachivska cardboard factory”, State	Municipal WWTP and pulp & paper

The complete information about these ARS is given in chapter 3.

2.3. Slovakia

16 spots of potentially polluting sources were indicated by the government. 12 were evaluated as having regional risk importance. These are:

1 high risk spot + mining industry

ARS Map no.	High Risk Spot in Slovakia	Industry Sector
1	12. Želba š.p. 02 Siderit, Rožňava	Mining

11 lower risk spots: + 4 mining and related industry
+ 1 machinery industry
+ 3 chemical industries
+ 1 metallurgy industry
+ 1 energy production
+ 1 pulp & paper industry

Lower Risk Spots in Slovakia	Industry Sector
1. FINIŠ Spišská Nová Ves	Chemicals
3. Kovohuty - úpravna Slovinky	Metallurgy
5. VSŽ Ferroenergy Košice	Mining
7. Chemko Strážske, Michalovce	Chemicals
8. SE a.s. EVO Vojany, Michalovce	Energy
9. SWS Vojany, Bardejov	Chemicals
10. Tesla Stropkov, Bardejov	Machinery
11. Bukocel Hencovce, Vranov nad Toplou	Pulp & Paper
13. Magnetech Slovakia a.s., Hnúšťa, Rimavska S.	Mining
14. Slovmag a.s. Lubeník, Revuca	Mining
15. SMZ Jelšava, Revuca	Mining

The complete information about these ARS is given in chapter 3.

2.4. Hungary

The government has provided a package of 447 spots of potentially polluting sources, compiled by the 7 environment inspectorates (EI) in the Tisza catchment. The Environment Management Institute from Budapest then evaluated the survey and reduced the site number to 261, many of which were attributed to the hazard category III. Only 10 of all evaluated polluting sources belong to the mining sector: The report states that, except for three less relevant sites, there is no metal mine or processing of dead rocks, neither sludge deposit from metal processing nor mine water treatment in the Hungarian Tisza catchment. However, there are some deposits from “drilling-lubricating sludge” (exploration of hydrocarbons).

The comments given in column 10 of the Szolnok Inspectorate are partly abbreviations which were not explained; they still have to be checked!

In the inventory, the most risky spots seem to be:

- 11 high risk spots**
- + 1 landfill with radioactive waste (**Budapest** Inspectorate)
 - + 1 deposit with several mio. tons of slag and flying ash (“)
 - + 1 pond (flood hazard) of a sugar factory (**Szolnok** Inspector.)
 - + 1 gasoline tank deposit (“)
 - + 1 complex of reservoirs with mine and industrial metal sludge (**Miskolc** Inspectorate)
 - + 1 big reservoir of power plant slag and slurry (“)
 - + 4 oil storage installations (“)
 - + 1 power plant complex with big slurry and slag deposits (“)

ARS Map no.	High Risk Spot in Hungary	Industry Sector
<i>Budapest region</i>		
1	4. Landfill for radioactive wastes Püspökszilágy	Waste
2	6. HUNVIRON Kft. Pile from flying ashes, Lőrinci	Energy
<i>Szolnok region</i>		
3	1. Sugar factory Rt. Begin-Say (French)	Food
4	3. MOL Rt., Szajol Bázistelep	Oil
<i>Miskolc region</i>		
5	22. HIDROTECH Bányászati- és Környezetvédelmi Kft., ÁPV Rt, Gyöngyösorosi	Mining
6	30. AES Borsodi Energetikai Kft. Power Plant, AES Summit Generation Ltd., Kazincbarcika	Energy
7	78. Kőolajtároló Rt., Tiszaújváros MOL Rt. Tiszai Finomító	Oil
8	79. Terméktároló Rt., Tiszaújváros MOL Rt. Tiszai Finomító	Oil
9	81. Columbian Tiszai Koromgyártó KFT, Columbian Chemical Company USA , Tiszaújváros	Oil
10	82. AES Tisza erőmű KFT, AES SUMMIT Generation Ltd., Tiszaújváros	Oil
11	83. AES Borsodi Energetikai KFT Tiszapalkonyai Hőerőmű, AES Áramtermelő Holding, Tiszaújváros	Energy

54 other industries appear to have a lower risk level:

- + 1 landfill with hazardous waste (categ. I-II) (**Budap.** Inspect.)
- + 1 oily waste deposit (“)
- + 1 mining tank car (**Szeged** Inspectorate)
- + 5 sludge piles from drilling with sodium-dichromate (“)
- + 1 pig farm manure reservoir (**Szolnok** Inspectorate)
- + 7 storages of various chemicals for manufacturing (“)
- + 1 fertiliser plant (“)
- + 3 machinery industries (“)
- + 3 gasoline tank deposits (“)
- + 2 chemical deposit from pharmaceuticals (**Debrecen** Inspect.)

- + 5 large reservoirs from food industry (“)
- + 1 big mining deposit from drilling with potassium-humate (“)
- + 2 reservoirs of pig farms (“)
- + 9 deposits from pharma, machinery & energy/oil industries (“)
- + 1 hazardous waste deposit (“)
- + 1 fertiliser plant (“)

- + 1 oil disposal site (**Gyula** Inspectorate)

- + 1 reservoir of oily sludge (**Miskolc** Inspectorate)
- + 2 municipal waste deposits (“)
- + 1 sludge pond of an abandoned mine (“)
- + 1 disposal site for hazardous waste (“)
- + 1 sugar wastewater basin (“)
- + 1 olefin production (several tanks with chemicals, wastewater basin) (“)
- + 1 chemical plant with various storing tanks (“)
- + 1 oil refinery (storage tanks) (“)
- + 1 hazardous waste combustion site (“)

- + 1 complex of 4 railway re-loading stations for chemicals (**Nyiregyhaza** Inspectorate)
- + 1 hazardous waste storage facility (“)

Lower Risk Spots in Hungary	Industry Sector
<i>Budapest region</i>	
5. Pyrus-Rumpold Rt. Landfill for hazardous wastes, Aszód-Galgamácsa	Hazardous waste
11. TERRAVITA Kft., Hatvan	Oil
<i>Szeged region</i>	
42. MOL Rt. Kut. Term. Ág. Kutatás-1 Iroda, Algyő	Mining
57. ROTARY Fúrési Kft., Zsana	Mining
58. Kőolajkutató Rt., Algyő	Mining
59. Kőolajkutató Rt., Cserebökény	Mining
60. Kőolajkutató Rt., Kiszombor	Mining
61. Kőolajkutató Rt., Ruzsa	Mining
<i>Szolnok region</i>	
2. META Kft. Abádszalók	Agric. /Pigs
1. Elektrolux Lehel Kft. Svéd property Jászberény	Chemical
2. TVM Rt. Szolnok	Agric./fertiliser
3. Gyógyászati Segédeszközök Gyára Kisújszállás	Machinery
6. PANNÓNIA Rt. Kunszent-márton	Agric./fur
8. Holland Colors Kft. Dutch property Szolnok	Chemicals
9. Mol Rt. Szajoli basic site Szajol	Oil
10. Saltis Kft. Italian property Martfű	Chemicals
11. Metallo-globus Rt. Tarnaszentmiklós	Chemicals
12. CLAAS Hungária Kft. German property Törökszentmiklós	Machinery
14. Fémfel-dolgozó Rt. Mezőtúr	Machinery
25. Terszol Szövetkezet Szolnok	Chemicals

31. Jász-Plasztik Kft. Jászberény	Chemicals
1. KUN-REHAB Kft. Kenderes	Oil
2. Magyar Honvédség Szolnok Repülőtér	Oil
<i>Debrecen region</i>	
2. ICN Magyarország Kft. Tiszavasvári	Chem./Pharmac.
3. Hortobágyi Vágóhíd Kft. Hortobágy	Food
4. BIG-COMPANY Kft. Balmazújváros-Telekföld	Food
5. MB Kőolajkutató Rt. Suburb of Berettyóújfalu site N: 0772	Mining
9. Sugar Factory Co. in Kaba	Food
11. NAGISZ Rt. Hegedűslóré site of pig husbandry Nádudvar	Agriculture
12. Hajdúsági Agráripari Rt. site of pig husbandry Hajdúszoboszló	Agriculture
15. Nagisz Rt. Factory of Milk and Ice-cream Nádudvar	Food
16. NAGISZ Rt. Slaughterhouse and Meat factory Nádudvar	Food
17. BIOGAL Pharmaceutical Factory Co. Debrecen	Chem./Pharmac.
18. DAEWOO MGM Rt. Debrecen	Oil
19. TITÁSZ Rt. Debreceni Power Plant Ltd. Debrecen	Oil
20. Dispomedicor Rt. Debrecen	Machinery
22. GE HUNGARY Rt. Hajdúböszörmény Kinizsi tér 1.	Machinery
24. HAJDUKOMM Kft. Balmazújváros-Lászlóháza	Chemicals
25. Hajdúsági Agráripari Rt. (Agrochemical Factory) Nádudvar	Agric./fertiliser
26. HTTV Ltd. Berettyóújfalu	Oil
29. Hajdú-Berstal Kft. Berettyóújfalu	Machinery
31. MOL Rt. BFL Logisztika Ebes	Oil
32. MOL Rt. Nagyhegyes	Oil
33. MÁVFAVÉD Ltd. Püspökladány	Agric./wood
<i>Gyula region</i>	
5. Körös-Kör Kft. Ecsegfalva	Oil
<i>Miskolc region</i>	
11. TERRA-VITA Kft., Eger	Oil
27. Kazincbarcika Múcsonyi út municipal solid waste landfill ÉHG. Rt. Kazincbarcika	Waste
34. Miskolc-Nádasrét municipal landfill for solid wastes REM Kft., Miskolc	Waste
57. Recski Ércbányák Rt., Recsk	Mining
62. Sajókaza-Határölgy landfill for hazardous waste of category III	Hazardous waste
72. Szerencsi Cukorgyár Rt Szerencs	Food
75. Tiszai Vegyi Kombinát Rt., Tiszaújváros	Oil
76. Akzo Nobel Festékgyártó és Kereskedelmi Rt. Tiszaújváros	Chemicals
77. MOL Rt. Tiszai Finomító, Tiszaújváros	Oil
80. Ecomissio KFT. Tiszaújváros	Chemicals

<i>Nyíregyháza region</i>	
2. MÁV ZÁHONY PORT Division Drawing-off Chemicals	Chemicals
3. MÁV ZÁHONY PORT Shaft readjusting Division for 500	Chemicals
4. MÁV ZÁHONY PORT Division Fényeslitke NS Marshalling yard	Chemicals
5. MÁV ZÁHONY PORT Division Eperjeske marshalling yard	Chemicals
10. VÁROSÜZEMEL-TETÉSI KHT. Nyíregyháza	Hazardous Waste

The complete information about these ARS is given in chapter 3.

3. High and Lower Risk Spots for Pollution Accidents in the Tisa Catchment of Romania, Ukraine and Slovakia

Detailed description of the high and lower risks spots, extracted from the national inventories:

Romania: High and Lower Risk Spots Somes-Tisa pages 15-17

High Risk Spots Crisuri-Mures page 18

Ukraine: High Risk Spots pages 19-20

Slovakia: High Risk Spot page 21

Lower Risk Spots page 21 (excerpt!)

Hungary: High Risk Spots pages 22-25

Almost all Lower Risk Spots are not shown here in the www version!

ROMANIA - High Risk Spots in the Somes-Tisa Sub-basin

<i>Company / Owner</i>	<i>Location / district</i>	<i>Receiver watercourse; length (km)</i>	<i>Company's object / type of technology used</i>	<i>Dangerous substances</i>	<i>Toxic properties WGK</i>	<i>Total quantity handled / stored (metric tones)</i>	<i>Storage facilities</i>	<i>Free operating volume (%)</i>	<i>Comments</i>
1	2	3	4	5	6	7	8	9	10
1. SC TERAPIA SA	Cluj-Napoca/Cluj	Somesul Mic (82) Somes (244)	Drugs production	cyanides	R50	cyanide waters storage in 3 local stations - 20 cm/day	3 decianuration	3 reserve tanks - 20 cm/day	-accidental leaches of cyanide waters over the platform
2. SC AURUL SA	Baia Mare/Maramures	Lapus (5,2) Somes (95)	Precious metal mining and processing / cianuration	cyanide, heavy metals (Pb, Zn, Cu, Mn)	R50-53	2.400.000	flatland pond; slag made dam	84%-precipitation take-over volume 85.000 m ³	-increased risk for cyanides and heavy metal ions - spills, dam's cracks, transport pipes breakdown
3. SM BORSA Colbu Pond	Baia Borsa / Maramures	Cisla (9,8) Viseu (63) Tisa (59)	Nonferrous ores mining and processing / flotation procedures	heavy metals	R50-53	2.880.000	flatland pond; slag made dam	15%takeover volume for the precip. @ 9.000 m ³	- high risk for heavy metals -spills, dam's cracks and transport pipes breakdown
4. SM BORSA Novat Pond	Baia Borsa/ Maramures	Novat (10) Vaser (12) Viseu (41) Tisa (59)	Nonferrous ores mining and processing / flotation procedures	heavy metals	R50-53	1.810.000	flatland pond; slag made dam	92,5% take-over volume for precip. @ to be established after activity resuming	- high risk for heavy metals - spills, dam's cracks
5. SM BAIA MARE UP Central Flotation Unit, UP Sasar	Baia Mare/ Maramures	Lapus (5,6) Somes (95)	Nonferrous ores processing / flotation procedures	cyanide, heavy metals (Pb, Zn, Cu, Mn)	R50-53	41.000.000	flatland pond; slag made dam	22% takeover volume for the precip. @ 120.000 m ³	- medium risk for cyanide and heavy metals -spills, dam's cracks, transport pipes breakdown
6. SC ALLIED DEALS PHOENIX SA	Baia Mare / Maramures	Sasar (13,5) Lapus (6) Somes (95)	Nonferrous smelting, reactivities production	heavy metals, sulphuric acid	R14 R21	H ₂ SO ₄ tank - 10.000 t silt pond - 2.600 m ³		20% 20%	- medium risk for H ₂ SO ₄

1	2	3	4	5	6	7	8	9	10
7. SM BAI A MARE EM Baia Sprie	Baia Sprie/ Maramures	Sasar (19) Lapus (6) Somes (95)	Nonferrous ores mining and processing / flotation procedures	heavy metals	R50-53	13.221.000	flatland pond; slag made dam	7% takeover volume for the precip. @ 30.000 m ³	- medium risk for heavy metals ion pollution - spills, dam's cracks, transport pipes breakdown
8. SM BAI A MARE EM Cavnic	Cavnic / Maramures	Cavnic (24,5) Lapus (37,7) Somes (95)	Nonferrous ores mining and processing / flotation procedures	heavy metals	R50-53	850.000	flatland pond; slag made dam	69%takeover volume for the precip. @ 12.000 m ³	- medium risk for heavy metals ion pollution - spills, dam's cracks, transport pipes breakdown
9. EM AURUM, Ilba Sector	Baia Mare (Ilba) / Maramures	Ilba (7) Somes (84,5)	Nonferrous ores processing	heavy metals from mine waters	R50-53		-intermediary storage for packed silt -mine waters -unproper purification		- medium risk for heavy metals ions pollution
10. SM BAI A MARE EM Herja	Baia Mare/ Maramures	Firiza (5) Sasar (14) Lapus (6) Somes (95)	Nonferrous ores mining	heavy metals	R50-53		-mine waters -reduced and unproper purification		- medium risk for heavy metals ions pollution
11. CMNPN REMIN BAIA MARE EM Turt	Turt / Satu Mare	Turt (18) Tur (68) Tisa (820)	Complex nonferrous ores mining without processing	heavy metals (Cu, Pb, Zn)	R43,47,50 R54-58		2,2 millions m ³	100%	- stalling pond not operating - processing plant in construction
12. EM AURUM Nistru Section	Baia Mare (Nistru) / Maramures	V.Rosie (3,5) Baita (12) Lapus (2) Somes (95)	Nonferrous ores processing	heavy metals from mine waters	R50-53		-mine waters -reduced and unproper purification		- medium risk for heavy metals ions pollution - breakdown of the silt # water transport pipes at Bozanta pond
13.C.N.M.P.N. REMIN SA BAI A MARE Mining Subsidiary Rodna	Rodna / Bistrita Nasaud	Somesul Mare (560)	Nonferrous ore mining and processing (Pb, Zn) Storage of the slag	heavy metals (Pb, Zn)	R50-53	6.300.000 slag (at final quota #740) 2.737.930 stored quantity, until #720 m quota	Stalling pond: valley - type pond, with main dam built on slag and additional toe dam	56%	- medium risk level - stability coefficient 1,4 - wide general angle of the slope @ 34 - leaches over the main dam, in case of malfunc- tion of the water evacua- tion system

1	2	3	4	5	6	7	8	9	10
14. SM BAIJA MARE EM Baiut	Baiut / Maramures	Lapus (110) Somes (95)	Nonferrous ores mining and processing / flotation procedures	heavy metals	R50-53	3.650.000	flatland pond; slag made dam	8,7% takeover volume for the precip. @ 25.000 m ³	- medium risk for heavy metals ions pollution - spills, dam's cracks, transport pipes breakdown
15. SC SOMES SA	Dej / Cluj	Somes (233)	Pulp and paper processing	organic substances, lignine, tanine	R52	110 t/year	silt storage	70%	-floods and high waters
16. SC COMINEX NEMETALIFERE SA Mining Subsidiary Aghires	Aghires / Cluj	Nadas (20) Somesul Mic (82) Somes (244)	Caolin sands and metalurgic sands mining	suspensions	R52	100.000 t/year	3 stalling ponds	41%	- floods, landslides, dam's cracks - instant power breakdown - breaking of the effluent pipe, which evacuates the residual waters from the pond
17. SC AGROCOMSUIN SA BONTIDA	Bontida / Cluj	Somesul Mic (42) Somes (244)	Hogs farm	organic substances, amonium, suspensions	R52	36.000 t/year	4 biologic ponds	semi-siltated ponds	- exfiltrations or cracks at the biologic ponds

ROMANIA - Lower Risk Spots in the Somes-Tisa Sub-basin

18. SC ZAHARUL SA	Carei / Satu Mare	Postei (2) Crasna (53) Tisa (820)	Sugar processing from sugar beetle by diffusion technology	oxygen consumer substances, suspensions (CCOCr)	R52	76.500 m ³	120.000 m ³	64%	- operations halted (since 2000) for a undetermined period
19. SC NUTRISAM SA SATU MARE Hogs farm Moftin	Moftin / Satu Mare	Crasna (66) Tisa (820)	Intensive livestock rising - hogs	oxygen consumer substances, suspensions (CCOCr) fenols	R52	2.800 m ³	6.000 m ³	60%	- biologic pond used only in case of maintenance or revision procedures at the epuration installation

ROMANIA - High Risk Spots in the Crisuri and Mures Sub-basins

CRISURI HYDROGRAPHIC SUB-BASIN

<i>Company / Owner</i>	<i>Location/ district</i>	<i>Receiver Water-course length (km)</i>	<i>Company's object/type of technology used</i>	<i>Dangerous substances</i>	<i>Toxic properties WGK</i>	<i>Total quantity handled/ stored (t, m³)</i>	<i>Storage facilities</i>	<i>Free operating volume (%)</i>	<i>Comments</i>
1	2	3	4	5	6	7	8	9	10
2.CNCAF Minvest SC Devamin SA Branch Mine Brad - U P Gurabarza Pond Râbita	Brad Hunedoara	Crisul Alb (41,5)	Copper and gold ore processing / flotation procedures	cyanide, heavy metals (Pb, Zn, Cu,Mn)	R 50-53	8 700 000 m ³	Slope pond, sterile dike 10 000 000 m ³	13 %	- medium risk for cyanides and heavy metal ion pollution - spills, dam cracks, transport pipes break-down
4.CNCAF Minvest SC Devamin SA Branch Mine Băita - U P Băita Fânate Pond	Stei Bihor	Crisul Băita (13), Crisului Negru (27)	Non-ferrous ore mining and processing/ Flotat. procedures	cyanide, heavy metals (Cu, Zn,Pb)	R 50-53	2 553 000 m ³	slope pond, sterile dike 3 010 000 m ³	15 %	- medium risk for cyanides and heavy metal ion pollution - spills, dam cracks, transport pipes break-down

MURES HYDROGRAPHIC SUB-BASIN

2. SC BICAPA SA	Târnăveni Mureș	Târnavă Mică (136)	Production of anorganics	- cyanide - Cr ⁶⁺	R50 - 53	Storage 1.000.000 t	Silt storage; flatland pond		- high risk of contamination with cyanide and Cr ⁶⁺
4. E.M. ABRUD	Abrud Alba	V. Sesei (2) Aries (66)	Nonferrous (Cu) ore mining and processing	- heavy metals - suspensions - acid solutions	R50- 53	27.568.410 tons	Flatland pond; Rock made dam;	74 %	- high risk for heavy metal; - low effic. of flatland
5. EM Roșia Montană	Roșia Montană Alba	V. Săliștei (22) Abrud (17) Arieș (49)	Nonferrous (Au) ore mining and processing	- heavy metals - acid solutions - suspensions	R50 - 53	407.000 t/year Storage 6.666.700 m ³	Flatland pond ; Slag and rock made dam; mine waters	35 %	- high risk for heavy metal pollution; - acid mine waters
7. EM Baia de Arieș	Baia de Arieș Alba	V. Cuții (1) V.Sartăș (5) Arieș (74)	Complex non-ferrous ore mining processing; flotation procedures	- heavy metals - cyanides - suspensions	R50 - 53	436.000 t/year Storage 1.400.000 t	Flatland pond slag made dam; mine waters	66 %	- high risk for heavy metal and cyanide pollution
10. EM Coranda Certej	Certej Hunedoara	Certej (16) Mureș (484)	Nonferrous ore mining	- heavy metals - suspensions	R50 - 53	Storage 8.000.000 t	Flatland pond; Slag made dam	4.800.000 t	- high risk for heavy metal pollution ;

UKRAINE: High Risk Spots

Inventory of the potential pollution sources (Ukraine)

<i>No.</i>	<i>Name of the company, owner</i>	<i>Location/ district</i>	<i>Recipient river (length of stream in km)</i>	<i>Company activities/ type of production processes</i>	<i>Dangerous substances</i>	<i>Toxic properties (WGK values)</i>	<i>Total amount dangerous substances handled/stored (tons)</i>	<i>Storage facilities</i>	<i>Free operational volume (%)</i>	<i>Remarks</i>
1	2	3	4	5	6	7	8	9	10	11
1.	Opened joint-stock company "Perechynskiy chemical timber industrial complex", State	town Perechyn	stream Dmorach, Uzh (0,3)	Chemical timber processing, charcoal production	phenols		1200	metal tanks	75	Medium (spillage from the tanks)
2.	Opened joint-stock company "Svalyava chemical timber industry complex" State	city Svalyava	r.Latorutsya 115	Chemical timber processing, charcoal production	phenols		1500	metal tanks	5	High (spillage from the tanks)
3.	Opened joint-stock company "Velykobychkivskiy chemical timber industrial complex", State	town Vel.Bychkiv, Rachivskiy rayon	r. Shopurka Tisza (0,5)	Chemical timber processing, charcoal production	phenols		1800	metal tanks	0	High (spillage from the tanks due to corrosion)
6.	"Prykarpattansoilproduct", Russian Federation	vill. Dubrynychy, Perechynskiy rayon	r. Uzh	Oil pipe-lines	Oil products					High. Pipe-lines burst, oil spillage
7.	"Druzhba" State	city L'viv	r. Pynya, Latorytsya	Oil pipe-lines	Oil products					High. Pipe-lines burst, oil spillage

No.	Name of the company, owner	Location/district	Recipient river (length of stream in km)	Company activities/type of production processes	Dangerous substances	Toxic properties (WGK values)	Total amount dangerous substances handled/stored (tons)	Storage facilities	Free operational volume (%)	Remarks
1	2	3	4	5	6	7	8	9	10	11
19.	Platform 2/1 village Rososh, "Prykarpatttransnafto-product", Russian Federation	village Rososh	r. Rososh	Treatment facilities physical-chemical treatment	Oil products					Medium, Accidental discharge of non treated wastes

UKRAINE - Lower Risk Spots

4.	Fuel depot, "Nafroservice" company, State	village Novoselytsya, Perechynskyi rayon	stream Bezimennyi. Uzh (5)	Fuel storage	Oil products		24000	metal tanks	90	Low
5.	Opened joint-stock company "Zakarpatyanaftoprodukt-Chust", State	city Chust	r. Tizsa 0,3	Fuel storage	Oil products			metal tanks		Low
8.	Zakarpatskyi polymetallic industrial complex, State	vill. Muzhievo	r. Borzhava 10	Polymetallic ore processing				Tailing dam 96,000 m ³	95	Low Dam break or over-spillage of non-treated wastes

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Slovakia: High Risk Spot

Inventory of potential pollution sources in the Slovak part of the Tisa river basin

No.	Name of company	Locality (region)	Recipient River (length of stream in km)	Activities of company (type of production, used technology)	Dangerous chemical substances	Amount of chem. Substances/year	WRC	Storing	Comment
1	2	3	4	5	6	7	8		
12	Želba š.p. 02 Siderit Nižná Slaná	Rožnava	Slaná (66,4) *	Siderite mining and processing	As 0,144% Pb 0,009% Zn 0,004% in sludge	3 984 911 m ³ silted sludge	3 2 1	sludge-drying bed	heavy metals are bound to the sludge

Slovakia: Lower Risk Spots

Name of company	Locality (region)	Recipient River (length of stream in km)	Activities of company (type of production, used technology)	Dangerous chemical substances	WRC	Amount of chem. Substances /year	Storing	
1	2	3	4	5	6	7	8	
1	FINIŠ Spišská Nová Ves	Spišská Nová Ves	Hornád (130) *	Synthetic and cotton material production	no actual information			
2	Želba Rudnany	Košice - surroundings	Rudniansky creek (0,6) Hornád (121,5) *	Mining and processing of baryte ore	oils and fats H ₂ SO ₄ oleic acid polyethylene glycol NaOH praestol hexametaphosphate Sludge with heavy metals	1 1 1 1 1 2	21,62 t 41,77 t 50,24 t 4,75 t 4,15 t 0,55 t 4,1 t	reservoir reservoir reservoir reservoir reservoir reservoir reservoir
3	Kovohuty - úpravna Slovinky	Spišská Nová Ves	Slovinský p. (5,5) Hornád (98,8) *	raw ore processing	no registered resource			

Hungary: High Risk Spots

Name and proprietor of the company	Settlement and EOY coordinates	Endangered watercourses – RECEIVER OF THE DISCHARGES (km)	ACTIVITY, technology	List of HAZARDOUS SUBSTANCES	TOXIC PORPerties – R VALUES, WGK hazard categories		QUANTITY OF MATERIALS (tons)	STORING FACILITIES	FREE OPERATING VOLUME (%)	COMMENTS
					6.a	6.b.				
1.	2.	3.	4.	5.	6.a	6.b.	7.	8.	9.	10.

Regional Environmental Inspectorate, Budapest

4.	Landfill for radioactive wastes	Püspökszilágy	SZILÁGY BROOK – (GALGA 29,8) – ((ZAGYVA 91,3)) – (((TISZA 335,5)))	Disposal of radioactive wastes	no storage of chemicals			in a scale of 1000 tons	SPECIAL DEPOSITS AND TANKS		Licensed landfill posing hazard in case of emergency
6.	HUNVIRON Kft. pile from flying ashes	Lőrinci	ZAGYVA 110,0 – (TISZA 335,5)	In the area of the flying ash pile of the Lőrinci Power Plant besides the waste from the Plant there are different waste of III hazard category	no storage of chemicals			Several million tons of slag and flying ash	DEPOSIT		It may pose risk in case of disaster

Közép-Tisza vidéki Regional Environmental Inspectorate, Szolnok

1.	Sugar factory Rt. Begin-Say French proprietor	Szolnok X: 200 Y: 735	Tisza (332)	production, of sugar storage of industrial waste water	Waste water from sugar production with organic nitrogen content			700 000	Depositor of reinforced concrete inside the factory, reservoirs made of earth in flood zone	20 %	P1 High risk due to conditions of the dams of the reservoirs located in flood zone of the Tisza
3.	MOL Rt.	Szajol Bázistelep X: 201 000 Y: 744 500	Alesi Holt-Tisza (10 km) Tisza (337+200 km)	Storage and trade of crude oil products	gasoline, petrol, motor oils	10, 11, 12, 45	2	550E m ³ storing capacity	Tanks above and below the surface		P1 Risk due to receiver in vicinity & to capacity

Regional Environmental Inspectorate Miskolc

	<i>1.</i>	<i>2.</i>	<i>3.</i>	<i>4.</i>	<i>5.</i>	<i>6.a</i>	<i>6.b.</i>	<i>7.</i>	<i>8.</i>	<i>9.</i>	<i>10.</i>
22.	HIDROTECH Bányászati- és Környezetvéde lmi Kft. Proprietor: ÁPV Rt	Gyöngyösoro- szi	Toka 5 Gyöngyös 23,1 Tarna 12,8 Zagyva 59,2 Tisza 395,6	Treatment of water from the mine, activity from liquidation	metal sludge (Fe, Mn, Zn, Cd, As, Pb)	22, 23, 51	2	167.884 m ³	Reservoir for slurry in Bence-völgyi (300.000 m ³) X: 280.800 Y: 711.800	kb. 50	No direct risk to the river Tisza. Valley is closed with dead rock from the mine. No proper tech- nical protection, improvement under preparation
					Water from the with high metal content (3500m ³ /day)		1	10.510 m ³	9400 m ³ and 6110 m ³ capacity depositing basins made of dead rock X: 280.600 Y: 711.500	10	No direct risk to the river Tisza. Reservoir made of dead rock from mine. No proper technical protection, im- provement un- der preparation against leakage
					Reservoir for industrial water and sludge with heavy metal content: Fe, Mn, Zn, Cd, As, Pb)		1	200- 280.000 m ³ water and 100- 120.000 m ³ sludge with heavy metals	300.000 m ³ reservoir in closed valley X: 278.000 Y: 712.000	10	No direct risk to the river Tisza. 1/3 part of the reservoir is mud High metal content.
30.	AES Borsodi Energetikai Kft. Borsodi Power Plant Proprietor: AES SUMMIT GENERATION Ltd.	Kazincbarcika	Sajó 85 Tisza 492	Power Plant electric energy and heat operated with coal	Reservoir for slag and slurry with metal content /Cu, Cd, Cr, Pb, V/ and As		1	17 400 000 t	Slurry cassettes without technical protection	0	No direct risk to the river Tisza. Average metal content of the slurry: 100-150 mg/kg, average arsenic content 176 mg/kg
					Light heating oil	10, 40	2	175 t	Tank of steel above surface	5	
					Transformer oil /no PCB content/	10, 40, 45	2	212 t	Open air transformers	100	All transformer provi- ded with concrete base
							23				

			Ős-Szuha 4,8 Sajó 76,1 Tisza 492	Water discharge from the Power Plant	Rainfall from the slurry site and the boilers	0	0	1900 m ³ /day	Drained in a circling ditch made of earth		The amount of hazardous sub- stances relates to the average quantity of discharged water
	<i>1.</i>	<i>2.</i>	<i>3.</i>	<i>4.</i>	<i>5.</i>	<i>6.a</i>	<i>6.b.</i>	<i>7.</i>	<i>8.</i>	<i>9.</i>	<i>10.</i>
78.	Kőolajtároló Rt.	Tiszaújváros MOL Rt. Tiszai Finomító	Tisza 483+600	Storage	Crude oil	11, 45	2	136.000	Metal tank above the surface	0	Risk to Tisza, classification is necessary. Basin with metal circle
79.	Terméktároló Rt.	Tiszaújváros MOL Rt. Tiszai Finomító	Tisza 483+600	Storage	Petrol	11	2	92.000	Metal tank above the surface	4	Risk to Tisza, classification is necessary. Basin with metal circle.
					Gasoline	10, 20 - 21, 40	2	100.000	Metal tank above the surface	0	Basin with metal circle.
81.	Columbian Tiszai Korom- gyártó KFT Proprietor: Columbian Chemikal Company USA	Tiszaújváros	Tisza 484	Production industrial soot of oil	oil	10, 40, 45	2	5200	Tank above the surface	50	Risk to Tisza, classification is necessary Placed in basin
82.	AES Tisza erőmű KFT Proprietor: AES SUMMIT Generation Ltd.	Tiszaújváros	Tisza 490	Production of electric energy, gas fuelled power plant	Turbine oil	10, 45	2	141	Tank above surface and in oil-cooling system in the technology	10	Risk to Tisza, classification is necessary Reinforced basin
					Transformer oil	10, 45	2	274	In transfor- mers & barrel	0	
					heating oil	10, 45	2	105,3	In the system	0	
				Treatment of waste water (municipal & industrial)	Organic material, oil		1	474 m ³	Reinforced basin	10	
					Heavy metals		1	400 m ³			
		Tiszaújváros			heating oil	10, 45	2	260,000	Tank above the surface	50	Basin

	<i>1.</i>	<i>2.</i>	<i>3.</i>	<i>4.</i>	<i>5.</i>	<i>6.a</i>	<i>6.b.</i>	<i>7.</i>	<i>8.</i>	<i>9.</i>	<i>10.</i>
83.	AES Borsodi Energetikai KFT Tiszapalkonyai Hőerőmű Proprietor: AES Áram-termelő Holdg.	Tiszaújváros	Tisza 483	Production of electric energy and heat						50	Potential risk to the Tisza, classification is necessary. Reinforced basin
				Transformer oil	10, 45	2	242				
				waste water treatment	Organic material		1	170 m ³	Reinforced concrete basin	15	
				Slurry water		1	800,000 m ³	Slurry site	5	Without technical protection, made of clay produced at site	
Slag, flying ash		1	14,000,000								