INTERNATIONAL COMMISSION FOR THE PROTECTION OF THE DANUBE RIVER

Inventory of Potential Accidental Risk Spots in the Danube River Basin

Prepared by

the ARS-*ad-hoc* Expert Panel of the AEPWS EG

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ANALYSIS
OF ACCIDENTAL RISK SPOTS (ARS)
IN THE CATCHMENT AREA OF THE DANUBE

As of 30 June 2001

Prepared
by the ARS-*ad-hoc* Expert Panel of the AEPWS EG:

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Preface

As a follow-up to the cyanide spills in the Tisa river basin 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 accidental risk spots (including their mapping) in the Tisa catchment area. The model adopted for the inventory was based on the previous classification of installations posing a danger of accidental water pollution in the Elbe catchment area.

In September 2000 The ICPDR Steering Group encouraged all ICPDR member States/Danube Countries to elaborate national ARS inventories in order to arrive at a common inventory for the whole Danube River Basin, based on the methodology applied for the Tisa.

The realisation of this task was entrusted to the AEPWS [Accident Emergency Prevention and Warning System] Expert Group, who in their turn delegated a panel of experts (ad-hoc ARS Expert Group) to carry out the analysis, which is presented here.

The basin-wide Inventory of Potential Accidental Risk Spots has been made on the basis of information supplied by each of the ICPDR countries. Additional data have been supplied by the ad-hoc ARS Expert Group. The analysis reflects the state of potential hazards as of 30 June 2001.

1. Synopsis

A quantitative evaluation of hazardous locations in the Danube catchment area was carried out for the first time with reference to possible water pollution resulting from accidents. The analysis is reflecting the potential dangers; the actual danger level can only be determined on the basis of an analysis of the safety measures that have been put in place.

The methods used are based on the transposition of substances present that could lead to water pollution into WRC (in German WGK) 3-equivalents (water risk classes). From the sum of the WRC 3- equivalents a so-called WRI (water risk index) can be calculated logarithmically, analogously to the Richter scale in the case of earthquakes. On this basis it was possible to analyse the potential ARSs (accidental risk spots) in the Danube catchment area and assess their relative significance.

The investigation discovered that about a third of the entire risk potential, in terms of WRC-3 equivalent mass, is to be found in the Danube catchment area in Germany, while about a quarter is connected with mining activities in Romania. In addition to this, sedimentation basins, or tailing ponds, present an enormous potential hazard. In view of the catastrophic accidents that have happened in the past (Donana, Baia Mare, Baia Borsa, etc.), this conclusion was to be expected.

The investigation was able to identify top-priority ARSs in the various member states of the ICPDR, which should prompt the local authorities to take urgent safety measures in these installations.

2. Background

The environmental disasters caused by the cyanide accident in the Tisa catchment area proved repeatedly that inadequate precautionary measures in industrial practice, when faced with a water pollution occasioned by accident, can lead to massively harmful effects, both for human beings and for the environment, as well as having a significant economic impact on entire regions.

On the initiative of the ICPDR, since 1997 an Accidental Emergency Warning System (AEWS) in the Danube river basin is in operation. Its major task is propagation of the alarm message on the accidental spill to mitigate the consequences of an accident. Preparation of an Inventory of Potential Accidental Risk Spots is a part of a complex of measures designed to support the AEWS and represents a contribution to fulfilment of the goals set out in the "ICPDR Joint Action Programme" for 2001 to 2005.

The selection of the installations was made on the basis of the potential danger they represent, based on the nature and the quantity of the raw materials handled in these installations that could cause water pollution. In this context it must be made clear that a definitive statement of the actual danger level was not possible on the basis of these findings only, since no investigation has been made of the safety measures that have been put in place in each of these locations. An evaluation of the quality of prevention, or of the safety rating of the factories concerned, is not the object of this analysis, even though suggestions are proposed as to what steps could be taken to make progressive improvements in the safety level (see attachment: "Checklist-methodology").

The philosophy of water protection, as seen in relation to industrial installations in the developed industrial countries is based on presumption that the potential hazard to water bodies can be compensated by comprehensive technological and organisational safety precautions.

The analysis executed here gives an overview of the potential dimensions of the hazard, showing at what points action needs to be taken, that is, which aspects of the safety of an installation need to be referred to as a matter of top priority.

3. Selection of hazardous locations

Because systems for classifying accident-susceptible industrial activities in the various countries of the Danube catchment area are quite different from one another, if they even exist at all, the first task was to find a common procedure to be used for the classification.

As a basis for this

- the EU "Seveso II" directive,
- the "UN/ECE agreement on the transboundary effects of industrial accidents" (Industrial Accidents Convention) as well as
- the findings of the International Commission for the Protection of the River Elbe (ICPE)

were taken into consideration.

The first criterion for selection in all cases was the quantity of dangerous substances present at each of the various locations. In particular, the international directives mentioned above make the following implications:

3.1 EU "Seveso II" directive

This directive defines hazardous industrial activity on the basis of the quantity of dangerous substances present at the given location. The level of hazard that a substance represents is based on danger categories as well as on a list of individual substances

(see Annex, Seveso II). No discrimination is made here in respect of potential hazards to water, air, or the soil.

3.2 "UN/ECE agreement on the transboundary effects of industrial accidents" (Industrial Accidents Convention)

The definition of hazardous industrial activities is in all essential respects analogous to the definition found in the EU "Seveso II" directive. Only in the quantities of the substances that are taken to be critical are there some small differences, which are however at present being harmonized. The convention itself still makes no difference between accidents that transmit their effects by way of water, the air, and the soil. At the first Conference of the Parties to the Industrial Convention, however, a resolution was adopted that included specified criteria for the classification of hazardous installations on river systems extending across national boundaries. In this method of classification, industrial activities with potential for water pollution are assessed in terms of the various substance categories 3, 4, 5, and 8 ("very poisonous", "poisonous", "oxidising", and "environmentally dangerous") along with the critical thresholds for the quantities involved (see Annex, UN/ECE criteria).

3.3 The ICPE methodology

As early as 1995 a method was developed within the ICPE for categorising those industrial activities in the Elbe river basin that represent a hazard of water pollution. The basis of this was the framework for determining the assessment of water pollution caused by accident that had been worked out by the Elbe Warning and Alarm Plan. The critical factors here were the potential for causing water pollution combined with the quantity of hazardous substances present in each case. These considerations gave the so-called water risk index (WRI). In the year 2001 this methodology has been also established by the ICPDR (see Annex “Alarmcriteria”)

3.3.1 Water Risk Classes

Water risk classes have already been used in Germany for more than 20 years as a means of assessing "substance-specific water hazards", particularly in determining the potential for water pollution represented by hazardous installations.

By now about 6000 substances and mixtures of substances have been classified in these terms.

- The following properties of substances are the essential factors that are taken into account when classifying in terms of Water Risk Classes (WRC):Toxicity (acute, chronic)
- Toxicity to humans and mammals

- Aquatic toxicity
- Persistence
- Biological degradability
- Physiochemical *eliminability*
- Properties of distribution in water and the soil
- In the organism (accumulation)

In detail the water risk class is determined by assessing the effects of substances that are categorised in terms of the 25 R-ratings. The difference is made between substances posing no danger (WRC 0) and those ranked into three classes of danger:

WRC 1: low danger to water
WRC 2: dangerous to water
WRC 3: high danger to water

Contrary to both the EU "Seveso II" directive and the UN/ECE "Industrial Convention", the water hazard classes are an integrated method of evaluating water hazards (see Annex, WRC classification).

3.3.2 Water Risk Index (WRI)

Substance-specific determination of water hazard makes distinctions between the separate water hazard classes based on the factors 10 – 100. For a simplified assessment of potential water hazard in industrial activities, the International Warning and Alarm Plan Elbe (IWAE) was the context for the development of the so-called index of water pollution. Here in the assessment of water pollution caused by an accident a water risk index (WRI) was introduced, which, like the Richter scale in the case of earthquakes, makes it possible to classify water-related accidents according to their potential danger. The WRI corresponds to the base 10 logarithm of the WRC 3 substance equivalents.

For categorising dangerous activities in the Elbe catchment area the above mentioned principles were referred to. In addition the following secondary criteria were introduced:

1. For the sake of determining which activities carried the highest risk potential, a cut-off threshold of WRI >= 5 was introduced.

2. Only those activities were investigated that are located directly on the Elbe, or up to 50 kilometres upstream on its tributaries.

3.4 Procedures followed in the Danube catchment area

On the basis of an analysis of the various approaches described above, the ICPE's way of proceeding was found to be the most suitable for the analysis of industrial activities with high potential for causing water pollution. An analysis just in terms of the EU "Seveso II" directive would have selected installations susceptible to accident without discriminating on the basis of their potential for causing water pollution. The UN/ECE "Industrial Convention" would have taken the water hazard more into account, but a weighting of the various activities in terms of hazard potential would not have been possible.

The ICPE's way of proceeding embodied a pragmatic approach, making possible a rapid determination of the most hazardous activities and, on that basis, a recommendation of safety measures that should be given the highest priority.

Because the substance classifications of the water hazard classes incorporate the substance criteria of the EU "Seveso II" directive as well as those of the UN/ECE-"Industrial Convention", while at the same time going beyond them, we can be assured that all industrial installations that are referred to on the basis of these two principles will also be selected using the ICPE method. Activities presenting a water hazard in terms of the EU "Seveso II" directive or in terms of the UN/ECE "Industrial Convention" would therefore be a subclass of the activities determined by the ICPE approach.

Only reservation no. 2 of the ICPE methodology, having in view the UN/ECE "Industrial Convention", has not been taken into account. Following example will explain the approach applied:

As the first step the inventory of chemicals (type and amount) in each site will be performed. The to each substance the WRC is ascribed. For this purpose the UBA databank of dangerous chemicals can be used (http://www.umweltbundesamt.de/wgs/wgs-index.htm). If no WRC can be found for a particular substance then the expert estimate must be done (e.g., content of the sedimentation reservoir has WRC 1). For the determination of the water endangering potential of the assessed site the calculation of the WRI is necessary. WRI is calculated from the amounts of all dangerous substances after their recalculation to WRC 3 equivalent[1] . The example of the recalculation is given in the following Table:

[1] The real differences in danger to water between particular WRC-classes are in the interval of 10-100. To simplify the classification using WRC the factor of danger between classes has been set to 10. This leads to a certain overestimation of danger of WRC 1 substances and to underestimation of danger of WRC 3 substances. This approach can be justified by the fact that during accidents in addition to toxic effects also other adverse

Table 1

Substance	***Amount [Kg]***	***WRC***	***WRC 3 – equivalent [Kg]***	***WRI***
Paraffine	*10000*	*"0"*	*10*	*1*
NaOH	*10000*	*1*	*100*	*2*
Ammonia	*10000*	*2*	*1000*	*3*
Acrylnitril	*10000*	*3*	*10000*	*4*
Sum			***11110***	***4,046***

From this example it is clear that substances posing low danger to water have negligible effect to total WRI in case that comparable amounts of various substances have been spilled.

4. Analysis and evaluation

In October 2000 the members states of the ICPDR were requested to compile a basin-wide Inventory of Potential Accidental Risk Spots based on the accepted methodology (see Annex, Survey Table). The survey was focussed to the place and name of the activity, along with the presence of substances capable of causing water pollution and their quantity. In addition, in the interests of cartographical precision the co-ordinates of the place were to be supplied.

The data resulting from the enquiry received by the end of June 2001 was of variable quality (see Annex „Information Sources"). No information was received from Austria, Ukraine and Bosna i Herzegovina. Although the Inventory consisted of very few columns to be filled in, it was obvious that some countries had found it very difficult to respond to the questions. In order to analyse these difficulties and to draw the appropriate conclusions, all member states of the ICPDR were asked to make a statement. The result is summarised in the Annex, Difficulties – NATIONAL A.R.S. – INVENTORY.

On the basis of a technical analysis of the results of the questionnaire, the following could be established as principal difficulties:

- Geographical co-ordinates are evidently known only in some countries.

impacts can occur (e.g., decrease of oxygen content). These effects are relevant especially during spills of large amounts of dangerous substances.

- For complex mixtures of substances there have often been no reliable R-phrases or water risk indices established. So in the analysis a number of water risk indices were estimated (for example with water-polluting solvents in tailing ponds → WRC=1).
- The total quantity of the hazardous substances can often be only an estimate.
- A major difficulty consists in the question of how an 'industrial activity' is to be defined. Are pipelines or refuse depots to be included into this category? Seeing that immediately following on the Seveso II directive the question has been raised whether the cyanide accident in the Tisa catchment area falls within the scope of the directive, in carrying out this survey an open mind was maintained on this issue, and the various ICPDR countries were offered the latitude of forming a definition of activities representing a water hazard in the light of their own experience. This way of proceeding resulted in some spectacular results, e.g. with reference to the potential risk of tailing ponds by comparison with "conventional" industrial activities.

In detail the survey produced the following results:

4.1 Results

The following table (Table 1) gives a comprehensive overview of the results obtained. Altogether data was determined for 611 ARSs (potential "accidental risk spots"). The total quantity of highly water-hazardous (WRC3) substances in the Danube catchment area is approx. 6 million tonnes. Over a third of this is used in industrial activities in Germany. In addition some 25% of this hazard potential is associated with mining activities (tailing ponds) in Romania. The lowest WRI (Water Risk Index) figures are found in Slovenia and the Republic of Moldova. Seeing that the WRI works on a logarithmic scale, the difference in substance-specific hazard potential between Hungary (WRI = 8.8), say, and Bulgaria (WRI = 8.6) practically represents a doubling in quantity. Therefore, the logarithmic scaling is always to be kept in mind when comparing any WRI values. The numerical difference of 1 in WRI means the difference in an order of magnitude in terms of mass.

All in all the distribution resulting from the survey, when compared with the economic capacity or industrial development of the various regions, is in accordance with what might have been expected. Only the high WRI for Romania is at first glance not easy to make sense of. The detailed analysis of the various countries gives a somewhat fuller picture.

Table 2 The number of ARSs and their total hazard potential

Country	Reported ARS	Evaluable ARS	Total quantity (WRC 3 – Equivalents)	Total WRI
			[Kg]	
Bulgaria	29	28	370,000,000	8.6
Germany	56	56	2,293,874,000	9.4
Croatia	30	26	135,734,760	8.1
Moldova	27	14	3,634,610	6.6
Romania	67	59	2,076,893,274	9.3
Slowak. Rep.	148	145	250,877,521	8.4
Slovenia	2	2	980,000	6.0
Czech Rep.	9	8	144,617,790	8.2
Hungary	243	242	706,603,002	8.8
Total	611	580	5,982,720,034	9.8

In view of the statistical distribution of the various ARSs in terms of WRI classes in the various countries, it can be clearly seen that the survey methods applied here succeeded in defining the top end of the high-risk locations in the Danube catchment area. As a rule, the number of ARSs should progressively rise as the WRI becomes lower (see Hungary); where this is not the case, and intermediate peaks come into view, this indicates certain specific factors peculiar to the country, such as a higher proportion of mining activities or refuse depots.

Table 3 Statistical distribution of the ARSs in terms of WRI classes

Danube Countries	Total Number of Evaluable ARS spots	Number of ARS spots belonging to the Water Risk Index groups					
		≥ 9.0	8.9 – 8.0	7.9 – 7.0	6.9 – 6.0	5.9 – 5.0	Below 5
Germany	**56**	**-**	**6**	**6**	**14**	**29**	**1**
Austria							
Czech Rep.	**8**	**-**	**1**	**1**	**-**	**1**	**5**
Slovakia	**145**	**-**	**-**	**9**	**17**	**62**	**57**
Hungary	**242**	**-**	**2**	**11**	**20**	**40**	**169**
Slovenia	**2**	**-**	**-**	**-**	**-**	**2**	**-**
Croatia	**26**	**-**	**-**	**3**	**10**	**2**	**11**

Romania	**59**	**-**	**8**	**11**	**12**	**7**	**21**
Bulgaria	**28**	**-**	**1**	**2**	**7**	**5**	**13**
Moldova	**14**	**-**	**-**	**-**	**1**	**7**	**6**
Ukraine							

In conclusion it must again be emphasised that the present determination of potential risk does not correspond to the actual risk, since for the real risk assessment the security measures applied must be taken into consideration, as well. In the course of the economic recovery of Middle and Eastern Europe, a considerable rise in the number of ARSs is to be expected. To prevent this development's leading to a rise in the Danube catchment area in the actual hazard of water pollution occasioned by accident, effective prescriptions for technical safety measures, both at national and at supranational level, are needed, and steps must be taken to ensure that they are realised in practice.

4.1.1 Germany

The German national inventory was carried out on the basis of the ICPE procedures, i.e., only industrial installations situated by the tributaries up to 50 kilometres upstream their confluence with the Danube mainstream were taken into consideration. As a result a number of industrial installations were not included (e.g. Munich). Inclusion of these regions would probably result in much higher WRI value.

Altogether 56 activities representing a water hazard were reported. These could be completely incorporated in the survey. The highest potential hazards are located to be in oil refineries and depots.

4.1.2 Austria

From Austria no information has been received by the end of June 2001.

4.1.3 Czech Republic

The Czech Republic reported 9 ARSs, although one of these could not be evaluated as the data supplied was incomplete. Out of the remaining 8 ARSs, 7 are associated with "industrial" activities and 1 ARS corresponds to two tailing ponds resulting from the processing of uranium. The results of the survey pointed at two interesting facts:

1. The potential hazard of uranium tailing ponds, even at a conservative estimate, is higher by a factor of 10 than all other "industrial" potential hazards in the Czech Republic.

2. Practically the whole potential "industrial" hazard (>99%) is produced by one ARS related to the processing of crude oil.

4.1.4. Slovak Republic

The report made by the Slovak Republic was also very comprehensive. Altogether 148 ARS were reported, out of which 145 could be assessed. The high number of installations arises from the fact that a lot of ARS with low hazard potential were reported. Having in mind that the WRI is logarithmically determined the contribution of these ARS to the overall WRI rating is negligible. A more significant influence here might have been derived from the conservative procedures of handling of petrochemical products belonging to WRC 3.

The highest hazard potential in the Slovak inventory was found in connection with a tailing pond ("siderite mining") and then that of refineries/depots for the processing or storing of petrochemical products.

4.1.5 Hungary

Hungary provided a very detailed and precise report; although, as already observed in the case of Germany, the survey considered tributaries up to a distance of only 50 kilometres above their confluence into the Danube. Altogether 246 ARSs were reported. This inventory included more ARSs than it was required by the WRI cut-off point having the value of 5. So the Hungarian report contains 173 ARS, which have a WRI less than 5, thus, they should be considered as relatively low-risk locations. As an additional interesting fact in the Hungarian national inventory the different hazardous potential of agricultural and industrial activities in the Tisa and the Danube catchment can be considered. It was found that the agricultural ARSs (U-Agri-D and U-Agri-T) have only a negligible influence on the overall Risk Index. The highest hazard potential is connected with the industrial activities on the Tisa (see Table 2). The highest potential hazards are found in two ARSs in the Tisa catchment (an oil-fired power station and a chemical factory).

Table 4

	ARS	Total quantity [Kg]	WRI	Mean/ARS	Mean WRI
Hungary Total	**243**	**706,603,002**	**8.8**	**3617345**	**6.6**
U-Agri-D	**30**	**2,910,000**	**6.5**	**100345**	**5.0**
U-Agri-T	**20**	**1,928,000**	**6.3**	**101474**	**5.0**
U-Industry-D	**131**	**163,766,892**	**8.2**	**1259745**	**6.1**
U-Industry-T	**62**	**537,998,110**	**8.7**	**8406220**	**6.9**

4.1.6 Slovenia

Slovenia reported two ARSs. Both are refuse depots ("land fill sites") arising from the metalworking and petrochemical industries.

4.1.7 Croatia

Out of 30 ARSs reported, data were supplied for 26. The highest potential hazard is connected with a pond of waste water.

4.1.8 Bulgaria

Out of 29 reported ARS, 28 could be evaluated in terms of WRC and on the basis of the quantities present by means of expert estimates. The Kremikovtzi industrial site had the highest hazard potential prevailing over all other risk spots.

It is particularly evident from the Bulgarian inventory that, in spite of the sufficient instructions provided to a local expert for carrying out of the survey, there is still a considerable need for consultation to enhance the understanding of the approach applied.

4.1.9 Romania

67 ARSs were reported by Romania. The available data were sufficient for the evaluation of 59 installations. After Germany, Romania has the second highest overall WRI. The Inventory shows the reasons for this phenomenon. The "industrial" hazard

potential of Romania represents less than 0.1% of the enormously high hazard potential of tailing ponds and wastewater dumps arising from a wide range of mining activities.

4.1.10 Ukraine

The Ukraine did not participate in the ARS survey.

4.1.11 Republic of Moldova

The Republic of Moldova reported 27 ARSs. More than the half of these (about 14) could be evaluated on the basis of simplified criteria. The Republic of Moldova is a predominantly an agricultural country with relatively limited industrial activities. Accordingly, the hazard potential is to be found almost exclusively in fuel depots and large-scale chlorine depots connected with water treatment or food production.

5. Recommendations

- On the basis of the survey procedures applied, the most significant potential hazards in the Danube catchment area could be determined. It is recommended to the ICPDR member states that they should carefully control and monitor locations with a high-risk potential, with special reference to weak points.
- It is recommended to the ICPDR member states that, using the agreed procedures, they should ensure the continuous updating of ARS Inventory with the aim to further investigate the distribution of potential hazards in their region. This should lead to specification of high priority actions to be taken.
- The ARS survey can only give an indication of potential hazards. The actual risks arising from the ARSs depend on the safety measures that have been applied in each installation. In order to estimate the real safety level that has been attained, and to improve it if necessary, special checklists have been developed (see Appendix), based on the recommendations of the ICPR and of the ICPE. These checklists should be used by the authorities of the ICPDR member states in order to investigate the safety measures in each ARS. These checklists should be seen as “living documents” and should be further adjusted to the need of the ICPDR-countries by the AEPWS expert group.
- The practical value of these checklists has been positively proved in the context of a support project donated by the German federal government to Romania and to the

Republic of Moldova. Therefore, the practical value of the checklists should be demonstrated to all ICPDR member states.

- Tailing ponds arising from mining activities and waste depots or dumps were found to be the ARSs with the highest hazard potential. These areas are covered only partially or not at all by international regulations (EU directives; UN/ECE conventions). The ICPDR should address recommendations to the EU and the UN/ECE urging them to provide appropriate regulations setting the safety standards for these high-risk locations.
- In addition to this, it is recommended that the ICPDR member states should assess their national legislation as for its efficiency to ensure a good technical status of the hazardous installations avoiding any weaknesses in their safety design.
- It is also recommended that the ICPDR member states should evaluate the personal and technical qualifications of their bodies responsible for mapping of hazards related to ARSs.
- The present analysis represents the first international survey of ARSs in the Danube River Basin. The survey procedures should be further refined and standardised to indicate the actions to be taken. It is therefore recommended that the ICPDR should continue to refine and standardise the survey methodologies, and should repeat the Inventory of ARSs in the Danube River Basin at three-year intervals.

Annex 1

Seveso II

ANNEX 1 – SEVESO 2

APPLICATION OF THE DIRECTIVE
INTRODUCTION
1. This Annex applies to the presence of dangerous substances at any establishment within the meaning of Article 3 of this Directive and determines the application of the relevant Articles thereof.
2. Mixtures and preparations shall be treated in the same way as pure substances provided they remain within concentration limits set according to their properties under the relevant Directives given in Part 2, Note 1, or their latest adaptation to technical progress, unless a percentage composition or other description is specifically given.
3. The qualifying quantities set out below relate to each establishment.
4. The quantities to be considered for the application of the relevant Articles are the maximum quantities which are present or are likely to be present at any one time. Dangerous substances present at an establishment only in quantities equal to or less than 2 % of the relevant qualifying quantity shall be ignored for the purposes of calculating the total quantity present if their location within an establishment is such that it cannot act as an initiator of a major accident elsewhere on the site.
5. The rules given in Part 2, Note 4 governing the addition of dangerous substances, or categories of dangerous substances, shall apply where appropriate.

PART 1

Named substances
Where a substance or group of substances listed in Part 1 also falls within a category of Part 2, the qualifying quantities set out in Part 1 must be used.
>TABLE POSITION>
NOTES
1. Ammonium nitrate (350/2 500)
This applies to ammonium nitrate and ammonium nitrate compounds in which the nitrogen content as a result of the ammonium nitrate is more than 28 % by weight (compounds other than those referred to in Note 2) and to aqueous ammonium nitrate solutions in which the concentration of ammonium nitrate is more than 90 % by weight.
2. Ammonium nitrate (1 250/5 000)
This applies to simple ammonium-nitrate based fertilizers which comply with Directive 80/876/EEC and to composite fertilizers in which the nitrogen content as a result of the ammonium nitrate is more than 28 % in weight (a composite fertilizer contains ammonium nitrate with phosphate and/or potash).
1. Polychlorodibenzofurans and polychlorodibenzodioxins
The quantities of polychlorodibenzofurans and polychlorodibenzodioxins are calculated using the following factors:
>TABLE POSITION>

PART 2

Categories of substances and preparations not specifically named in Part 1
>TABLE POSITION>
NOTES
1. Substances and preparations are classified according to the following Directives (as amended) and their current adaptation to technical progress:
- Council Directive 67/548/EEC of 27 June 1967 on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (1),
- Council Directive 88/379/EEC of 7 June 1988 on the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations (2),
- Council Directive 78/631/EEC of 26 June 1978 on the approximation of the laws of the Member States relating to the classification, packaging and labelling of dangerous preparations (pesticides) (3).
In the case of substances and preparations which are not classified as dangerous according to any of the above Directives but which nevertheless are present, or are likely to be present, in an establishment and which possess or are likely to possess, under the conditions found at the establishment, equivalent properties in terms of major-accident potential, the procedures for provisional classification shall be

followed according to the relevant Article of the appropriate Directive.
In the case of substances and preparations with properties giving rise to more than one classification, for the purposes of this Directive the lowest thresholds shall apply.
For the purposes of this Directive, a list providing information on substances and preparations shall be established, kept up to date and approved by the procedure set up under Article 22.
2. An 'explosive` means:
(a) (i) a substance or preparation which creates the risk of an explosion by shock, friction, fire or other sources of ignition (risk phrase R 2),
(ii) a pyrotechnic substance is a substance (or mixture of substances) designated to produce heat, light, sound, gas or smoke or a combination of such effects through non-detonating self-sustained exothermic chemical reactions, or
(iii) an explosive or pyrotechnic substance or preparation contained in objects;
(b) a substance or preparation which creates extreme risks of explosion by shock, friction, fire or other sources of ignition (risk phrase R 3).
3. 'Flammable`, 'highly flammable`, and 'extremely flammable` in categories 6, 7 and 8 mean:
(a) flammable liquids:
substances and preparations having a flash point equal to or greater than 21 °C and less than or equal to 55 °C (risk phrase R 10), supporting combustion;
(b) highly flammable liquids:
1. - substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any input of energy (risk phrase R 17),
- substances which have a flash point lower than 55 °C and which remain liquid under pressure, where particular processing conditions, such as high pressure or high temperature, may create major-accident hazards;
2. substances and preparations having a flash point lower than 21 °C and which are not extremely flammable (risk phrase R 11, second indent);
(c) extremely flammable gases and liquids:
1. liquid substances and preparations which have a flash point lower than 0 °C and the boiling point (or, in the case of a boiling range, the initial boiling point) of which at normal pressure is less than or equal to 35 °C (risk phrase R 12, first indent), and
2. gaseous substances and preparations which are flammable in contact with air at ambient temperature and pressure (risk phrase R 12, second indent), whether or not kept in the gaseous or liquid state under pressure, excluding liquefied extremely flammable gases (including LPG) and natural gas referred to in Part 1, and
3. liquid substances and preparations maintained at a temperature above their boiling point.
4. The addition of dangerous substances to determine the quantity present at an establishment shall be carried out according to the following rule:
if the sum
>NUM>q1
>DEN>Q
+ >NUM>q2
>DEN>Q
+ >NUM>q3
>DEN>Q
+ >NUM>q4
>DEN>Q
+ >NUM>q5
>DEN>Q
+ . . . > 1where qx = the quantity of dangerous substances x (or category of dangerous substances) falling within Parts 1 or 2 of this Annex,
Q = the relevant threshold quantity from Parts 1 or 2,
then the establishment is covered by the relevant requirements of this Directive.
This rule will apply for the following circumstances:
(a) for substances and preparations appearing in Part 1 at quantities less than their individual qualifying quantity present with substances having the same classification from Part 2, and the addition of substances and preparations with the same classification from Part 2;
(b) for the addition of categories 1, 2 and 9 present at an establishment together;
(c) for the addition of categories 3, 4, 5, 6, 7 a, 7 b and 8, present at an establishment together.

(1) OJ No 196, 16. 8. 1967, p. 1. Directive as last amended by Directive 93/105/EC (OJ No L 294, 30.

11. 1993, p. 21).
(2) OJ No L 187, 16. 7. 1988, p. 14.
(3) OJ No L 206, 29. 7. 1978, p. 13. Directive as last amended by Directive 92/32/EEC (OJ No L 154, 5. 6. 1992, p. 1).

Annex 2

UN/ECE convention – Annex 1

GUIDELINES TO FACILITATE THE IDENTIFICATION OF HAZARDOUS ACTIVITIES FOR THE PURPOSES OF THE CONVENTION

(in accordance with article 4, paragraph 1, of the Convention)

1. According to the definitions of the Convention, hazardous activities are activities capable of causing transboundary effects that involve the manufacture, use, storage, handling or disposal of hazardous substances in quantities above the threshold limits laid down in annex I to the Convention.

2. A transboundary effect means a serious effect in one Party as a result of an industrial accident occurring in another Party. An effect is a direct or indirect, immediate or delayed adverse consequence caused by an industrial accident on, inter alia, human beings, soil, water, air, landscape, material assets or cultural heritage.

3. Taking into account the definition of hazardous activity and the fact that industrial accidents with transboundary effects are more likely to occur in activities close to a border or in a river basin having a transboundary outlet, it is clear that both substance and quantity criteria and location criteria are needed for the purpose of identifying hazardous activities. These criteria are given below. They are intentionally kept pragmatic so that the Parties can start implementing the Convention swiftly.

Substance and quantity criteria

4. The following substance and quantity criteria shall apply for the purpose of identifying hazardous activities capable of causing transboundary effects under the Convention: 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 to the Convention.1/

Location criteria

5. The following two location criteria shall apply for the purpose of identifying hazardous activities capable of causing transboundary effects under the Convention:

(a) 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;

(b) Along or within the catchment areas of transboundary and border rivers, transboundary or international lakes, or within the catchment areas of transboundary groundwaters, 2/ for activities involving substances falling under category 3, 4, 5 or 8 of part I of annex I to the Convention. 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.

Notes

1/ According to Council Decision 98/685/EC of 23 March 1998, for EU member States all establishments covered by article 9 of Council Directive 96/82/EC of 9 December 1996 (Seveso II), i.e. upper-tier establishments, are taken to meet these criteria.

2/ A list of major transboundary watercourses (i.e. any surface waters or groundwaters which mark, cross or are located on boundaries between one or more States) and international lakes has been compiled within the framework of the UN/ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes on the basis of information provided by Parties and other UN/ECE member countries. The term "major" implies that there may be a significant transboundary impact through these waters. It was, however, left to the discretion of the countries to decide which of these waters were considered to fulfil the condition of "significant transboundary impact". Thus, the list includes not only big, but also medium and small watercourses. This list will soon be available through the Internet at the following address: www.unece.org/env/water and will be updated regularly.

ANNEX I

HAZARDOUS SUBSTANCES FOR THE PURPOSES OF EFINING HAZARDOUS ACTIVITIES

The quantities set out below relate to each activity or group of activities. Where a range of quantities is given in Part I, the threshold quantities are the maximum quantities given in each range. Five years after the entry into force of this Convention, the lowest quantity given in each range shall become the threshold quantity, unless amended.

Where a substance or preparation named in Part II also falls within a category in Part I, the threshold quantity set out in Part II shall be used.

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.

PART I. Categories of substances and preparations not specifically named in Part II

Category	Threshold Quantity (Tonnes)
1. Flammable gases 1a) including LPG	200
2. Highly flammable liquids 1b)	50,000
3. Very toxic 1c)	20
4. Toxic 1d)	500-200
5. Oxidizing 1e)	500-200
6. Explosive 1f)	200-50
7. Flammable liquids 1g) (handled under special conditions of pressure and temperature)	200
8. Dangerous for the environment 1h)	200

PART II. Named substances

Substance	Threshold Quantity (Tonnes)
1. Ammonia	500
2 a Ammonium nitrate 2)	2,500
2 b Ammonium nitrate in the form of fertilizers 3)	10,000
3. Acrylonitrile	200
4. Chlorine	25
5. Ethylene oxide	50

6. Hydrogen cyanide	20
7. Hydrogen fluoride	50
8. Hydrogen sulphide	50
9. Sulphur dioxide	250
10. Sulphur trioxide	75
11. Lead alkyls	50
12. Phosgene	0.75
13. Methyl isocyanate	0.15

NOTES

1. Indicative criteria. In the absence of other appropriate criteria, Parties may use the following criteria when classifying substances or preparations for the purposes of Part I of this Annex.

(a) FLAMMABLE GASES: substances which in the gaseous state at normal pressure and mixed with air become flammable and the boiling point of which at normal pressure is 20'C or below;

(b) HIGHLY FLAMMABLE LIQUIDS: substances which have a flash point lower than 21'C and the boiling point of which at normal pressure is above 20'C;

(c) VERY TOXIC: substances with properties corresponding to those in table 1 or table 2 below, and which, owing to their physical and chemical properties, are capable of creating industrial accident hazards.

TABLE 1

LD_{50}(oral)(1) mg/kg body weight $LD_{50} \leq 25$	LD_{50}(dermal)(2) mg/kg body weight $LD_{50} \leq 50$	LC_{50}(3) mg/l (inhalation) $LC_{50} \leq 0.5$
(1) LD_{50} oral in rats		
(2) LD_{50} dermal in rats or rabbits		
(3) LC_{50} by inhalation (four hours) in rats		

TABLE 2

Discriminating dose mg/kg body weight	< 5
where the acute oral toxicity in animals of the substance has been determined using the fixed-dose procedure.	

(d) TOXIC: substances with properties corresponding to those in table 3 or 4 and having physical and chemical properties capable of creating industrial accident hazards.

TABLE 3

LD_{50}(oral)(1) mg/kg body weight $25 < LD_{50} \leq 200$	LD_{50}(dermal)(2) mg/kg body weight $50 < LD_{50} \leq 400$	LC_{50}(3) mg/l(inhalation) $0.5 < LC_{50} \leq 2$
(1) LD_{50} oral in rats		

(2) LD_{50} dermal in rats or rabbits
(3) LC_{50} by inhalation (four hours) in rats

TABLE 4

Discriminating dose mg/kg body weight =5
where the acute oral toxicity in animals of the substance has been determined using the fixed-dose procedure.

(e) OXIDIZING: substances which give rise to highly exothermic reaction when in contact with other substances, particularly flammable substances.

(f) EXPLOSIVE: substances which may explode under the effect of flame or which are more sensitive to shocks or friction than dinitrobenzene.

(g) FLAMMABLE LIQUIDS: substances which have a flash point lower than 55oC and which remain liquid under pressure, where particular processing conditions, such as high pressure and high temperature, may create industrial accident hazards.

(h) DANGEROUS FOR THE ENVIRONMENT: substances showing the values for acute toxicity to the aquatic environment corresponding to table 5.

TABLE 5

LC_{50}(1) mg/l LC_{50} <= 10	**EC_{50}(2) mg/l EC_{50} <= 10**	**C_{50}(3) mg/l IC_{50} <= 10**
(1) LC_{50} fish (96 hours)		
2) EC_{50} daphnia (48 hours)		
(3) IC_{50} algae (72 hours)		
where the substance is not readily degradable, or the log Pow > 3.0 (unless the experimentally determined BCF < 100).		

(i) LD - lethal dose

(j) LC - lethal concentration

(k) EC - effective concentration

(l) IC - inhibiting concentration

(m) Pow - partition coefficient octanol/water

(n) BCF - bioconcentration factor

2. This applies to ammonium nitrate and mixtures of ammonium nitrate where the nitrogen content derived from the ammonium nitrate is > 28% by weight, and to aqueous solutions of ammonium nitrate where the concentration of ammonium nitrate is > 90% by weight.

3. This applies to straight ammonium nitrate fertilizers and to compound fertilizers where the nitrogen content derived from the ammonium nitrate is

>`28% by weight (a compound fertilizer contains ammonium nitrate together with phosphate and/or potash).

4. Mixtures and preparations containing such substances shall be treated in the same way as the pure substance unless they no longer exhibit equivalent properties and are not capable of producing transboundary effects.

Annex 3

WRC classification

ANNEX 3 – WRC Classification

Federal Environmental Agency August 1999

Classification of Substances and Mixtures into Water Hazard Classes

according to the Administrative Regulation

on the Classification of Substances Hazardous to Waters

(*Verwaltungsvorschrift wassergefährdende Stoffe*; VwVwS) of 17 May, 1999

- Guidelines for self-classification -

Table of Contents

1. Introduction

An amended version of the Administrative Regulation on Substances Hazardous to Waters (*Verwaltungsvorschrift wassergefährdende Stoffe*; VwVwS) was published on 17 May, 1999, and entered into force as of 1 June, 1999, creating a new basis for the classification of substances into water hazard classes (*Wassergefährdungsklassen*; WGK) in Germany. In the past, substances were classified on the basis of an evaluation scheme published in 1979 and the classifications were published in VwVwS. This evaluation scheme was subsequently revised according to scientific developments and published in 1998 as a report of the Advisory Council on the Storage and Transport of Substances Hazardous to Waters (LTwS-Schrift No. 28); adequate classification of substances into water hazard classes was thus possible from a technical standpoint, but it did not conform to recent developments in the classification and evaluation of substances in the context of European Law on Chemicals.

The VwVwS Amendment is therefore primarily intended to adapt WGK classifications to the Law on Hazardous Substances. At the same time, however, it is designed to facilitate self-classification by the industry, thus increasing its independence and responsibility. The Administrative Regulation foresees a combination of defined WGK classifications (Annexes 1 and 2), and self-classifications (according to the schemes in Annexes 3 and 4).

All WGK classifications of substances are registered and published by the Federal Environmental Agency. It is therefore irrelevant with respect to legal implementation whether a classification is based upon VwVwS Annex 1, 2, or 3. **All of these classifications are equivalent with regard to their implementation.** Classifications of preparations and mixtures based on VwVwS Annex 4 are usually not centrally registered and published. They are the sole reponsibility of the classifier.

This guideline aims at providing an overview of the procedures for self-classification into water hazard classes. It cannot provide rules for each and every particular case. **In borderline cases, the authoritative texts are the Administrative Regulation on Substances Hazardous to Waters (VwVwS) and the Ordinance on Hazardous Substances (and not this guideline).**

Detailed and binding rules for classification are also given in a report of the Advisory Council on the Storage and Transport of Substances Hazardous to Waters (LTwS-Schrift No. 10 of 1999), including cases in which the VwVwS classification scheme does not apply. Classifications of this type will continue to be the responsibility of the Commission for the Evaluation of Substances Hazardous to Waters (whose guidelines are documented in LTwS-Schrift No. 10), and they will be published in VwVwS Annexes 1 and 2.

2. General procedures for the determination of water hazard classes

With respect to the classification into water hazard classes (WGK), VwVwS discriminates between substances (*Stoffe*) and mixtures (*Gemische*). Before the WGK can be determined, it is therefore necessary to decide whether the compound represents a substance or a mixture (the latter term being largely equivalent to the term preparation - *Zubereitung* - of the Chemicals Act). In borderline cases, the definitions in the Chemicals Act apply. The following points may serve as a guide:

- A substance may contain impurities resulting from technical processes. These will usually not have to be evaluated separately, as long as the tests on which the evaluation is based were conducted with the same technical product.

- A reaction mixture not subject to further separation or processing may be considered a substance. The same applies to substances having a complex chemical composition resulting from their (partly) natural origin (e.g. petroleum products and fatty acid esters).

- The Chemicals Act and the Ordinance on Hazardous Substances do not apply to all substances requiring classification into a WGK. In these cases, the R-phrases merely represent a practical procedure for the purpose of WGK classification; they are of no consequence in other sectors of the law.

- If a manufacturer deliberately mixes individual constitutents (which may themselves consist of several substances), the result is a mixture.

In the classification of a **substance**, VwVwS discriminates between two groups:

- Substances specified in VwVwS Annexes 1 and 2, and

- all other substances (regardless of whether they are existing or new notified substances in the sense of the Chemicals Act).

VwVwS unequivocally prescribes the priority of the classifications in Annexes 1 and 2; the water hazard classes named in these Annexes therefore apply to the corresponding substances or groups of substances (see Section 4.2 on the possibility of reclassification). The classification scheme in Annex 3 only applies if a substance is not named in Annexes 1 and 2, in which case the water hazard class is derived from R-phrases and/or default values. This procedure is explained in Section 3 of this guideline.

The procedure for a **mixture** is analogous. First, it needs to be ascertained whether the mixture is named in Annexes 1 and 2. This will usually not be the case, however, and the manufacturer will bear the responsibility of classifying the mixture according to VwVwS Annex 4. This procedure is explained in Section 5 of this guideline.

The rules of VwVwS Annex 4 will in general not apply to mixtures of undefined composition (e.g. wastes). The Commission for the Evaluation of Substances Hazardous to Waters (KBwS) will classify these mixtures on the basis of preliminary studies of their composition and their effects.

3. Classification on the basis of R-phrases according to VwVwS Annex 3

If a substance is **not** named in Annexes 1 and 2 of VwVwS[2], then it needs to be classified by the industry according to the provisions in VwVwS Annex 3, and the Office of Documentation and

[2] All classifications - including those in VwVwS - are registered at the Office of Documentation and Information on Substances Hazardous to Waters at the Federal Environmental Agency. It is therefore possible to inquire whether a substance has already been classified, either in VwVwS, or by a third party (cf. Section 6).

Information on Substances Hazardous to Waters at the Federal Environmental Agency must be informed of the classification.[3]

The following steps are to be taken in order to derive a water hazard class:

I. Assessment of the basic data set
II. Assessment of other hazardous features of the substance
III. Determination of the R-phrase classifications
IV. Allocation of evaluation points and default values
V. Derivation of the water hazard class (WGK)
VI. Documentation of the classification

These steps are explained below.

3.1 The basic data set

VwVwS provides that a WGK should be assigned to a substance on the basis of at least four hazard characteristics (the so-called "basic data set"):

- Acute oral or dermal toxicity to mammals (e.g. LD_{50} in rats).
- One piece of data on aquatic toxicity - fishes (acute), daphnia (acute) or algae).
- Biodegradability.
- Potential for bioaccumulation.

Additional data are required before a substance may be classified as "non-hazardous to waters" (cf. Section 3.7).

There are two fundamental ways to establish the data of the basic data set:

a) the substance has been classified into a corresponding R-phrase in Annex 1 of Directive 67/548/EEC ("legal classification" according to the Law on Hazardous Substances),

b) corresponding studies have been conducted and are known to the classifier.
Possibility a) only provides evidence that a substance has certain hazardous characteristics (e.g. toxicity to mammals). Because the EU does not publish whether a substance has been evaluated and determined to be non-toxic, possibility b) applies in such cases. The classifier must therefore procure the corresponding report. This obviously results in a duplication of effort, but it remains unavoidable as long as the EU does not publish "negative classifications". Table 1 shows the R-phrases available for establishing the various components of the basic data set according to possibility a).

Table 1: Establishment of basic data by R-phrase classifications in Annex 1 of Directive 67/548/EEC

Characteristic	R-phrases
Acute toxicity to mammals (oral or dermal)	21, 22, 24, 25, 27, 28, 20/21, 20/22, 20/21/22, 21/22, 23/24, 23/25, 23/24/25, 24/25, 26/27, 26/28, 26/27/28, 27/28
Toxicity to an aquatic organism (fishes, algae or daphnia)	50, 52, 53, 50/53, 51/53, 52/53
Biodegradability	50*, 52*, 53, 50/53, 51/53, 52/53
Potential for bioaccumulation	50*, 52*, 53, 50/53, 51/53, 52/53

* R-phrases 50 and 52 do not describe hazards concerning degradability and potential for bioaccumulation. These characteristics have, however, been tested in each case prior to "legal classification", so that an R-phrase classification into R50 or R52 permits the conclusion that no hazard exists with respect to degradability and potential for bioaccumulation.

[3] Section 4.1. describes the procedure in cases where several classifiers have classified the same substance into different water hazard classes.

Example 1: A substance is "legally classified" into R22-40. In this case there is no need to determine its acute toxicity to mammals, because this characteristic has already been evaluated by the EU. The remaining three characteristics of the basic data set need to be investigated.

Example 2: A "legal classification" into R23/25-52/53 means that all basic data have been established. The classifier therefore does not need to conduct any further investigations.

If the basic data set cannot, or can only partly be established by "legal classifications", the missing data needs to be established in a study by the classifier, or by valid data from the literature (possibility b). The recommended test procedures are given in Annex 1. It is also possible, however, to conduct investigations by other comparable standardized test procedures.

3.2 Other characteristics for hazard assessment

The R-phrases listed in VwVwS Annex 3 (cf. Annex 2 of this guideline) also describe some characteristics hazardous to waters that are not part of the basic data set (e.g. R-phrases on carcinogenic and mutagenic effects).

If such R-phrases are listed in Annex 1 of EU Directive 67/548/EEC ("legal classifications") they must be taken into account in deriving the water hazard class. When this is not the case, the manufacturer or distributor is responsible for allocating an R-phrase according to § 4a of the Ordinance on Hazardous Substances if the corresponding hazards are known. After this R-phrase classification according to the Law on Hazardous Substances, evaluation points are allocated according to Annex 2.

It must be pointed out that the Ordinance on Hazardous Substances requires manufacturers and distributors to search for any specific data available on hazardous characteristics of "their" products. As opposed to the case of basic data (Section 3.1), however, there is no need to demonstrate that scientific studies on other hazard characteristics have been carried out. Default values are not assigned when such studies are lacking.

3.3 Determination of R-phrase classifications

R-phrases are allocated according to the provisions of the Ordinance on Hazardous Substances. In the case of substances to which the provisions of the Chemicals Act and of the Ordinance on Hazardous Substances do not apply (e.g. pharmaceuticals), R-phrases are determined by analogous procedures. These R-phrases, however, merely represent a practical instrument to determine the water hazard class; they are of no consequence in other sectors of the law.

Tables 2 and 3 provide an overview of the characteristics of the basic data set, and of the resulting R-phrase classifications and WGK evaluation points. The Ordinance on Hazardous Substances and VwVwS remain, however, the authoritative texts in borderline cases.

With respect to R-phrase classifications, it must be kept in mind that the classification always depends on the most sensitive data item.

Table 2: Overview of R-phrases and evaluation points for acute toxicity to mammals

Exposure	**LD_{50}** in mg/kg body weight	**R-phrase**	**Evaluation points**
oral	$LD_{50} \geq 2000$	-	0
dermal	$LD_{50} \geq 2000$	-	0
oral	$200 < LD_{50} \leq 2000$	R22	1
dermal	$400 < LD_{50} \leq 2000$	R21	1
oral	$25 < LD_{50} \leq 200$	R25	3
dermal	$50 < LD_{50} \leq 400$	R24	3
oral	$LD_{50} \leq 25$	R28	5

dermal	$LD_{50} \leq 50$	R27	5

Example: The acute oral toxicity to rats has been determined as LD_{50} = 1400 mg/kg. This leads to a classification into R22 and to the allocation of one evaluation point.

Table 3: Overview of R-phrases and evaluation points for various combinations of aquatic toxicity (fishes, algae or daphnia), biodegradability and potential for bioaccumulation

Biodegradability	Potential for bioaccumulation	aquatic toxicity (LC_{50}, EC_{50} or IC_{50}) in mg/l (most sensitive organism)			
		> 100	**10 - ≤100**	**1 - ≤10**	**≤1**
Readily degradable (corres	yes	0 points*	0 points*	R51/53 (6 points)	R50/53 (8 points)
ponding to OECD 301)	no	0 points*	0 points*	0 points*	R50 (6 points)
inherently (but possibly	yes	0 points	0 points	R51/53 (6 points)	R50/53 (8 points)
not readily) degradable**	no	0 points	0 points	R51/53 (6 points)	R50/53 (8 points)
not readily and/or	yes	R53 (3 points)	R52/53 (4 points)	R51/53 (6 points)	R50/53 (8 points)
not inherently degradable	no	0 points	R52/53 (4 points)	R51/53 (6 points)	R50/53 (8 points)

* 10 d window is not taken into account in the evaluation of the test on ready biodegradability.

** Substances are inherently biodegradable if they are mineralized in a test on inherent degradability to an extent of more than 60/70% (oxygen demand / DOC elimination) within 28 days. In the test according to OECD 302 B, however, the 70% mark must be attained within 7 days.

Example 1: A substance has a toxicity to fishes of LC_{50} = 7 mg/l; the degradability study shows that it is not readily degradable; there is no potential for bioaccumulation (log Pow < 3.0). This leads to a classification into R51/53, and 6 evaluation points are allocated to the substance.

Example 2: If the substance in Example 1 is readily degradable, an R-phrase classification becomes unnecessary and no evaluation points are allocated.

If other hazard characteristics are known in addition to those mentioned above (e.g. mutagenic effects), then R-phrase classification must follow the provisions of the Ordinance on Hazardous Substances (cf. Section 3.2).

3.4 Allocation of evaluation points and default values

The allocation of **evaluation points** to the R-phrases of a substance follows the procedures in VwVwS Annex 3. An overview of the evaluation points is given in Annex 2 of this guideline.

The consideration of the R-phrases and, thus, the allocation of evaluation points is based on the following principles:

- There is no double tally of R-phrases on acute oral and dermal toxicity to mammals. The more sensitive characteristic is the only relevant one.

Example 1: A substance classified into R21/22 is allocated 1 evaluation point (not 2 points).

Example 2: A substance classified into R22-24 is allocated 3 evaluation points (neither 4 nor 1 point).

- Classifications reflecting long-term or irreversible effects, and repeated exposures are taken into account in addition to the acute toxicity. Example: A substance classified into R22-40/21/22 is allocated 1 + 2 = 3 evaluation points.[4]

- There is no double tally of carcinogenic and mutagenic properties. The more sensitive characteristic is the only relevant one.

- There is no double tally of toxic effects on reproduction; here again, the more sensitive characteristic is the only relevant one. Example: A classification into R61-62 results in 4 evaluation points (not: 4 + 2 = 6).

If an item is missing from the basic data set, then as a precaution a high level of risk is assumed, and default values are allocated for the corresponding area. For juridical reasons, the allocation of default values is described in a rather incomprehensible manner in VwVwS, and a more intelligible procedure is given below:

In the case of gaps in the basic data set, a high level of risk is assumed for precautionary reasons, and the values given in Table 4 are assigned to the characteristic. This permits a "hypothetical" classification into R-phrases, leading to a derivation of evaluation points. The default value is the difference between the evaluation points of the "hypothetical" R-phrases and the R-phrases from the Ordinance on Hazardous Substances.

Table 4: Precautionary values used to fill gaps in the basic data set

Characteristic missing from the basic data set	**Precautionary value used for "hypothetical" R-phrase classification**
acute toxicity to mammals (oral or dermal)	LD_{50} = <25 mg/kg body weight
toxicity to an aquatic organism (fishes, algae or daphnia)	$LC_{50}/EC_{50}/IC_{50}$ = <1 mg/l
biodegradability	poor degradability
potential for bioaccumulation	BCF > 100

Example 1: The acute toxicity to mammals is unknown. Therefore, a precautionary LD_{50} of <25 mg/kg is assumed according to Table 4, leading to a "hypothetical" classification into R28 and thus to a default value of 5 points.

Example 2: The toxicity to fishes is LC_{50} = 8 mg/l. The potential for bioaccumulation is low (log Pow = 2,0); the degradability is unknown. According to the Ordinance on Hazardous Substances, there is no need to classify the substance in this case. The "hypothetical" assumption of poor biodegradability, however, results in a classification into R51/53 and thus to a default value of 6 points.

3.5 Derivation of water hazard classes (WGK)

The evaluation points and default values allocated to a substance are added up to obtain the total number of points, and thus the water hazard class:

Total number of points	**Water hazard class (WGK)**
0 to 4	1
5 to 8	2
9 and more	3

When the total is 0 the substance may be classified as "non-hazardous to waters" if it fulfills certain other prerequisites; see Section 3.7.

[4] When R-phrases 20 to 28 form part of an R-phrase combination that applies to long-term or irreversible effects (e.g. R48/25), this describes the pathway of exposure (in this case: oral), and does not provide an assessment of the acute toxicity. The evaluation points are obtained from Annex 2. This type of classification does not represent evidence for the completeness of the basic data set.

3.6 Documentation of the classification

The classifier is required to document the classification and send a copy for registration and publication purposes to the Office of Documentation and Information on Substances Hazardous to Waters (Dokumentations- und Auskunftsstelle wassergefährdende Stoffe im Umweltbundesamt, Schichauweg 58, 12307 Berlin; Fax +49 030-8903-4200). The documentation should adhere to the form of Annex 3. It is planned to perform the documentation electronically in the future.

The classifier is required to inform the Office of Documentation and Information without delay of any changes in the data documented.

3.7 Substances non-hazardous to waters

To classify a substance as "non-hazardous to waters", it must first be evaluated according to VwVwS Annex 3 (as described above). A substance is non-hazardous to waters if its total number of points is 0 and it fulfills all of the following prerequisites:

- Low solubility in water (less than 100 mg/l in the case of gases and solids, less than 10 mg/l in the case of liquids),
- No toxicity at saturation levels (tested with at least two organisms - fishes, daphnia or algae),
- Ready biodegradability in the case of organic liquids.

The data on toxicity and biodegradability must be documented by laboratory reports or appropriate literature citations, and they must be sent to the Office of Documentation and Information on Substances Hazardous to Waters along with the documentation form.

4. Special cases

4.1 Discordant classifications of the same substance

If the Office of Documentation receives two different WGK classifications for one and the same substance, it will first examine whether one of them is based on default values. If this is the case, the classification with the lower number of default points will be valid.

If the difference in classification is based on different R-phrases, the Office will inform both classifiers of the discordance and ask them to compare their data. If this leads to an agreement, the resulting WGK will be published.

If the comparison does not result in an agreement, the substance will be classified by the Commission for the Evaluation of Substances Hazardous to Waters (KBwS). If a prolonged delay in the evaluation by KBwS is to be expected, the higher WGK will be published provisionally. The classification by KBwS will be published in VwVwS Annex 2.

The data of a documented classification will be made available to third parties only if they can show a legitimate interest. This usually applies if they are themselves conducting and documenting a classification of the substance in question, or if they require the data in their capacity as operators in a water licensing procedure.

4.2 Reclassification of substances named in VwVwS Annex 2

The classifications in VwVwS Annex 2 are based on the former scheme for classification of substances hazardous to waters. This procedure is documented in LTwS-Schrift No. 28. Applications to reclassify substances in Annex 2 on the basis of the new evaluation scheme may be submitted to the Commission for the Evaluation of Substances Hazardous to Waters (KBwS).

The application for reclassification must include the data on the identity of the substance along with its present R-phrase classifications.

The KBwS decides whether a substance is to be reclassified according to VwVwS Annex 3, or whether it will continue to be named and classified specifically in Annexes 1 or 2.

4.3 Classification of groups, and classification based on analogies

VwVwS does not provide for a classification of groups by classifiers in the industry. If it is desired to categorize certain groups of substances having the same structural or functional characteristics, or the same mode of action as a substance group in VwVwS Annexes 1 and 2, a corresponding application must be submitted to the Commission for the Evaluation of Substances Hazardous to Waters (KBwS). The WGK of a substance group applies to each individual substance in the group.

In principle, VwVwS does not permit classifications by analogy; rather, the basic data set (cf. Section 3.1) must be created for every substance. Analogies are only permissible in the very restrictive framework applying to the registration of new notified substances according to the Chemicals Act. Classifications by analogy are restricted to special cases in which testing is superfluous according to the present level of scientific knowledge, or impossible for technical reasons.

On the other hand, assessments by analogy may be conducted by KBwS if the data indicate it to be plausible and sensible. This will generally follow the same procedures named above for the classification of groups.

4.4 Classification by procedures other than those in VwVwS Annex 3

In most cases the classification scheme based on R-phrases adequately reflect the water hazard characteristics of a substance. There are a few substances, however, where classification by procedures other than those in VwVwS Annex 3 will be appropriate. This may be the case when a hazardous characteristic is not accounted for by R-phrases (e.g. high mobility in the soil with resulting hazards to the groundwater), or when certain hazardous characteristics leading to R-phrase classifications are not, or hardly applicable to aquatic pathways (e.g. limited bioavailability).

These cases are assessed by the Commission for the Evaluation of Substances Hazardous to Waters (KBwS) and published in VwVwS Annexes 1 and 2. Corresponding applications may be submitted to KBwS. The procedure is described in detail in LTwS-Schrift No. 10 of 1999.

5. Classification of mixtures

VwVwS Annex 4 specifies the methods to derive the water hazard class for a mixture. The first consists of a computation of the WGK on the basis of the components WGK (as in the 1996 VwVwS). Secondly, the WGK may be derived from tests conducted with the mixture itself. Results obtained by the latter method have priority.

5.1 Classification based on the water hazard classes of the components

The computation rule in Annex 4 is basically identical to the former rule in the 1996 VwVwS. It first requires the determination of the WGK of each single component by the methods that apply to substances in general. If the identity of a component is unknown or undefined, then as a precaution WGK 3 is assumed for that component.

The mass fractions of the individual components are added up by their WGK, and the WGK of the mixture is then determined according to Table 5. Components are taken into account if their fraction surpasses the following thresholds:

- 0.1% in the case of carcinogenic substances
- 0.2% in the case of all other substances
- If carcinogenic substances are *actively added* to a mixture and their fraction is less than 0.1%, the mixture is classified at least into WGK 1; the same applies when the fraction of WGK 3 additives is less than 0.2%.

Table 5: Computation rule for the derivation of the WGK of a mixture from the WGK of its components

Ingredients (components)	Result			
	WGK 3	**WGK 2**	**WGK 1**	**non-hazardous**
WGK 3	≥ 3 %	0.2 to 3 %	< 0.2% in case of additives	< 0.2% (no additives permitted)
WGK 2		≥ 5%	0.2 to 5%	< 0.2%
WGK 1			≥ 3%	< 3%
non-hazardous				
R45 (carcinogenic)	≥ 0.1%	≥ 0.1%, but WGK 2	< 0.1% in case of additives	< 0.1% (no additives permitted)

Example 1: If a mixture contains a total of 3% of WGK 2 components and no WGK 3 components, this yields WGK 1 for the mixture as a whole.

Example 2: If a 0.05% fraction of a WGK 3 component is added to a substance non-hazardous to waters, the mixture is classified into WGK 1. If, however, the substance contains this component only as an impurity resulting from the production process, then it is "non-hazardous to waters".

Example 3 (dilution): A mixture containing a total of 20% of WGK 2 components and 80% of WGK 1 components is classified into WGK 2. If the mixture is diluted with water at a ratio of 1:1, yielding a fraction of 10% of WGK 2 components, it is still classified into WGK 2. If, however, it is diluted at a ratio of 1:4, the total fraction of WGK 2 components is only 4%, and the diluted mixture is classified into WGK 1.

5.2 Classification based on test data obtained with the mixture

A novel feature of the present VwVwS, compared to the 1996 VwVwS, is that it permits the classification of mixtures on the basis of test data obtained with the mixture itself. It may become feasible in the future to apply the corresponding provisions of the Law on Hazardous Substances in such cases, but the EU Directive 1999/45/EC on classification, packaging and labelling of dangerous preparations has not yet been adopted into German legislation.

VwVwS Annex 4 Number 4 provides for the following procedure:

- The R-phrases on acute toxicity to mammals are to be determined according to the Law on Hazardous Substances (either from data obtained with the mixture, or from data on the components). There are no specific provisions in VwVwS. If test data are not available, then a default value of 5 points is assumed (as in the case of substances, cf. Section 3).

- The environmental hazard is to be assessed by toxicity tests with at least two aquatic organisms (fishes, daphnia, or algae). The results lead to an allocation of evaluation points according to Table

6.[5]

- R-phrases on all other hazard characteristics are classified according to the Law on Hazardous Substances (Ordinance on Preparations) and the evaluation points are allocated according to VwVwS.

- The evaluation points are added up and the WGK is derived according to the Table in Section 3.5.

Table 6: Evaluation of test results on the aquatic toxicity of mixtures

$LC_{50}/EC_{50}/IC_{50}$ in mg/l (most sensitive value of two trophic levels)	**Evaluation points**
LC/EC/IC > 100	3
10 < LC/EC/IC ≤ 100	4
1 < LC/EC/IC ≤ 10	6
LC/EC/IC ≤ 1	8
tests lacking (or tests with only one species)	8

5.3 Documentation and publication

The classification of mixtures is the responsibility of the manufacturer or distributor. There are no provisions for centralized collection and publication of the classifications. It is recommended, however, that classifiers maintain a documentation (on the safety data sheet, if possible), to enable operators of facilities to prove their adherence to the guidelines in a water licensing procedure.

5.4 Deviation from the classification in VwVwS Annex 4 and Number 2.2.2

The Administrative Regulation provides that classification of a mixture may deviate from the procedures named above. This may be necessary, for instance, if substances behave differently in the mixture than they do in the pure state. Another aspect might be that studies on degradation and bioaccumulation potential of the individual components demonstrate that a mixture exclusively contains components that are readily degradable and do not bioaccumulate.

In such cases, an application may be submitted to the Commission for the Evaluation of Substances Hazardous to Waters (KBwS), which may then classify the mixture differently, if appropriate, and subsequently propose its publication in VwVwS Annex 1 or 2 to the Federal Ministry of the Environment. Deviating classifications may only be conducted by KBwS; VwVwS does not provide for classifications based on expert opinions and the like.

6. Office of Documentation and Information on Substances Hazardous to Waters at the Federal Environmental Agency

Documented WGK classifications are registered and published by the Office of Documentation and Information on Substances Hazardous to Waters at the Federal Environmental Agency. Publications by

[5] Table 6 is based on the assumption that the usual tests on degradability and bioaccumulation will not always yield adequate results in the case of mixtures. Example: A mixture may have 65% degradability, even though it contains a 10% fraction of a persistent component; based on the precautionary principle, it is therefore assumed that the mixture is not readily degraded and/or that it may bioaccumulate.

the Office include the substances classified by VwVwS Annexes 1 and 2. Thus, all classifications are available in single list.

Classifications are published by the following methods:

- Internet (Address: www.umweltbundesamt.de/wgk.htm); updated monthly.
- CD-ROM (first publication: end of 1999); updated twice a year.
- In print (first publication: end of 1999); updated once a year.

In addition, WGK classifications can be obtained by calling the phone number

+49-030-8903-4168 (Fax: -4200).

Addresses:

Umweltbundesamt
Dokumentations- und Auskunftsstelle wassergefährdende Stoffe
Schichauweg 58
12307 Berlin

Email: wgk@uba.de

Applications for reclassification and for deviating classifications may be submitted to the KBwS Secretariat

Geschäftsstelle der Kommission Bewertung wassergefährdender Stoffe (KBwS)
im Umweltbundesamt
Schichauweg 58
12307 Berlin

Annex 1: Test procedures for the determination of the basic data set

	Test protocol					
Characteristic	**EU**	**OECD**	**CEN**	**DIN EN ISO**	**DIN**	**DEV**
Acute oral or dermal toxicity to mammals	Corresponding to the effective OECD guidelines (401, 402, 420 oder 423) or EU Directives; for reasons of animal protection, results of similar studies are acceptable if the data have been published in the scientific literature.					
Toxicity to aquatic organisms: Fishes (acute) Algae Daphnia (acute)	 92/69/EEC C.1 92/69/EEC C.3 92/69/EEC C.2	 203 201 202, Part I	 28692	 7346 8692 6341	 (38412 L15)** 38412 L11	 L15 L9 L40
Inherent bio-degradability	88/302/EEC Teil C	302 B 302 C	29888	9888	(38412 L25)**	L25
Readily bio-degradable	92/69/EEC C.4-A 92/69/EEC C.4-C 92/69/EEC C.4-F 92/69/EEC C.4-E 92/69/EEC C.4-B 92/69/EEC C.4-D	301 A 301 B 301 C 301 D 301 E 301 F	 29439 29408	7827 9439 10707 (draft) 10708 9408 (draft) 14593 (draft)		L29 L23 L22
Bioaccumulation behavior,* log Pow		 107 117				
Bioaccumulation in fishes		305				

* It is permissible to assess the bioacumulation behavior by computing a log octanol/water distribution coefficient (log Pow) (according to Chapter 4 of the Technical Documents in Support of the Commission Directive 93/67/EEC on Risk Assessment of New Notified Substances, and of Commission Regulation 1488/94 on Risk Assessment of Existing Substances, Ispra 1996).

** Older results obtained with tests corresponding to this norm may be used as well.

Annex 2: Allocation of evaluation points for R-phrases, and of default values

Number of points	1	2	3	4	5	6	7	8	9
Ecotoxicity and degradation/bio-accumulation				52/53		51/53		50/53	
undetermined				❁ 3)		❁ 2)		❁ 1)	
Ecotoxicity			52			50			
undetermined						❁ 4)			
Degradation/bio-accumulation			53						
undetermined			❁ 5)						
Acute oral and/or dermal toxicity to mammals	22 65 21 20/22 21/22 20/21/22 20/21		25 24 23/25 24/25 23/24/25 23/24		28 27 26/28 27/28 26/27/28 26/27				
undetermined					❁				
Carcinogenic and/or mutagenic effects		40							45 46
Irreversible effects		40/21 40/22 40/20/21 40/20/22 40/21/22 40/20/21/22		39/24 39/25 39/23/24 39/23/25 39/24/25 39/23/24/25		39/27 39/28 39/26/27 39/26/28 39/27/28 39/26/27/28			
Repeated exposure		33 48/21 48/22 48/20/21 48/20/22 48/21/22 48/20/21/22		48/24 48/25 48/23/24 48/23/25 48/24/25 48/23/24/25					
Toxic effects on reproduction		62 63		60 61					
Harmful reaction with water		29 15/29							

❁ = Number of points in cases where one or several of the characteristics "ecotoxicity", "degradation/bioaccumulation" and "acute toxicity" are not determined, or unknown (see footnotes)

Note: Not all evaluation points are allocated additively (cf. VwVwS Annex 3).

Footnote 1) : This value is allocated when

- Ecotoxicity, and degradation and/or bioaccumulation are unknown, or
- Ecotoxicity is unknown and ready degradation has not been demonstrated, or
- Ecotoxicity is unknown and bioaccumulation potential exists, or
- The substance is classified into R 50, and degradation and/or bioaccumulation are unknown

Footnote 2) : This value is allocated when ecotoxicity is greater than 1 and smaller than or equal to 10 mg/l, and degradation and/or bioaccumulation are unknown.

Footnote 3) : This value is allocated when ecotoxicity is greater than 10 and smaller than or equal to 100 mg/l, and degradation is unknown.

Footnote 4) : This value is allocated when ecotoxicity is unknown, and ready degradation has been demonstrated and no potential for bioaccumulation exists.

Footnote 5) : This value is allocated when

- Degradation and bioaccumulation are unknown, and ecotoxicity is greater than 100 mg/l, or
- Degradation is unknown and bioaccumulation potential exists, and ecotoxicity is greater than 100 mg/l, or
- Bioaccumulationis unknown and ready degradation or inherent degradation have not been demonstrated, and ecotoxicity is greater than 100 mg/l.

Note: Bioaccumulation potential exists when log Pow $\geq$ 3.0, unless BCF $\leq$ 100.

Annex 3 Documentation form for WGK classifications

Documentation of WGK classification according to Annex 3 of the Administrative Regulation on Substances Hazardous to Waters (VwVwS) of 17 May, 1999

Applicant data (simultaneously used as return address):

	Company
	Contact person
	Department
	Street / P.O. Box
	Postal code and city

	e-mail address

Data on the substance

Unequivocal chemical name of the substance			
Synonymous name (optional)			
CAS-No.[6]		EC-No.	

R-phrases according to Annex 1 RL 67/548/EEC	
R-phrase self-classification according to § 4a (3) of the Ordinance on Hazardous Substances	
R-phrase evaluation points according to VwVwS	
Default value for toxicity to mammals	
Default value for environmental hazard	
Total number of points	

[6] This information is only required if a CAS-number has been allocated. The commercial name and the EC-number are sufficient in the case of new notified substances according to the Law on Chemicals if characteristics of the substance are confidential.

Additional data only for "substances non-hazardous to waters":

				Laboratory report included?
State (solid, liquid, gas)				
Solubility in water		mg/l		
Aquatic toxicity	Species	$LC_x/EC_x/IC_x$	Value in mg/l	
Species 1				
Species 2				
Biodegradability	Test	Degree of degradation after 28 d in %	10 d window attained?	
(only in the case of organic liquids)				

The applicant must inform the Federal Environmental Agency, Office of Documentation and Information on Substances Hazardous to Waters (Dokumentations- und Auskunftsstelle wassergefährdende Stoffe im Umweltbundesamt, Schichauweg 58, 12307 Berlin) of any new information leading to a change in WGK.

Comments of the applicant	

Applicants should inform the Office of Documentation and Information on Substances Hazardous to Waters at the Federal Environmental Agency of any characteristics that may affect the hazard to waters and are not represented by R-phrase classifications known to them (e.g. characteristics related to mobility in the soil).

Date	Signature of the applicant, stamp

The above classification has been registered by the Federal Environmental Agency, Office of Documentation and Information on Substances Hazardous to Waters.

Date	Registration No.	Reference	Stamp, Signature

Annex 4: Examples of evaluations

Example 1 - A substance that is already classified

Situation

The water hazard class of 2-chloroaniline is to be determined.

Procedure

2-chloroaniline is classified in VwVwS Annex 2 (Registration No. 694, WGK 2). This water hazard class is valid and no further action is needed.

Example 2 - A substance that is well-researched and relatively non-hazardous

Situation

The following data are known:

- Acute oral toxicity to mammals, determined in rats: LD_{50} >2000 mg/kg body weight
- Toxicity to fishes: LC_{50} > 100 mg/l
- Toxicity to algae: IC_{50} = 580 mg/l
- Toxicity to daphnia: EC_{50} = >1000 mg/l
- Degradability: readily biodegradable according to OECD 301 D
- log Pow = 2.5
- State: solid
- Solubility in water = 1150 mg/l

Procedure

According to Hazardous Substances Law, an R-phrase classification of this substance is unnecessary. The basic data set is available. There are no default values to be allocated and the total number of points is 0. Because the substance has a solubility in water greater than 100 mg/l, however, it can not be classified as "non-hazardous to waters" (VwVwS No. 2.2.2). Therefore the water hazard class is WGK 1.

Example 3 - A substance that is well-researched and relatively hazardous

Situation

The following data are known:

- Acute oral toxicity to mammals, determined in rats: LD_{50} = 150 mg/kg body weight
- Toxicity to fishes: LC_{50} = 10 mg/l
- Toxicity to algae: IC_{50} = 5 mg/l
- Toxicity to daphnia: EC_{50} = 70 mg/l
- Degradability: not readily biodegradable according to OECD 301 E, but inherently degradable according to OECD 302 B
- log Pow = 2.5

Procedure

Because of its toxicity to mammals, the substance is classified into R25 (range of toxicity: $25 < LD_{50} \leq 200$ mg/kg).

The assessment of environmental hazard depends on the most sensitive organism (in this case: algae). The toxicity to algae is situated in the range between 1 and 10 mg/l, and the substance is not readily biodegradable. Therefore, it is classified into R51/53. Comments: The inherent degradability of the substance does not result in a change in classification; if it were readily biodegradable, an R-phrase classification due to environmental hazard would be unnecessary.

All of the data of the basic data set are available; therefore no default values are allocated.

The total number of points according to VwVwS Annex 3 No. 1 is 3 (due to R25) plus 6 (due to R51/53), equal to 9 points. Therefore the water hazard class is WGK 3.

Example 4 - A substance that is not well-researched (I)

Situation

The following data are known:

- Acute oral toxicity to mammals, determined in rats: LD_{50} >2000 mg/kg body weight
- State: solid
- Solubility in water = 50 mg/l

Procedure

The data do not necessitate a classification into R-phrases; therefore, this does not result in any evaluation points.

The basic data set is incomplete, however, because there are no known experimental data on the environmental hazard. Therefore, VwVwS Annex 3 No. 2 requires the allocation of a default value with the highest possible number of points for environmental hazard (8 points, corresponding to R50/53).

Thus, the total number of points is 8 and the water hazard class is WGK 2.

Example 5 - A substance that is not well-researched (II)

Situation

The following data are known:

- Acute oral toxicity to mammals, determined in rats: LD_{50} >500 mg/kg body weight
- Toxicity to fishes: LC_{50} = 50 mg/l

Procedure

Because of its toxicity to mammals, the substance is classified into R22 (range of toxicity: 200 to 2000 mg/kg).

The data on toxicity to fishes do not necessitate an R-phrase classification. The need to allocate default values according to VwVwS Annex 3 No. 2 must be examined, however, because the basic data set is incomplete (lack of data on biodegradability and on bioaccumulation potential). The lack of data implies that the substance might not be readily biodegradable, in which case it would have to be classified into R52/53. Therefore, the default value is 4 (corresponding to R52/53). On the other hand, the bioaccumulation potential is irrelevant with respect to an allocation of default values, because it would not require R-phrase classification in any case.

Thus the total number of points is 1 (due to R22) plus 4 (default value), equal to 5, and the water hazard class is WGK 2.

Example 6 - Classification of a mixture based on data on its components

Situation

All components of a mixture, as well as their water hazard classes, are known. The total sums of the fractions by water hazard class are as follows:

- Substances non-hazardous to waters: 9.9%
- WGK 1: 89%
- WGK 2: 1%
- WGK 3: 0.1 %
- Carcinogenic substances: none

Procedure

The hazard is determined in this case by the fractions of WGK 1, as well as WGK 2 substances. According to VwVwS Annex 4 No. 3.2, mixtures consisting of 0.2 to <5% WGK 2 substances, and mixtures with 3% or more WGK 1 substances are classified into WGK 1. At the same time, the fraction of WGK 3 substance is lower than the threshold required for consideration according to VwVwS Annex 4 No. 1.

The water hazard class of the mixture is WGK 1.

Example 7- Classification based on test data obtained with the mixture

Situation

The components of a mixture are only partially known, but tests with the mixture itself have given the following results:

- Acute oral toxicity to mammals, determined in rats: LD_{50} >2000 mg/kg body weight
- Toxicity to fishes: LC_{50} = 15 mg/l
- Toxicity to daphnia: EC_{50} = 7 mg/l

Procedure

The acute toxicity to mammals does not necessitate a classification into R-phrases; therefore, it does not result in any evaluation points.

According to VwVwS Annex 4 No. 4.3, the allocation of evaluation points for environmental hazard depends on the most sensitive organism (in this case: daphnia). As the toxicity to daphnia is in the range between 1 and 10 mg/l, 6 points are allocated according to VwVwS Annex 4 No. 4.3.

The total number of points is 6 and the resulting water hazard class of the mixture is WGK 2.

Annex 4

Alarm criteria

ANNEX 4 – Alarm Criteria

Assessment of water pollution resulting from accidents in the framework of the "International Warning and Alert Plan for the Danube

With the help of the chart below the substances classified according to water risk classes (WRC[7]) and/or R-phrases[8] can be linked to certain alert thresholds. If these values are exceeded in the event of an accidental release of substances into waters, an "Information" or a "Warning" is set off according to the alert scheme of the "International Warning and Alert Plan for the Danube".

The alert thresholds mentioned (daily loads resulting from accidents), as well as the open scaling according to water pollution indexes (WRI)[9], are mere **frameworks of orientation** to facilitate the decision within the system of the "International Warning and Alert Plan of the Danube"
In the case the flow rate exceeds 1000 m³ per sec. the Alert-thresholds are multiplied by the factor 10.

Substance classifications		**Alert thresholds**		
WRC	**R - phrases**	**INFORMATION [kg] or [l]**	**WARNING [kg] or [l]**	
"0"	- 22	≥ 10,000	≥ 100,000	≥ 10^{n+3}
1	- 25, 52/53, 52 or 53	≥ 1,000	≥ 10,000	≥ 10^{n+2}
2	- 50, 51/53, 28 or 45 - (52/53, 52 or 53) **and** (22 or 25)	≥ 100	≥ 1,000	≥ 10^{n+1}
3	- 50/53 - (50, 51/53, 52/53, 52 or 53) **and** (45 or 28) - 45 **and** 28	≥ 10	≥ 100	≥ 10^{n}
Water Risk Index (WRI)[3]		≥ 1	≥ 2	≥ n

[7] Katalog wassergefährdender Stoffe, LTwS Nr. 12, Umweltbundesamt 1991; http://www.umweltbundesamt.de/wgs/wgs-index.htm
[8] Directive 67/548/EEC ff.
[9] The Water Risk Index is intended to scale water pollution events.

Substance mixtures (oils, quench water and slurry)

From past accidents we know that the substances most frequently released by accidents in the Danube catchment area are heterogenious groups of substances and mixtures as, for instance, mineral oils, slurry and quench water.

To obtain alert thresholds the risk emanating from each substance mixture can be characterised by classifying the corresponding indicator substances.

For non-specified oils, quench water and slurry, the following alert thresholds were determined:

Released substance mixture	**INFORMATION [kg] or [l]**	**WARNING [kg]or [l]**	
- Oils (non-specified)	≥ 100	≥ 1,000	≥ 10^{n+1}
- Quench water	≥ 1,000	≥ 10,000	≥ 10^{n+2}
- Slurry	≥ 1,000	≥ 10,000	≥ 10^{n+2}
Water Risk index (WRI)	≥ 1	≥ 2	≥ n

Substances and substance mixtures, for which no classification of the risk they pose to water can be determined, should be treated as WRC 3 substances for reasons of precaution.

Explanation of R-phrases

R 22 Harmful if swallowed
R 25 Toxic if swallowed
R 28 Very toxic if swallowed
R 45 May cause cancer
R 50 Very toxic to aquatic organisms
R 52 Harmful to aquatic organisms
R 53 May cause long-term adverse effects in the aquatic environment
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Annex 5

Information-Sources

ANNEX 5 – Information sources for national ARS Inventories

Country	Source of information
Germany	Bavarian State Office for Water Management County District Offices and the Non-District Municipalities
Austria	
Czech Rep.	Czech Inspection of Environment, evaluated by experts from Ministry of Environment (water protection department).
Slovakia	Water Protection Inspectorates of the Slovak Inspectorate of the Environment
Hungary	Ministry for Environment, Department for Environmental Safety and Health
Slovenia	Ministry of the Environment and Spatial Planning
Croatia	Ministry of Environment and Physical Planning "Hrvatske vode" Zagreb (Croatian Waters Zagreb - Water management company) INA Industrija nafte d.d. Zagreb (INA Oil Industry Join-stock company)
Romania	Romanian Water Authority (C.N. "Apele Romane")
Bulgaria	Bulgarian Ministry of Environment and Water. database of the State Agency for Civil Protection
Moldova	The Ministry of Ecology, Construction and Territorial Development, State Ecological Inspectorate
Ukraine	

Annex 6

Difficulties - ARS

ANNEX 6 - Difficulties occurred during the development of the national ARS inventories

As was already pointed at the first ARS ad-hoc EG Meeting some inconsistencies between the content and presentation of the national ARS Inventories have been identified. More than this not all ICPDR contracting parties presented the above mentioned inventories, despite of certain delays in this respect. As a consequence it was considered that in the process of the ARS-inventory preparation some difficulties could exist, particularly for the countries with the economy in transition. A request in this matter was sent on 19th June to each riparian country in order to identify these difficulties. Based on the answers received up till 18th July the following information could be derived:

1. General considerations

The ECE Convention on transboundary industrial hazards (Helsinki 1992) still represents one of the task for some countries in the process of accession to the EU, particularly the ratification of this. This represents one of the explanation that the methodological instruments and procedures are in the preparatory phase for these countries, despite of already existing experience in the transboundary water quality monitoring and AEWS operation. More than this the transposition of the Seveso II Directive is still under the way for these countries. As a first consequence the Elbe methodology for some of the accession countries is still not familiar. There also are the other difficulties generated, particularly by the following factors:

1.1. The ECE 76/464 Directive and the daughter Directives regarding the dangerous chemicals for the water is in the process to be absorbed by the European Water Framework Directive. However each accession country has to considered this, despite of the fact that some of its provisions are overpass.

1.2. There are the other lists concerning the dangerous chemicals for the waters (Helsinki Convention regarding the transboundary rivers and international lakes, Convention of the Danube River Protection, EWFD/EU priority lists a.s.o.) which are based on different approaches and not fully congruent.

1.3. The ECE Convention on transboundary industrial hazards and particularly the Seveso II Directive are not referring to the water endangered cases only.

As an overall result the approaches in the Inventory preparation are still different:

(i) starting from the point and diffuse discharges inventories of waste waters in the surface waters: based on the best expert judgement and taking also in the view the landfill relevant sites; this represents usual way of the ARS-Inventories draw-up system for the most countries with the economy in the transition process.

(ii) using the Rhine/Elbe methodology (EU member).

The Baia Mare Task Force represented from this point of view the first step in the overcoming these general difficulties being realized the first inventory (ARS) at the level of Tisza River Basin (Ukraine, Romania, Hungary).

In this respect the present ARS-Inventory could be consider the second step in the process of the harmonization of the approaches first of all, despite of some inconstancies which may still exist.

2. Problems encored in the preparation of the ARS Inventories

Based upon the answers received the following remarks could be stated:

2.1. General overview

No basic or major difficulties have been recorded during the ARS Inventories preparation.

2.2. Particular difficulties

Some of particular difficulties, specific for certain countries have been identified during the ARS Inventories carrying-out process, the most relevant being as follows:

2.2.1. Database availability for the chemicals toxic properties assessment. In this regard not all the riparian countries are provided with this requirements (BIG database or similar – see Croatia response).

2.2.2. Luck of a basic methodology or system for the ARS ranking.

2.2.3. Organizational problems particularly for the countries where the infrastructure of the National Authority is changing.

2.2.4. Data/ information flux from the territory to the Central Authority; this is almost related with the above (2.2.2.) mentioned remark.

2.2.5. The implementation/ access to the GIS – especially the software.

2.2.6. Luck of the proper information in some circumstances related with the deactivation of old installations.

2.2.7. Flood events consequences and landfills sites control (in the view of risk assessment and management).

2.2.8. Proper training of the Local Authority responsible persons in the data/ information content issues for the inventories drawing up process.

3. Draft conclusions and recommendations

- There are not major difficulties for the ARS Inventories generation. From country to country, particularly for those with the economy in the transition some problems have been identified, the most frequent being related with: (i) database provisions in order to assess the toxic properties of the chemicals (R phrases system and water risk class); (ii) methodological issues for the ranking system. The both difficulties might be overcome using the Ad-hoc EG result dissemination.
- The other difficulties occurred by some countries in the ARS Inventory preparation process need to be solved by own efforts.
- As an overview it might be of interest to be periodically organized a suitable and flexible training system in this matter one of the alternative/ advisable solution being using the already existing ICPDR informative system (DANUBIS).

Attached is presented a summary of the answers received from the ICPDR – AEPWS – EG members till 18th July.

Tab. 1 Summary of the answers concerning the difficulties occurred in the national ARS Inventory preparation

No.	Country	Remarks – problems encountered	Data of receiving
0	**1**	**2**	**3**
1.	CROATIA	Missing information on toxic properties of chemicals. BIG database is not available for Croatia. There is UBA web site access.	19.06
2.	SLOVENIA	1. Inner staff organization caused by Ministry reorganization (New Agency of Environment). 2. The classification of dangerous substances was done in accordance with WGK provisions (toxic properties). It was adopted the solution of landfill sites inventory for dangerous substances. (How to extract those risk spots which might have a directed impact in the water system – usually based on the expert analyses.)	29.06
3.	MOLDOVA	- no relevant difficulties to collect the information for ARS inventory. Name of enterprise, its location and amount of substances stored are collected and presented in the Annual Report of the State Ecological Inspectorate. - The ownership needs to be found specifically.	22.06
4.	AUSTRIA	No relevant difficulties. However should be considered the time constrains in extracting the relevant water-related data out of the whole data-information on dangerous substances in order to synthesize the Inventory on installations with water endangering substances exceeding the relevant threshold quantities in the Danubian part of territory. Note: this was presented early may.	*
5.	HUNGARY	- no basic difficulties have been met during the preparation of the Danube ARS Inventory. - The GIS-based national inventory of dangerous dischargers and potential polluters is under preparation in the Ministry of Environment and items of the ARS inventory were taken from this wide database. - Because the Elbe methodology was strictly followed, several big potential ARS spots are missing from the inventory provided, because their locations are out of considered area. - Some practical problems with the Excel sheets were faced only.	12.07
6.	ROMANIA	- There are not basic difficulties for the ARS Inventory development. - However some problems have occurred in the selection of the Accident Risk spots from the general Inventory of the point and diffuse sources of water pollution. This is most related with the luck of an uniform methodology in this respect. - Specific problems have been identified with the risk related to the old industrial installations deactivation and with the accidents caused by floody conditions and the landfills disposal sites of industrial wastes.	

ARS Germany

lfd. Nr.	Name des Betriebs/ Betreiber	Standort/ Landkreis	Betriebs- zweck/ Anlagenart	vorhandene wasser-gefährdende Stoffe	Masse in Tonnen	WGK	Bezugsmenge (kg/l)	WGK-3 Äquivalente	Summe	WRI
1	Zweckverband Müllverwertung	Schwandorf, Lkr. Schwandorf	Müllver-brennung, Lageranlage	Heizöl EL	1500	**2**	1,500,000	150,000	150,000	**5.2**
2	Bayernoil	Stadt Ingolstadt	Raffinerie, Tanklager	Zwischen- und Fertigprodukte	600,000	**3**	600,000,000	600,000,000	642,000,000	**8.8**
					400,000	**2**	400,000,000	40,000,000		
					200,000	**1**	200,000,000	2,000,000		
3	Audi AG	Stadt Ingolstadt	Automobil-werk Lageranlagen	Altemulsion	450	**3**	450,000	450,000	700,000	**5.8**
				Heizöl	2500	**2**	2,500,000	250,000		**8.5**
4	Deutsche Transalpine Ölleitung	Lenting, Lkr. Eichstätt	Tanklager	Rohöl	300,000	**3**	300,000,000	300,000,000	300,000,000	
5	e-on Kraftwerk	Großmehring Lkr. Eichstätt	Tanklager	Heizöl S	340,000	**1**	340,000,000	3,400,000	4,900,000	**6.7**
				Heizöl EL	15,000	**2**	15,000,000	1,500,000		**8.8**
6	ESSO	Kösching, Lkr. Eichstätt	Raffinerie, Tanklager	Heizöl EL	95,000	**2**	95,000	9,500	700,429,500	
				Rohöl	700,000	**3**	700,000,000	700,000,000		
				Heizöl S	42,000	**1**	42,000,000	420,000		
7	Zentralklinikum Augsburg	Stadt Augsburg	Heizzentrale Lageranlage	Heizöl EL	2,000	**2**	2,000,000	200,000	200,000	**5.3**
8	Fa. Sailer Umwelttechnik	Stadt Augsburg	Lageranlage	Altöl und Heizöl	3,300	**3 2**	3,300,000	3,300,000	3,300,000	**6.5**
9	Fa. Haindl	Stadt Augsburg	Papierfabrik LAU- und HBV	Bindemittel, Laugen, Entschäumer, Heizöl,	3,000 6,000	**1** **2**	3,000,000 6,000,000	30,000 600,000	630,000	**5.8**
10	Fa. Präg GmbH & Co. KG	Stadt Augsburg	Tanklager	Heizöl EL, DK, VK	18,000	**2 3**	18,000,000	1,800,000	1,800,000	**6.3**
11	Fa. MAN B&W Diesel AG	Stadt Augsburg	LAU- und HBV	Heizöl EL, DK, VK, Altöl, Motorenöl,	1,000	**2 3**	1,000,000	100,000	100,000	**5.0**

12	Gesellschaft zur Entsorgung von Sondermüll in	Stadt Augsburg	Lagern und Behandeln von Sondermüll	Abfälle, Altöl, Deponiesicker-wasser, Trenn-mittel, Säure,	300	**1** **2** **3**	300,000	30,000	30,000	**4.5**
13	Lech-Elektrizitäts-werk	Gersthofen Lkr. Augsburg	Lageranlage	Heizöl	10,000	**2**	10,000,000	1,000,000	1,000,000	**6.0**
14	Clariant GmbH	Gersthofen Lkr. Augsburg	Lageranlagen HBV-Anlage	diverse diverse	1,900 140	**2** **3**	1,900,000 140,000	190,000 140,000	330,000	**5.5**
15	Kosa GmbH & Co. KG	Gersthofen Lkr. Augsburg	Lageranlage Lageranlage	Heizöl Xylol	1,200 6,000	**2** **2**	1,200,000 6,000,000	120,000 600,000	720,000	**5.9**
16	Schmid Andreas	Gersthofen Lkr. Augsburg	Lageranlage	brennbare Flüssigkeiten	960	**3**	960,000	960,000	960,000	**6.0**
17	Gba Spezialitätenchem	Langweid Lkr. Augsburg	Lageranlage	diverse	13,000 550	**2** **3**	13,000,000 550,000	1,300,000 550,000	1,850,000	**6.3**
18	SGL Carbon AG	Meitingen Lkr. Augsburg	Lageranlage	Heizöl	2000	**2**	2,000,000	200,000	200,000	**5.3**
19	Fa. Sailer Mineralöl	Neusäß Lkr. Augsburg	Lageranlage	Heizöl	2000	**2**	2,000,000	200,000	200,000	**5.3**
20	Bayernoil	Vohburg Lkr. Pfaffenhofen	Tanklager	Rohöl	300,000	**2**	300,000,000	30,000,000	184,750,000	**8.3**
			Zwischen- und Fertigpro-duktelage r	Mineralöl-produkte	300,000	**2**	300,000,000	30,000,000	154,750,000	**8.2**
					120,000	**3**	120,000,000	120,000,000		
					100,000	**1**	100,000,000	1,000,000		
			Tanklager	Additive	1,000	**2**	1,000,000	100,000		
			Sonstige (Slops, div. Chemik.)	Diverse (z.B. LCB)	3,500	**3**	3,500,000	3,500,000		
			HBV	Rohöle und Zwischenprodukte	1,500	**2** **3**	1,500,000	150,000		
21	TAL	Vohburg Lkr. Pfaffenhofen	Entlastungs-tank Pipeline	Rohöl	12,000	**3**	12,000,000	12,000,000	12,000,000	**7.1**
22	MERO	Vohburg Lkr. Pfaffenhofen	Tanklager	Rohöl	180,000	**2**	180,000,000	18,000,000	18,000,000	**7.3**

23	e-on	Irsching Lkr. Pfaffenhofen	Tanklager Heizkraftwerk	Heizöl	150,000	**2**	150,000,000	15,000,000	15,000,000	**7.2**
24	Ruhr Oel	Münchsmünster Lkr. Pfaffenhofen	Tanklager	Mineralöl-produkte	20,000	**3**	20,000,000	20,000,000	20,000,000	**7.3**
25	SKW	Münchsmünster Lkr. Pfaffenhofen	Tanklager	ACH	1,300	**3**	1,300,000	1,300,000	1,600,000	**6.2**
			Lageranlagen	brennbare Flüssigkeiten u.a.	2,000	**2**	2,000,000	200,000		
			Diverse Lageranlagen	NaOH, HCl, Essigsäure, usw.	10,000	**1**	10,000,000	100,000		
26	GSB	Ebenhausen- Werk Lkr. Pfaffenhofen	Tanklager 1,2,3	verunreinigte Lösemittel	1,400	**3**	1,400,000	1,400,000	4,750,000	**6.7**
			Fasslager und -behandlung	Sondermüll	900	**3**	900,000	900,000		
			Bunker	Sondermüll, Feststoffe und Schlämme	2,000	**3**	2,000,000	2,000,000		
			Abstell-flächen für Mulden und Wechsel-brücken		450		450,000	450,000		
27	Sifokan	Ebenhausen- Lkr. Pfaffenhofen	Lageranlagen	div. feste und flüssige Stoffe	2,500	**3**	2,500,000	2,500,000	2,500,000	**6.4**
28	Industrieverwaltungs-gesellschaft IVG Logistik GmbH	Oberhausen Lkr. Neuburg-Schroben-hausen	Tanklager NATO-Flugplatz	F 34 und F 35	ca. 65.000	**2**	ca. 65000000	6,500,000	16,500,000	**7.2**
			betriebseig. Lageranlage	Reststoffe	ca. 10.000	**3**	ca. 10000000	10,000,000		
29	FBG Weichering	Weichering Lkr. Neuburg-Schroben-hausen	Pipeline Tanklager	F 34 und F 54	ca. 30.000	**2**	ca. 30000000	3,000,000	3,000,000	**6.5**
30	DTL Donautanklager-g	Deggendorf Lkr. Deggendorf	Tanklager	Gasöl (Diesel)	ca. 8.500	**2**	ca. 8500000	850,000	850,000	**5.9**
31	BayWa AG	Plattling Lkr. Deggendorf	Lageranlage	Pflanzenschutz-mittel	ca. 200	**3**	ca. 200000	200,000	200,000	**5.3**
32	Wieland-Werke AG	Vöhringen Lkr. Neu-Ulm	Halbzeug-herstellung	Tetrachlorethen	130	**3**	130,000	130,000	130,000	**5.1**

33	Bayernwerk	Vilshofen Lkr. Passau	Kraftwerk	Heizöl EL	5,500	**2**	5,500,000	550,000	550,000	**5.7**
34	BMW AG	Stadt Regensburg	Automobil-werk Lageranlagen	Lackierabfälle	150	**3**	150,000	150,000	250,000	**5.4**
				Heizöl	1000	**2**	1,000,000	100,000		
35	Nibelungenkaserne Standortverwaltung	Stadt Regensburg	Lageranlage	Heizöl	1600	**2**	1,600,000	160,000	160,000	**5.2**
36	Südzucker AG	Stadt Regensburg	Lageranlage	Heizöl S	22,000	**1**	22,000,000	220,000	220,000	**5.3**
37	VTG Lenkering AG	Stadt Regensburg	Lageranlage	Diesel, Heizöl EL	39,000	**2**	39,000,000	3,900,000	21,900,000	**7.3**
			Lageranlage	Benzin	18,000	**3**	18,000,000	18,000,000		
38	Bundeswehrkaserne Standortverwaltung Bogen	Bogen Lkr. Straubing-Bogen	Lageranlage	Heizöl EL	2,000	**2**	2,000,000	200,000	200,000	**5.3**
39	Bayernoil	Neustadt Lkr. Kelheim	Raffinerie Tanklager	Rohöle und Mineralöl-produkte	50,000 500,000 110,000	**1** **2** **3**	50,000,000 500,000,000 110,000,000	500,000 50,000,000 110,000,000	160,500,000	**8.2**
40	Acordis	Kelheim Lkr. Kelheim	Faser-herstellung	ACN	2,000	**3**	2,000,000	2,000,000	2,185,000	**6.3**
				div. Chemikalien	1,850	**2**	1,850,000	185,000		
41	ESSO AG	Stadt Passau	Tanklager	Heizöl Dieselöl	5,000	**2**	5,000,000	500,000	500,000	**5.7**
42	Zahnradfabrik Passau	Stadt Passau	Lageranlage	Emulsion Altemulsion	900	**3**	900,000	900,000	900,000	**6.0**
43	Bucher	Waldstetten Lkr. Günzburg	Chem. Fabrik	div. Chemikalien	1,000 150	**2** **3**	1,000,000 150,000	100,000 150,000	250,000	**5.4**
44	Standortverwaltung	Leipheim Lkr. Günzburg	Lageranlage	div. Chemikalien Mineralöl-produkte	1,700 1,560	**2** **3**	1,700,000 1,560,000	170,000 1,560,000	1,730,000	**6.2**

45	Geiss	Offingen Lkr. Günzburg	Chem. Fabrik	div. Chemikalien	389	**3**	389,000	389,000	389,000	**5.6**
46	Fernwärme Ulm GmbH	Stadt Ulm	Heizwerk Einsteinstr. 20	Heizöl	1905	**2**		190,500	190,500	**5.3**
47	Fernwärme Ulm GmbH	Stadt Ulm	Heizwerk Daimlerstr. 29	Heizöl	2610	**2**		261,000	261,000	**5.4**
48	Carl Beiselen GmbH	Stadt Ulm	Düngemittel-großhandel	Pflanzenschutz-mittel	790	**3**		790,000	790,000	**5.9**
49	Uzin Utz AG	Stadt Ulm	Herstellg. von Klebstoffen	Kleberrohstoffe	210	**3**		210,000	210,000	**5.3**
50	Zweckverband Therm.	Stadt Ulm	Müllheizwerk	Haumüll und hausmüllähnl.	5800	**3**		5,800,000	6,896,000	**6.8**
				Schlacke	720	**3**		720,000		
				Asche/ Filterkuchen	200	**3**		200,000		
				Verfahrenstechn. Abwasser	176	**3**		176,000		
51	Wielandwerke AG	Stadt Ulm	Metall-verarbeitung	Schwefelsäure, Natrium-dichromat	173	**3**		173,000	173,000	**5.2**
52	Heidelberger Zement AG	Schelklingen/ Alb-Donau-Kreis	Lageranlage	Heizöl S	16000	**1**		160,000	160,000	**5.2**
53	Standortver-waltung Ulm	Laupheim/ Kreis Biberach	Flugfeldbetank-ungsanlage	Flugbenzin AI	300 x 3	**3**		900,000	900,000	**6.0**
54	Fina Deutschland GmbH	Giengen/ Heidenheim	Tankstelle/ Lageranlage Abfüllanlage	VK, DK, Heizöl EL, Altöl AIII	110	**3**		110,000	110,000	**5.0**
55	Südtank GmbH & Co	Heidenheim/ Heidenheim	Tankstelle/ Lageranlage Abfüllanlage	Benzin, Diesel, Altöl, Heizöl	120	**3**		120,000	120,000	**5.1**

56	IHKW Industrieheiz-kraftwerk Heidenheim	Heidenheim/ Heidenheim	Öllager/ -	Heizöl EL, Schmieröle, Trafoöl	800	**3**		800,000	800,000	**5.9**
								Summe=	2,293,874,000	**9.4**

1.) potentielle Einleitstelle: in der gültigen Schifffahrtskilometr 2) bei mehreren Anlagenstandorten Mittelwert

Kriterien für die Aufnahme von Anlagen zum Umgang mit wassergefährdenden Stoffen (ohne Tankstellen und Anlagen des Bergbaus):

1. Lage in einem 10 km breiten Streifen längs der Donau oder
2. Lage in einem 10 km breiten Streifen längs eines Nebenflusses der Donau und nicht weiter als 50 km von der Mündung in die Donau entfernt und
3. maßgebliches Volumen: 100 t oder mehr WGK 3, 1000 t oder mehr WGK 2, 10.000 t oder mehr WGK 1.

ARS Austria (no table received)

ARS Czech Republic

Inventory of potential pollution sources in the Czech part of Morava River basin

N°	Name and proprietor of the company	Location/ District	Recipient river (length of the stream in km)	Company activities	Dangerous substances	WGK	Total amount stored/handled	Storage facilities	Operational volume total/free (%)	Remark	Total quantity in kg/l	Water risk class equivalent	Sum of water risk class equivalents	Water risk index
1.	Farmak, Joint Stock Company	Olomouc/ Olomouc	Morava 225,7 Danube	pharmaceutical production	sulphuric acid, hydrochl. acid, sodium chloride, ammonium, sodium hydroxide	1 1 0 2 1	50/25 t 60/30 t 25/25 t 10/5 t 32/32 t	tanks, pipelines, technological units	40 m^3 45 m^3 40 m^3 10 m^3 45 m^3	municipal WWTP	177000	1770	1770	**3.2**
2.	Lukana, Joint Stock Company.	Olomouc/ Olomouc	Morava 222 Danube		methanol, methylester of vegetable oil (biofuel)	1 01.Feb	100/100 t 1500/150 t	tanks, pipelines, technological units	150 m^3 300 m^3	own biological WWTP	1600000	16000	16000	**4.2**
3.	Deza, Joint Stock Company	Valašské Mezirící/ Vsetín	Becva 59 Morava 210,6 Danube	black coal tar and raw benzene treatment	black pitch, tar, raw anthr. oil, raw naphft. oil, raw benzene, pure benzene, pure toluene, pure xylene, benzine, black oil	2 2 2 2 2 2 2 2 2 1	6226/113 t 30000/500 t 5126/2563 t 3880/1940 t 16000/6000 t 12000/6000 t 2600/1300 t 500/250 t 1340 t 25000/5000 t	tanks, pipelines, technological units	5000 m^3 7000 m^3 3500 m^3 3000 m^3 9000 m^3 8000 m^3 2000 m^3 400 m^3 2000 m^3 10000 m^3	own biological WWTP	102672000	10267200	10267200	**7.0**
4.	Precheza, Joint Stock Company	Prerov/Prerov	Becva 10,5 Morava 210,6 Danube	production of sulphuric acid, titan dioxides, inorganic pigments, coagulants	sulphuric acid, coagulant, petrol	1 2	10400/2600 t 200/50 t 1800/600 t 1500/750 t 600/200 t	tanks, pipelines, technological units	5000 m^3 100 m^3 1000 m^3 1100 m^3 400 m^3	all waters are neutralised in own neutralisation unit	14500000	145000	145000	**5.2**
5.	Aliachem, Joint Stock Company part of Technoplast co.	Chropyne/ Kromeríž	Malá Becva 15,7 Morava 189 Danube	rubber and plastic products	dimethylform-amide, dibutylftalate	1 1	120/120 t 120/120	tanks, pipelines, technological units	180 m^3 180 m^3	own biological WWTP	240000	2400	2400	**3.4**

6.	Koželužny, Ltd. Koželužny – KTO Ltd. Toma Joint Stock Co.	Otrokovice/ Zlín	Morava 177,6 Danube	tanneries	technological sludge									
7.	Fosfa, Joint Stock Company	Poštorná/ Breclav	Dyje (Thaya)17 Morava 69 Danube	phosphates production	P_4 H_3PO_4 H_2SO_4	 1 1	200 t 455 t 573 t	tanks, pipelines, technological units	2350 t 610 t 1507 t		1228000	12280	12280	**4.1**
8.	CEZ, Joint Stock Company Nuclear Power Plant Dukovany	Dukovany/ Trebíc	Jihlava 59,2 Dyje (Thaya)66 Morava 69 Danube	Nuclear Power Plant	toxic substanc., oils, petrol, oxygen, hydrogen, combustible substamces	 2	0,9 t 80 t 6,4 t 0,6 t	glass jars, metal tanks in pools	reserves according to the process		88000	8800	8800	**3.9**
9.	DIAMO, State Enterprise, part of GEAM co.	Dolní Rožínka/ Žd ár nad Sázavou	Nedvedicka 13 Svratka 95,5 Dyje (Thaya)66 Morava 69 Danube	uranium mines, classical mining methods, alkaline leaching	uranium and its radionuclides, neutralisation sludge	1	13 416 434 t, i.e. 10 062 325 m^3 of pulp	two ponds with earth dam	1 789 519 m^3/18%	2 ponds	13416434000	134164340	134164340	**8.1**

Summe	144617790	**8.2**
Summe-Industrie	10453450	**7.0**

The missing data were not available or their determination was not possible, e.g toxicity, free operational volume in tanks.

ARS Slovak Republic

Inventory of potentially hazardous plants in the Danube river basin in Slovakia

	Name of company/operator	Location/ district	Name of tributary water	River km (potential discharge)	Km to est. into the Danube	Type of plant (type of production, used technology)	Hazardous substances	Max. storage capacity /m3/	WHC	R phr.	Comments	S/P	SE	Water risk class equivalent	Sum of water risk class equivalents	Water risk index
1	SAM, a. s. Myjava	Myjava	**Myjava**	**62.4**	133.9	Galvanic	oils	142	2	65	WWT	P		14200	29200	**4.5**
			Morava	71.5		metal-plating	splinters /Fe, Ms, Al/	150	2	15.17	of city Myjava			15000		
2	SH, a. s. Senica	Senica	**Teplica-3**	**1.8**	101.4	Viscose silk production	heavy heating oils	7 700 t	2	65	own WWT	P	SE	770000	806120	**5.9**
			Myjava	28.1			methanol	535 t	1	11.39				5350		
			Morava	71.5			ethyleneglycol	630 t	1	10				6300		
							CS_2	100 t	1	11.48				1000		
							NaOH	2 200 t	1	35				22000		
							H_2SO_4	147 t	1	35				1470		
3	NAFTA ZÁHORIE, a. s. Gbely	Skalica	**Gbelský cr.**	**1.75**	97.25	Repairs and maintaning	petroleum	100	3	65.45		S		100000	100000	**5.0**
			Morava	95.5												
4	NAFTA ZÁHORIE, a. s. Gbely	Senica	**Teplica-3**			Liquidation of waste	solid waste	60 000	1			P	SE	600000	600000	**5.8**
			Myjava	28.1												
			Morava	71.5												
5	Hebel Pórobetón Šaštín, s. r. o.	Senica	**Šaštínsky cr.**	**1.6**	87.5	Building industry	hydrate of calcium	246 t	1		own WWT	S		2460	2460	**3.4**
			Myjava	14.4												
			Morava	71.5												
6	KOVOTVAR VD, Kúty	Senica	**Zelnícky cr.**	**4.5**	82.4	Surface modif. of metals	NH_3	150 t	2	10.5		P	SE	15000	15000	**4.2**
			Kúty-Brodské canal	4.4												
			Myjava	2												
			Morava	71.5												
7	HIROCEM, a. s. Rohožník	Malacky	**Vajar cr.**	**1**	76.9	Cement production	heavy heating oils	18 000	2	65	own WWT	P	SE	1800000	2000000	**6.3**
			Rudavka	3.5			petroleum	200	3	65.45				200000		
			Rudava	21.2												
			Morava	51.2												
8	Vojenský útvar 4990, Kuchyna	Malacky	**Pernecká Malina**	**4.9**	48.3	Soldier organisation	aviation petrol	1 920	3	65.45	own WWT	S		1920000	1920000	**6.3**
			Malina	32.8												
			Morava	10.6												
9	Sky Life, s. r. o. BA factory in Malacky	Malacky	**Malina**	**26**	36.6	Insulators, conductors pr.	phenol	290	2	24.34	WWT	S		29000	34800	**4.5**
			Morava	10.6			methanol	290	1	11.39	of Strojárne, a. s.			2900		
							formaldehyde	290	2	23.43	Malacky			2900		
10	ISTROCHEM, a. s. Bratislava	Bratislava		1863.8	0	Rubber accelerators production	oil R 935	200	2	65	own WWT	P	SE	20000	184500	**5.3**
							NaOH	100	1	35				1000		
						Additives to greases	fural	100	3	12.45				100000		

						Plant protection subst.	HCl	150	1	34.37				1500		
							$NaOCl_3$	200	1	31.34				2000		
							aniline	500	2	50				50000		
							$NaOCl_3$	750	1	31.34				7500		
							cyclohexylamine	250	1	10.34				2500		
11	SLOVNAFT, a. s. Bratislava factory 31-Fuel	Bratislava		1863.7	0	Destilation of oil	crude oil	> 100	2	65	own WWT	P	SE	10000	10000	**4.0**
12	Slovenská plavba a prístavy, a. s. Bratislava	Bratislava		1862.2	0	River transport	petroleum	1500	3	65.45	WWT of city Bratislava	S		1500000	1515000	**6.2**
							waste from ships	1500	1					15000		
13	MATADORFIX, a. s. Bratislava	Bratislava		1862.2	0	Pastes, paints product.	toluene	175	2	11.2	WWT of city Bratislava	P	SE	17500	122500	**5.1**
							technical petrol	105	3	65.45				105000		
14	AssiDomän, a. s. Štúrovo	Nové Zámky		1722	0	Paper mill	heavy heating oils	10 940	2	65	own WWT	P	SE	1094000	2777000	**6.4**
							petroleum	1 560	3	65.45				1560000		
							oils	1 050	2	65				105000		
							lye	1 800	1	34.39				18000		
15	JCP IZOLÁCIE, a. s. Štúrovo	Nové Zámky		1722	0	Electro-technical industry	ixide composition	7 200	2	65	WWT of AssiDomän, a.s. Štúrovo	P		720000	834500	**5.9**
							ixide asphalt	750	1	65				7500		
							primal asphalt	3200	1	65				32000		
							heavy heating oils	750	2	65				75000		
16	NAD, a. s. Bratislava	Bratislava			0	National bus transport	petroleum	320	3	65.45	WWT of city Bratislava	S		320000	320000	**5.5**
17	Krajské policajné riaditel stvo, Gaštanový hájik	Bratislava			0	Car repairs and maintaning	petrol	150	3	65.45	WWT of city Bratislava	S		150000	150000	**5.2**
18	Kablex, s. r. o. Bratislava	Bratislava			0	Electro-technical ind.	dioctylphtalate	140	1	62.63	WWT of city Bratislava	P		1400	1400	**3.1**
19	BEZ TRANSFORMÁTORY, a. s. Bratislava	Bratislava			0	Production of transformers	transform. oils	1 000	2	65	WWT of city Bratislava	S		100000	120000	**5.1**
							used transform. oils	200	2	65				20000		
20	RUDEX, s. r. o. Bratislava	Bratislava			0	Bleaching clay prod.	HCl	150	1	34.37	WWT of ISTROCHEM	S		1500	1500	**3.2**
21	PALMA-TUMYS, a. s. Bratislava	Bratislava			0	Herb oils and animal fats prod.	hexane	100	1		WWT of city Bratislava	P	SE	1000	1000	**3.0**
22	DP, a. s. Jurajov dvor	Bratislava			0	Town traffic	petroleum	250	3	65.45	WWT of city Bratislava	S		250000	250000	**5.4**
23	OLO, a. s. Bratislava	Bratislava			0	Incinerator of communal waste	waste	13 000	1		WWT of city Bratislava	S		130000	135130	**5.1**
							cinder	513	1					5130		
24	HCl, s. r. o. Sládkovicovo	Galanta				Storage of chemicals	mineral acids	180 t	1	34.39		S		1800	2800	**3.4**

							inorganic salts	100 t	1	36				1000		
25	Dunaj Petrol Trade, a. s.	Komárno				Trade in fuel	petroleum, petrol	1 770 t	3	65.45		S		1770000	1770000	**6.2**
26	Chemolak, a. s. Smolenice	Trnava	**Luhový cr.**	**2**	182.5	Paints production	light heating oils	363	2	65	own WWT,	P	SE	36300	1219300	**6.1**
			Trnávka	28			polish petrol	873	3	11,65,45	creek flows through			873000		
			Dolný Dudváh	20.8							the dam Boleráz					
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	76.2			technical petrol	198	3	65.45				198000		
			Trnávka-2	**25.8**	178.3		medical toluene	329	2	11.2				32900		
			Dolný Dudváh	20.8			medical xylene	306	2	10,38,21				30600		
			Cierna voda	5.5			substance X 2003	360	2					36000		
			Malý Dunaj	50			substance X 247	100	2					10000		
			Váh	76.2			glycerine	250	1					2500		
27	Malokarpatská drevárska	Pezinok	**Blatina-2**	**3.3**	162	Wood processing	mazut	2 200	2	65	WWT of city Pezinok	S		220000	220000	**5.3**
			Šúrsky canal	15.3												
	fabrika, a. s.		Malý Dunaj	117.3												
			Váh	26.1												
28	JUHOCUKOR, a. s.	Dunajská Streda	**Vojka-Kracany can.**	**1.7**	68	Sugar production	heavy heating oils	18 540	2	65	own WWT	S	SE	1854000	1854000	**6.3**
			Gabcíkovo-Topol níky	16.6												
			Klatovské rameno	4.1												
			Malý Dunaj	19.5												
			Váh	26.1												
29	D-Apetit, s. r. o. Dun. Streda	Dunajská Streda	**Gabcíkovo-Topol níky can.**	**11.5**	61.2		heavy heating oils	1 080	2	65	WWT of city Dunajská Streda	S		108000	108000	**5.0**
			Klatovské rameno	4.1												
			Malý Dunaj	19.5												
			Váh	26.1												
30	DRON trade, s. r. o.	Dunajská Streda	**Gabcíkovo-Topol níky can.**	**11.5**	61.2	Crude oil storing	petroleum	1 070	3	65.45	WWT of city Dunajská Streda	S		1070000	1070000	**6.0**
			Klatovské rameno	4.1												
			Malý Dunaj	19.5												
			Váh	26.1												
31	Hydina Danubius, s. r. o.	Dunajská Streda	**Gabcíkovo-canal**	**11.5**	61.2	Poultry processing	light heating oils	300	2	65	WWT of city Dunajská Streda	S		30000	30000	**4.5**
			Klatovské rameno	4.1												
			Malý Dunaj	19.5												
			Váh	26.1												

32	MEDMILK, Vel ký Meder	Dunajská Streda	**Chotárny canal**	**12.4**	53.5	Milk processing	heavy heating oils	360	2	65	own WWT	S		36000	48000	**4.7**
			Malý Dunaj	14.8			mud from sewage	1 200	1					12000		
			Váh	26.1												
33	Kafiléria, a. s. Senec	Senec	**Cierna voda**	**1.9**	51.9	Animal waste processing	animal fat	160	0		WWT of city Senec	S		160	160	**2.2**
			Malý Dunaj	50												
			Váh	26.1												
34	EBA, s. r. o. Bratislava factory Dolný Štál	Dunajská Streda	**Belský canal**		47.3	Earthy substrates prod.	compost	20 000 t	0		RKm from mouth into	S		20000	25200	**4.4**
			Chotárny canal	6.4			fluid part from ferm.	520	1		the Chotárny canal			5200		
			Malý Dunaj	14.8												
			Váh	26.1												
35	Trnavský cukrovar, a. s.	Trnava	**Trnávka**	**13.29**	115.69	Sugar mill	heavy heating oils	9 000	2	65	own WWT	S		900000	1065000	**6.0**
			Dol. Dudváh	20.8			HCl	1 500	1	34.37				15000		
			Cierna voda	5.5			formaldehyde	1 500	2	23.43				150000		
			Malý Dunaj	50												
			Váh	26.1												
36	ZEZ Tepláren Trnava	Trnava	**Parná**	**7.2**	113.6	Heating factory	heavy heating oils	4 000	2	65		S		400000	400000	**5.6**
			Trnávka	4												
			Dol. Dudváh	20.8												
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
37	TATRACHEMA VD Trnava	Trnava	**Trnávka-1**	**10.5**	112.9	Flat chemistry production	alcohol	180	1	11.39		S		1800	1800	**3.3**
			Dol. Dudváh	20.8												
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
38	ŽOS, a. s. Trnava	Trnava	**Trnávka-2**	**9**	111.4	Repairs, engineering	mazut	3 140	2	65	WWT of city Trnava	S	SE	314000	314000	**5.5**
			Dol. Dudváh	20.8												
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
39	Školský majetok Trnava	Trnava	**Trnávka-2**	**9**	111.4	Farming	dung	4 500	1		WWT of city Trnava	S		45000	51700	**4.7**
			Dol. Dudváh	20.8			dung water	670	1					6700		
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
40	Slovnaft Benzinol Trnava	Trnava	**Trnávka-2**	**9**	111.4	Petrol station	petrol	128	3	65.45	WWT of city Trnava	S		128000	128000	**5.1**
			Dol. Dudváh	20.8												
			Cierna voda	5.5												

			Malý Dunaj	50												
			Váh	26.1												
41	ŽSR Locomotive depot Trnava	Trnava	**Parná**	**4.6**	111	Repairs and maintaning	petroleum	300	3	65.45	WWT of city Trnava	S		300000	300000	**5.5**
			Trnávka	4												
			Dol. Dudváh	20.8												
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
42	SSC Trnava-Modranka	Trnava	**Trnávka**	**8**	110.4	Roads maintaning	gritting salts	2 500	1			S		25000	25000	**4.4**
			Dol. Dudváh	20.8												
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
43	AE Jaslovské Bohunice	Trnava	**Manivier**	**4**	107.5	Atomic power station	turbine oil	> 100 t	2	65	own WWT,	S		10000	22000	**4.3**
			Horný Dudváh	13.3			mazut	> 100 t	2	65	above dam Král ová			10000		
			Váh	90.2			HCl	> 100 t	1	34.37				1000		
			Drahovský canal	**0.4**	102.2		NaOH	> 100 t	1	35				1000		
			Váh	101.8												
44	Cukrovar a konzerváren Sládkovicovo	Galanta	**Dol. Dudváh**	**10.35**	91.95	Sugar and canning factory	8% vinegar acid	290	1	10.35		S		2900	2900	**3.5**
			Dol. Dudváh	**10.2**	91.8											
			Cierna voda	5.5												
			Malý Dunaj	50												
			Váh	26.1												
45	OTF-Energia, s. r. o. Nižná	Tvrdošín	**Orava**	**52.3**	354.1	Television machines prod. and galvanic	heavy heating oils	600	2	65	own WWT,	S		60000	60000	**4.8**
			Váh	301.8							above dam Krpel any					
46	AGRO-RACIO, s. r. o.	Liptovský Mikuláš	Bobrovecký cr.		346.2	Agricultural production, trade	light heating oils	100	2	65	1	S		10000	15250	**4.2**
			Jaslovský cr.	1.2			dung water	525	1					5250		
			Váh	345												
47	SCP, a. s. Ružomberok divisions Suprabal, Supragraf	Ružomberok	**Váh**	**321.5**	321.5	Cellulose and paper mill	$CaCO_3$	1 000	0		own WWT,	S		1000	3400	**3.5**
							glue	240	1		above dam Krpel any			2400		
48	Kovostav, a. s. Biely Potok	Ružomberok	**Revúca**	**4.2**	320.8	Engineering	light heating oils	800	2	65	own WWT,	S		80000	80000	**4.9**
			Váh	316.6							above dam Krpel any					
49	SCP, a. s. Ružomberok factory CELPAP	Ružomberok	**Váh**	**314.8**	314.8	Cellulose and paper mill	NaOH	386	1	35	own WWT,	P	SE	3860	1557060	**6.2**
							H_2SO_4	100	1	35	above dam Krpel any			1000		
							$NaClO_3$	423	1	31.34				4230		
							heavy heating oils	12 000	2	65				1200000		
							black lye	7 511	1	34,35,39				75110		

							petroleum	135	3	65.45				135000		
							H_2O_2	160	1	8.34				1600		
							$NaHSO_3$	166	1	22.31				1660		
							lime	1 460	1	41				14600		
							soap	120 000	0					120000		
50	Druhá Strojárenská, a. s.	Martin	**Turiec**	**8**	289.6	Engines for agricultural	engine petroleum	108	3	65.45		S		108000		
	Stará Turá		Váh	281.6		machines					above dam Žilina				108000	**5.0**
51	SSE Tepláren Martin	Martin	**Turiec-1, Kalnô**	**7.8**	289.4	Heating plant	$Ca(OH)_2$	104	1	41		S		1040		
			Váh	281.6			NaOH	126	1	35	own WWT,			1260	3560	**3.6**
							HCl	126	1	34.37	above dam Žilina			1260		
52	ZTS TEES -	Martin	**Turiec-1**	**4.4**	286	Heavy engineering	petroleum	446	3	65.45	own WWT,	S		446000		
	Martinské strojárne. a. s.		Váh	281.6			oils	204	2	65	above dam Žilina			2040	448040	**5.7**
53	PRATEX COM, a. s.	Cadca	**Kysuca**	**29**	281.3	Textile industry	$Ca(OH)_2$	132	1	41	above dam Hricov	S		1320		
			Váh	252.3											1320	**3.1**
54	KLF-ZVL, a. s.	Kysucké N. Mesto	**Neslušanka**		256.7	Bearing production,	oils	205	2	65		S		20500		
	Kysucké Nové Mesto		Kysuca	4.4		energetics	petropal	360	3	65.45	above dam Hricov			360000	380500	**5.6**
			Váh	252.3												
55	SSE Tepláren Žilina	Žilina	**Váh**	**255**	255	Heating plant	HCl	160	1	34.37	own WWT,	S		1600		
							NaOH	120	1	35	above dam Hricov			1200	2800	**3.4**
56	Aqachémia, s. r. o. Žilina	Žilina	**Váh**	**254.25**	254.25	Organic, inorganic	cyclohexanone	406	1	10.2	WWT of city Žilina,	P	SE	4060		
	area of Pov. chemické závody					production	NaOH	143	1	35	above dam Hricov			1430	472460	**5.7**
							solution KL	750	1					7500		
							sulphate lye	1 000	1	34,35,39				10000		
							NH_4NO_2	500	1	8,28,50				5000		
							hydroxylaminesulphate	350	1	22.5				3500		
							H_2SO_4	600	1	35				6000		
							oleum	600	2	14,35,37				60000		
							caprolactame	700	2	36,37,38				70000		
							acetocyanhydrine	300	3					300000		
							methanol	260	1	11.39				2600		
							methylacrylate	237	1	11.43				2370		
57	Slovnaft Benzinol, a. s.	Žilina	**Váh**	**244.9**	244.9	Storage and trading in fuel	petrol	770	3	65.45	own WWT,	S	SE	770000		
	Terminal Horný Hricov		**Lehotský cr.**	**1.5**	243.85		techn., aviation petrol	800	3	65.45	above dam Hricov			800000	2182000	**6.3**
			Váh	242.35			light heating oils	1 620	2	65				162000		
							oils and greases	4 500	2	65				450000		
58	Kinex, a. s. Bytca	Bytca	**Váh**	**235**	235	Engineering	oils	200 t	2	65	own WWT,	S		20000		
															20000	**4.3**

											above dam Nosice					
59	Tepláren, a. s.	Považská Bystrica	**Váh**	**217**	217	Energetics	waste oils	150	2	65		S		15000	25800	**4.4**
							used crude oil	108	2	65	disch. into dam Nosice			10800		
60	Matador, a. s. Púchov	Púchov	**Pružinka**	**0.03**	201.73	Rubber factory	heavy heating oils	14 000	2	65	own WWT,	P	SE	1400000	1885360	**6.3**
			Váh	201.7			technical petrol	139	3	65.45	above dam Slnava			139000		
			Váh	**201.7**	201.7		furex	320	3					320000		
							HCl	136	1	34.37				1360		
							waste oils	250	2	65				25000		
61	Považské cementárne, a. s.	Ilava	**Lúckovský cr.**	**0.5**	192	Cement production	heavy heating oils	6 000	2	65	own WWT,	S	SE	600000	600000	**5.8**
			Nosický canal	25.9							above dam Slnava					
			Váh	165.6												
62	Považský cukrovar, a. s. Trencianska Teplá	Trencín	**Nosický canal**	**23.5**	189.1	Sugar mill	heavy heating oils	11 000	2	65	above dam Slnava	S		1100000	1100000	**6.0**
			Váh	165.6												
63	SLOVLAK FALA, a. s. Košeca	Ilava	**Podhradský cr.**	**3**	187.5	Inorganic pigments,	xylene	120	2	10.38	own WWT,	P		12000	24000	**4.4**
			Váh	184.5		paints prod.	aromatol	120	2		above dam Slnava			12000		
64	ZTS Energo, a. s. Dubnica	Ilava	**Lieskovecký cr.**	**1.8**	165.6	Engineering, energy production	used oils	160	2	65	2, above dam Slnava, own WWT	S		16000	16000	**4.2**
65	ZTS Metalurgia, a. s. Dubnica nad Váhom	Ilava	**Lieskovecký cr.**	**1.8**	165.6	Metallurgy	tempered oils	400	2	65	WWT of ZTS Energo,	S		40000	41200	**4.6**
							water glass	120	1		above dam Slnava			1200		
66	Agrokombinát, a. s. Vel ké Bierovce	Trencín	**Biskupický canal**	**7.25**	127.65	Breeding of pigs	dung water	7 500	1		own WWT,	S		75000	75000	**4.9**
			Váh	120.4							above dam Slnava					
67	Farm Chtelnica	Piešt any	**Chtelnicka**	**12.67**	121.37	Farming	petroleum	240	3	65.45	WWT of mun.	S		240000	336800	**5.5**
			Horný Dudváh	18.5			dung	9 000	1		Chtelnica,			90000		
			Váh	90.2			dung water	680	1		above dam Slnava			6800		
68	Pol nohosp. výroba a obchodné družstvo Kocín	Piešt any	**Šteruský cr.**	**6.5**	119.6	Farming	solid fuel	1 000 t	2		above dam Slnava	S		100000	114400	**5.1**
			Borovský canal	4.2			silage	100	1					1000		
			Horný Dudváh	18.7			dibutylphtalate	134	2	63,50,53				13400		
			Váh	90.2												
69	Drôtovna, a. s. Hlohovec	Hlohovec	**Váh**	**100.8**	100.8	Wire production	mazut	5450 t	2	65	own WWT,	P	SE	545000	548200	**5.7**
							HCl	320	1	34.37	above dam Slnava			3200		
70	Slovakofarma, a. s. Hlohovec	Hlohovec	**Váh**	**100.65**	100.65	Drugs production	28% NH_4OH	160	2	10.38	own WWT, above dam Slnava	P	SE	16000	16000	**4.2**
71	Hornonitrianske bane, a. s.	Prievidza	**Krivý cr.**	**3.8**	172.3	Coal mining	petrol	100	3	65.45	own WWT	S		100000	245000	**5.4**

	factory Bana Cígel , o. z. Prievidza		Cigliansky cr.	2.8			petroleum	100	3	65.45				100000		
			Lehotský cr.	3.3			oils	450	2	65				45000		
			Nitra	132.3												
			Váh	30.1												
			Moštenica	**2.3**	173.7											
			Handlovka	5.7												
			Nitra	135.6												
			Váh	30.1												
			Ciglianka	**1.5**	168.5											
			Handlovka	1.3												
			Nitra	135.6												
			Váh	30.1												
72	Hornonitrianske bane Nováky, factory Bana Lehota	Prievidza	**Lehotský cr.**	**5.7**	168.1	Coal mining	petroleum	100	3	65.45	above dam Nováky	S		100000	100000	**5.0**
			Nitra	132.3												
			Váh	30.1												
73	Hornonitrianske bane Nováky, factory Bana Mládeže	Prievidza	**Lehotský cr.**	**1.7**	164.1	Coal mining	petroleum	100	3	65.45	own WWT,	S		100000	100000	**5.0**
			Nitra	132.3							above dam Nováky					
			Váh	30.1												
74	SAD, Prievidza	Prievidza	**Handlovka**	**4.8**	170.5	National bus transport	petroleum	200	3	65.45	WWT of city Prievidza	S		200000	200000	**5.3**
			Nitra	135.6												
			Váh	30.1												
75	Hornonitrianske bane Nováky, factory Bana Nováky	Prievidza	**Ciglianka**	**2.4**	169.4	Coal mining	petroleum	100	3	65.45		S		100000	100000	**5.0**
			Handlovka	1.3												
			Nitra	135.6												
			Váh	30.1												
76	Novácke chemické závody,	Prievidza	**Nitra**	**130.6**	160.7	Chemical industry	dioctyladipate	120	1	36	own WWT	P	SE	1200	3058650	**6.5**
	a.s., Nováky		**Nitra**	**129.7**	159.8		diisooctylphtalate	240	1	62,63,58				2400		
			Váh	30.1			1,2 (dichloro)ethane	3 000	3	40				3000000		
							methanol	143	1	11.39				1430		
							vinylacetate	327	2	11				32700		
							emulgator	444	1					4440		
							$Fe_2(SO_4)_3$	112	1					1120		
							$CaCl_2$	146	1	36				1460		
							cooling oils	139	2	65				13900		
77	SE, a. s. Nováky	Prievidza	**Nitra**	**126**	156.1	Heat and	petroleum	10 000	3	65.45	WWT of city	S	SE	10000000	10174400	**7.0**
	factory Zemianske Kostol any		Váh	30.1		electricity production	turbine oils	219	2	65	Z. Kostol any			21900		
							mazut	1 525	2	65				152500		
78	VEGUM, a. s.	Prievidza	**Nitrica**	**12**	153.9	Rubber industry	dibutylphtalate	300	2	63,50,53	own WWT	P		30000	40000	**4.6**

	Dolné Vestenice		Nitra	111.8			oils	100	2	65				10000		
			Váh	30.1												
79	Zornica, š. p.	Bánovce	**Radiša**	**2.3**	148.7	Textile, fashion industry	heavy heating oils	720	2	65		S		72000	72000	**4.9**
		n/Bebravou	Bebrava	18												
			Nitra	98.3												
			Váh	30.1												
80	Cebo Holding Slovakia a. s.,	Partizánske	**Nitra**	**111.2**	141.3	Shoes, leather industry	technical petrol	140	3	65.45	WWT of city	S		140000	151200	**5.2**
	Partizánske		Váh	30.1			oils	100	2	65	Partizánske			10000		
							dioctyladenylate	120						1200		
81	Pol noslužby BEBRAVA, a. s.	Bánovce	**Bebrava**	**12.5**	140.9	Agricultural production	engine petroleum	200	3	65.45		S		200000	200000	**5.3**
	Rybany	n/Bebravou	Nitra	98.3		trade										
			Váh	30.1												
82	Školský majetok Tovarníky	Topol cany	**Chotina**	**4.5**	128.6	School farm	solid fuel	700 t	1			S		7000	12000	**4.1**
			Nitra	94			dung water	500	1					5000		
			Váh	30.1												
83	Novpol, a. s. Vel ké Ripnany	Topol cany	**Radošinka**	**19**	115.4	Agricultural product., trade	light heating oils	150	2	65	above dam	S		15000	15000	**4.2**
			Nitra	66.3							Vel ké Ripnany					
			Váh	30.1												
84	Pol nonákup a. s. Lužianky	Nitra	**Nitra**	**85**	115.1	Agricultural product., trade	light heating oils	100	2	65		S		10000	10000	**4.0**
			Váh	30.1												
85	Slovnaft Benzinol,	Trnava	**Andac**	**13.5**	114.4	Storage and trade in fuel	petrol	14 030	3	65.45	WWT of mun. Kl acany	S	SE	14030000	24339000	**7.4**
	Kl acany pri Trnave		Radošinka	4.6			petroleum	9 275	3	65.45				9275000		
			Nitra	66.2			crude oil	10 340	2	65				1034000		
			Váh	30.1												
86	ŽSR Zlaté Moravce	Zlaté Moravce	**Hostiansky cr.**	**5.5**	101.6	Engineering	engine petroleum	225	3	65.45		S		225000	225000	**5.4**
	Engineering station		Žitava	40.5												
			Nitra	25.5												
			Váh	30.1												
87	NITRAFROST, a. s.	Nitra	**Nitra**	**53.5**	83.5	Food industry	NaCl	100	1			S	SE	1000	11000	**4.0**
			Váh	30.1			NH_3	100	2	10.5				10000		
88	AGROMILK, a. s.	Nitra	**Nitra-1**	**52.5**	82.6	Milk processing	heavy heating oils	630	2	65		S		63000	63000	**4.8**
			Váh	30.1												
89	Plastika, a. s. Nitra	Nitra	**Malá Nitra**	**28.1**	80.8	Production of plastics	mazut	3 000	2	65	own WWT	P		300000	301300	**5.5**
			Nitra	22.6			HCl	130	1	34.37				1300		
			Váh	30.1												
90	Nitrianske strojárne Nitra	Nitra	**Malá Nitra**	**28**	80.7	Engineering	heavy heating oils	1 080	2	65	own WWT	S		108000	108000	**5.0**

			Nitra	22.6											
			Váh	30.1											
91	HIRK, s. r. o. Sered	Galanta	**Váh**	**78.99**	78.99	Nickel works	engine petroleum	100	3	65.45	can. of Cukrov. Sládkov.	P		100000	100000	**5.0**
92	PAL-INALFA, a. s. Vráble	Nitra	**Host ovský cr.**	**1.1**	78.5	Electrical machines prod.	crude oil substances	100 t	2	65	own WWT	S		10000	10000	**4.0**
			Žitava	22												
			Nitra	25.5												
			Váh	30.1												
93	Farm Komjatice	Nové Zámky	**Malá Nitra**	**14**	66.7	Farming	dung water	1 445	1			S		14450	14450	**4.2**
			Nitra	22.6												
			Váh	30.1												
94	Zlatý Bažant, a.s. Hurbanovo	Nové Zámky	**Stará Žitava**	**4.8**	62.6	Brewery	engine petroleum	100	3	65.45	own WWT	S		100000	100000	**5.0**
			Žitava	2.2												
			Nitra	25.5												
			Váh	30.1												
95	Duslo Šal a, a. s.	Šal a	**Váh**	**53.9**	53.9	Chemical industry	HCl	263	1	34.37	own WWT	P	SE	2630	476630	**5.7**
							H_2SO_4	320	1	35				3200		
							NaOH	480	1	35				4800		
							KOH	100	1	22.35				1000		
							$NaNO_2$	320	2	8,25,50				32000		
							CCl_4	152	3	23.51				152000		
							$Fe(NO_3)_3$	1 500	1					15000		
							ammonium water	160	2	10.5				16000		
							greases	2 000	2	65				200000		
							aniline	500	2	20,25,50				50000		
96	Farm Vel ký Kýr	Nové Zámky	**Stará Nitra**	**17**	53.7	Farming	dung water	915	1			S		9150	100150	**5.0**
			Nitra	6.6			dung	9 000	1					90000		
			Váh	30.1			silage	100	1					1000		
97	Elektrosvit, a. s. Nové Zámky	Nové Zámky	**Nitra**	**8.8**	38.9		heavy heating oils	4 000	2	65	WWT of city	P		400000	3620000	**6.6**
			Váh	30.1			petrol	1 610	3	65.45	Nové Zámky			1610000		
							petroleum	1 610	3	65.45				1610000		
98	ŽSR Locomotive depot	Nové Zámky	**Nitra**	**8.8**	38.9	Repairs and maintaning	engine petroleum	630	3	65.45	WWT of city	S		630000	652000	**5.8**
			Váh	30.1		of locomotives	oils	220	2	65	Nové Zámky			22000		
99	Šajgal s. r.o., Brezno	Brezno	**Hron**	**226.8**	226.8	Distribution of fuel	petrol	133	3	65.45		S		133000	133000	**5.1**
100	SAD, š. p. Brezno	Brezno	**Drábsko**	**2.1**	223.8	Slovak bus transport	engine petroleum	200	3	65.45	own WWT	S		200000	200000	**5.3**
			Hron	221.7												
101	ŽSR Zvolen	Brezno	**Hron**	**220.5**	220.5	Repairs of locomotives	petroleum	100	3	65.45		S		100000	100000	**5.0**
	division Brezno		Hron	214.2												
102	UNI, s. r. o. Brezno	Brezno	**Bystrianka**	**1.7**	215.9	Fuel storage	petroleum	820	3	65.45		S		820000	820000	**5.9**
	Store Piesok		Hron	214.2												

103	Petrochema, a. s. Dubová	Brezno	**Oselné cr.**		205.7	Refinery	crude oil	9 572	2		65	own WWT,	P	SE	957200	12181740	**7.1**
			Hron	205.7			refine oils	2 309	2		65	river km			230900		
							heating oils	4 500	2		65	from the mouth			450000		
							oleum	105	2	14,35,37		into the Hron river			10500		
							dark oils	900	2		65				90000		
							white oils	1 175	2		65				117500		
							light heating oils	815	2		65				81500		
							traf. and cond. oils	1 229	2		65				122900		
							low-solidifying oils	510	2		65				51000		
							emulsion oils	272	2		65				27200		
							waste oils	2 011	2		65				201100		
							petrosulphonates	475	2		65				47500		
							petropal	260	2		65				26000		
							petrol	3 905	3		65.45				3905000		
							H_2SO_4	220	1		35				2200		
							techn. HCl	325	1		34.37				3250		
							NaOH	199	1		35				1990		
							oth. basic raw materials	1 273	2						127300		
							dunon	290	2						29000		
							dubacid	187	2						18700		
							benzene	1 201	3	11,23,65					1201000		
							petroleum + gas destill. prod.	752	3		65.45				752000		
							petroleum + components	3 500	3		65.45				3500000		
							n-alkanes	2 280	2		65				228000		
104	Neuber-Chemika, a. s.	Banská Bystrica	**Hron**	**185.8**	185.8	Chemical industry	H_2SO_4	300 t	1		35	canalization	S		3000	4000	**3.6**
	Slovenská Lupca		**Hron**	**185.4**	185.4		KH_2PO_4	100 t	1			of Slovenská Lupca			1000		
105	BIOTIKA, a. s.	Banská Bystrica	**Istebník**	**0.5**	183.8	Drugs production	NaOH	137	1		35	own WWT	P	SE	1370	407870	**5.6**
	Slovenská Lupca		Hron	183.3			buthylacetate	550	1		10.66				5500		
							buthanol	100	1	10,22,38					1000		
							heavy heating oils	4 000	2		65				400000		
106	Stavby-mechanizácia-dopr.	Banská Bystrica	**Selciansky cr.**	**2.2**	181.2	Building, mechanization,	petroleum	100	3		65.45	own WWT	S		100000	100000	**5.0**
	a. s., Nemce		Hron	179		transport											
107	SAD BBDS, š. p.	Banská Bystrica	**Selciansky cr.**	1.25	180.25	Public traffic	petroleum	200	3		65.45	own WWT	S		200000	200000	**5.3**
			Hron	179													
108	Slovenské cementárne	Banská Bystrica	**Selciansky cr.**	1.2	180.2	Cement production	mazut	5 000	2		65	own WWT	P		500000	500000	**5.7**
			Hron	179													

109	Slovnaft Benzinol Stožok	Detva	**Slatina-1**	**24.55**	178.05	Storage, trade in fuel	petrol	8 230	3	65.45	own WWT	S	SE	8230000	16143000	**7.2**
			Hron	153.5			engine petroleum	7 586	3	65.45				7586000		
							transmission oils	2 004	2	65				200400		
							used crude oils	100	2	65				10000		
							light heating oils	1 166	2	65				116600		
110	Podpolianske strojárne DETVA Holding, a. s.	Detva	**Hradná**	**1.6**	176.5	Engineering	inorganic oils	148 t	2	65	own WWT, above dam Môt ová	S		14800	14800	**4.2**
			Slatina-1	21.4												
			Hron	153.5												
111	Slovenka, š. p.	Banská Bystrica	**Bystrica-1**	**0.9**	176.3	Cotton processing	heavy heating oils	1 600	2	65	own WWT	S		160000	160000	**5.2**
			Hron	175.4												
112	Slovenská správa letísk airport Sliac	Zvolen	**Hron**	**164.4**	164.4	Personal and cargo transport	aviation petroleum	116	3	65.45	own WWT	S		116000	116000	**5.1**
113	ŽOS, a. s. Zvolen	Zvolen	**Slatina-1**	**4**	157.5	Repairs, engineering	heavy heating oils	183	2	65		S		18300	538300	**5.7**
			Hron	153.5			engine petroleum	504	3	65.45				504000		
							engine oils	160	2	65				16000		
114	ŽSR, a. s. Zvolen Locomotives depot	Zvolen	**Slatina-1**	**0.2**	153.7	Repairs of locomotives	engine petroleum	2 933	3	65.45	WWT of city Zvolen	S		2933000	3005400	**6.5**
			Hron	153.5			mazut	180	2	65				18000		
							crude oil	379	2	65				37900		
							engine oils	165	2	65				16500		
115	BUCINA, a. s. Zvolen	Zvolen	**Zolná**	**1.5**	158.5	Wood processing	modificator	7 000	1			P	SE	70000	76085	**4.9**
				1.1	158.1		stiffener R 60	135	1					1350		
				1	158		paste LP	460	1					4600		
				0.66	157.66		paraffin	135	0					135		
				0.63	157.63											
				0.6	157.6											
			Slatina-1	3.5												
			Hron	153.5												
			Slatina	**3**	156.5											
			Hron	153.5												
			Hron	**153.8**	153.8											
116	SEZ, š.p. Žilina factory Tepláren Zvolen	Zvolen	**Hron**			Heating plant	heavy heating oils	1 800	2	65	canalization of Bucina	S		180000	182500	**5.3**
			Slatina				NaOH	110	1	35				1100		
			Zolná				HCl	140	1	34.37				1400		
117	SAD, š. p. Zvolen	Zvolen	**Hron**	**154.26**	154.26	Transp., repairs of buses	petroleum	200	3	65.45		S		200000	200000	**5.3**
118	VD Kovohron Zvolen	Zvolen	**Hron**	**153.5**	153.5	Steel, plates processing	light heating oils	200	2	65	WWT of city Zvolen	P		20000	20000	**4.3**
119	Elba, a. s. Kremnica	Žiar nad Hronom	**Kremnický cr.**	**15**	150.5	Armatures, fixtures prod.	HCl	105	1	34.37		P	SE	1050	1050	**3.0**

			Hron	135.5												
120	KBS, s. r. o. Kremnica	Žiar nad Hronom	**Kremnický cr.**	**14**	149.5	Ores proces., electr. prod.	CN solutions	550	2	26,28,32		P		55000	55000	**4.7**
			Hron	135.5												
121	Závod SNP, a. s.	Žiar nad Hronom	**Hron**	**129**	129	Aluminium processing	NaOH	1 825	1	35		P	SE	18250	84650	**4.9**
			Hron	**125.3**	125.3		inorganic oils	664	2	65				66400		
122	de Miclén Levice	Levice				Cosmetics production	KOH	105	1	22.35	WWT of city Levice	S		1050	1050	**3.0**
123	A. N. B., s. r. o. Bratislava factory Žarnovica	Žarnovica	**Hron**	**108.35**	108.35	Wood processing	heavy heating oils	2 883 t	2	65		P		288300	303829	**5.5**
							paste MF	669,1 t	1					6691		
							paste FFD	883,8 t	1					8838		
124	IZOMAT, a. s. Nová Bana	Žarnovica	**Novobanský cr.**	**0.5**	94.3	Isolating materials	phenolphormaldehyde	125	2	43	own WWT	P		12500	12500	**4.1**
			Hron	93.8		production	resin		1							
			Hron	**93.45**	93.45											
125	AE Mochovce	Levice	**Hron**	**93.95**	93.95	Atomic power station	petroleum	200	3	65.45	own WWT	S		200000	206260	**5.3**
	municipality						H_2SO_4	180	1	35				1800		
	Veľké Kozmálovce						NaOH	160	1	35				1600		
							$Fe_2(SO_4)_3$	160	1					1600		
							HNO_3	126	1	8.35				1260		
126	Slovnaft Benzinol, a. s. PS Hronský Benadik	Žarnovica	**Hron**	**82.3**	82.3	Fuel storage	engine petroleum	11 700	3	65.45		S	SE	11700000	22254000	**7.3**
							light heating oils	800	2	65				80000		
							car and aviation petrol	10 464	3	65.45				10464000		
							used crude oils	100	2	65				10000		
127	NOVOCHEMA Levice	Levice	**Podlužianka**	**2.2**	55.95	Paints, non-freezing liquids, thinners, dispersive pastes	polish petrol	125	3	11,65,45	WWT of city Levice	P	SE	125000	145000	**5.2**
			Hron	53.75			xylene	100	2	10,21,38				10000		
							polishes	100	2	65				10000		
128	Slovmag, a. s. Lovinobana	Lucenec	**Krivánsky cr.**	**21.1**	160.8	Mining	heavy heating oils	650	2	65	own WWT	S		65000	92800	**5.0**
			Krivánsky cr.	**19.5**	159.2		sulphite extract	128	2	31.34				12800		
			Ipel	139.7			tar	150	2	65				15000		
129	Žiaromat Kalinovo	Poltár	**Slatinka**	**12.7**	153	Ceramic industry	light heating oils	100	2	65	own WWT	S		10000	10000	**4.0**
			Krivánsky cr.	0.6												
			Ipel	139.7												
130	SAP, š.p. Lucenec	Lucenec	**Krivánsky cr.**	**4.4**	144.1		petroleum	150	3	65.45	WWT of city Lucenec	S		150000	150000	**5.2**
			Ipel	139.7												
131	VÚ Lešt , Pliešovce	Krupina	**Krupinica**	**57.6**	111.7	Soldier organisation	petroleum	188	3	65.45		S		188000	188000	**5.3**
			Ipel	54.1												
132	ACHP, s. r. o. Veľký Krtíš	Veľký Krtíš	**Medokýšny cr.**	**2.1**	106.3	Agrochemistry	fluid fertilisers	1 920	1			S		19200	19200	**4.3**
			Krtíš	14.1												
			Ipel	90.1												

133	Pol nonákup HONT, a.s . Hontianske Nemce	Krupina	**Štiavnica** Ipel	**29.5** 47.5	76.9	Trade, drying, treating, storage of grain	light heating oils	300	2	65		S		30000	30000	**4.5**
134	Transpetrol, a. s. Šahy municipality Tupá	Levice	**Štiavnica** Ipel	**2.6** 47	50.1	Transport, storage of crude oil and c. o. products	crude oil	180 000	2	65	own WWT	S		18000000	18000000	**7.3**
135	Želba š.p. 02 Siderit Nižná Slaná	Rožnava	**Slaná**	**66.4**	66.4	Siderite mining and processing	As 0,144% Pb 0,009% Zn 0,004% in sludge	3 984 911 silted sludge	1 1 1	23.25 20,33,61 15.17		S		39849110	39849110	**7.6**
136	Magnetech Slovakia a.s. Hnúšt a	Rimavská Sobota	**Rimava** Slaná	**64.3** 1.4	65.7	Production of non - fe-rrous clinkers	HCl Cl_2 NaOH	756 m^3 80 m^3 20 m^3	1 2 1	34.37 23,37,50 35		P	SE	7560 8000 200	15760	**4.2**
137	Slovmag a.s. Lubeník	Revúca	**Murán** Slaná	**26.5** 25.8	52.3	Mining and processing of magnesite on dead - burned magnezia	sulfid light heat. oil mineral oil H_2SO_4	3 300 t 120 t 317 t 225,5 t	2 2 2 1	 65 65 35		P		330000 12000 31700 2255	375955	**5.6**
138	SMZ Jelšava	Revúca	**Murán** Slaná	**23.3** 25.8	49.1	Mining and processing of magnesite on dead - burned magnezia	heavy heat. oil light heat. oil	6 000 100	2 2	65 65		P	SE	600000 10000	610000	**5.8**
139	SLZ Chémia a.s. Hnúšt a	Rimavská Sobota	**Rimava** Slaná	**59** 1.4	60.4	Production of coal, acetone, acetate, acetic acid	acetone acetic acid methylacetate butylacetate tar wood vinegar	204 273 108 234 204 865	1 1 1 1 3 1	11 10.35 36.11 10		P	SE	2040 2730 1080 2340 204000 8650	220840	**5.3**
140	Želba Rudnany	Košice	**Rudniansky creek** Hornád	**0.6** 121.5	122.1	Mining and processing of baryte ore,	oils and fats H_2SO_4 oleic acid polyethylene glycol NaOH praestol hexametaphosphat e	21,62 t 41,77 t 50,24 t 4,75 t 4,15 t 0,55 t 4,1 t	2 1 1 1 1 2	65 35 35 		S		2162 418 502 48 42 410	3582	**3.6**
141	Vitrum Krompachy	Spišská Nová Ves	**Hornád**	**97.8**	97.8	mettalurgical industry	oils H_2SO_4 lime	1,1 t 1 t 5 t	2 1 1	65 35 		S		110 10 50	170	**2.2**

142	VSŽ Ferroenergy Košice	Košice	**Sokoliansky c.**	**8.5**	8.5	Waste waters treatment plant from the factory VSŽ	waste oil substances		2	65		P				
143	Chirana - Prema Humenné	Humenné	**Laborec**	**66**	90.2	Health equipments	no actual information available					S				
			Latorica	9.2												
			Bodrog	15												
144	Chemko Strážske	Michalovce	**Laborec**	**53.9**	78.1	Products of inorganic,	nitric acid	24 350 t	1	8.35		P	SE	243500	16577450	**7.2**
			Latorica	9.2		organic, small-assembly	formaldehyde	146 802 t	2	23.43				14680200		
			Bodrog	15		chemistry, technical gases	cyclohexanone	75 656 t	1	10.2				756560		
							nitre	20 250 t	1					202500		
							methanol	69 469 t	1	11,23,25				694690		
145	SE a.s. EVO Vojany	Michalovce	**Laborec**	**10.5**	34.7	Heat and electricity energy	residual oil	150 000 t	2	65		S	SE	15000000	15000000	**7.2**
			Latorica	9.2		production										
			Bodrog	15												
146	SWS Vojany	Bardejov	**Laborec**	**10.5**	34.7	Chemical industry oil	liquid gases	53 331 t	2	12		S	SE	5333100	25350500	**7.4**
			Latorica	9.2		products, chemical and	gasoline	12 300 t	3	65.45				12300000		
			Bodrog	15		other substrates, stocking	heating oil	38 423 t	2	65				3842300		
						and distribution	mineral oil	38 751 t	2	65				3875100		
147	Tesla Stropkov	Bardejov	**Ondava**	**101**	116	Electro -technical	NaOH	25 t	1	35		S		250	7540	**3.9**
			Bodrog	15		industry	$Na_2S_2O_3$	7 t	1					70		
							Syngal Zn	2 t	1	15.17				20		
							trichloroethylene	7,2 t	3					7200		
148	Bukocel Hencovce	Vranov	**Ondava**	**50.1**	65.1	Fibre and cellulose	HCl	290 t	1	34.37		P	SE	2900	906680	**6.0**
		nad Topl ou	Bodrog	15		production,	NaOH	518 t	1	35				5180		
						derivatives products	$Ca(OH)_2$	1 040 t	1	35				10400		
						on base of cellulose	$FeCl_3$	178 t	1					1780		
						and hydrolysate	NaCl	132 t	1					1320		
							heating oil	8 851 t	2	35				885100		

* to boundary the Slovak Republic and Hungary

Summe 250877521 **8.4**

ARS Hungary

A.) Industry - POTENTIAL ACCIDENTAL RISK SPOTS > TISA < RIVER SUB-BASIN 2001.

N°	Name and proprietor of the company	Place, settlement	EOV coordinates		Receiving watercourses (km)	Activity of the company (type of technology)	Sum of water risk class equivalents	Water risk index
			X	Y				
51.	AES Borsodi Energetikai KFT Tiszapalkonyai Hoeromu Proprietor:	Tiszaújváros			Tisa 483	Production of electric energy and heat	148,000,000	**8.170**
52.	Akzo Nobel Festékgyártó és Kereskedelmi Rt.	Tiszaújváros			Tisa 484	Storage of materials, production and trade of resins, paints, lacquers, solvents	118,105,000	**8.072**
27.	Mol Rt. - Szajol basic site	Szajol	201.000	744.000	Holt-Tisa (10) - Tisa (337)	Storage of fuel, receipt of use-up oil	95,290,000	**7.979**
53.	MOL Rt. Tiszai Finomító	Tiszaújváros			Tisa 483+600	Refining crude oil Storage	30,415,500	**7.483**
55.	AES Tisza eromu KFT Proprietor: AES SUMMIT Generation Ltd.	Tiszaújváros			Tisa 490	Production of electric energy, gas fuelled power plant	26,052,030	**7.416**
19.	MOL RT. BÁZISTELEP Kenoanyag üzletág	Nyírbogdány, Gyártelep	862.030	307.420	Lónyay canal (34), Tisa river (559)	receiving and storing products of crude oil arriving through pipeline (petrol, gasoline) and drawing off into railway and for public road transport	20,400,000	**7.310**
18.	MOL Rt Kenoanyag division	Nyírbogdány	862.030	307.420	Lónyai canal Tisa river	storage of hazardous wastes	19,028,900	**7.279**
48.	Koolajtároló Rt.	Tiszaújváros MOL Rt. Tiszai Finomító			Tisa 483+600	Storage	13,600,000	**7.134**
58.	AKZO NOBEL Festékgyártó és kereskedelmi Rt	Tiszaújváros			Tisa 484	Storage of materials, production and trade of resins, paints, lacquers, solvents	13,000,000	**7.114**
49.	Terméktároló Rt.	Tiszaújváros MOL Rt. Tiszai Finomító			Tisa 483+600	Storage	9,200,000	**6.964**
56.	AES Borsodi Energetikai KFT Tiszapalkonyai Hoeromu Proprietor:	Tiszaújváros			Tisa 483	Production of electric energy and heat	8,024,200	**6.904**
36.	Sugar factory Rt. Begin-Say French proprietor	Szolnok	200.000	735.000	Tisa (332)	production, of sugar storage of industrial waste water	7,000,000	**6.845**
46.	Tiszai Vegyi Kombinát Rt. Proprietor: Befektetoi csoport	Tiszaújváros			Tisa 484	Production of olefin	6,778,400	**6.831**
6.	MOL RT. KFÜ pumping site	Fényeslitke	878.822	329.465	Belfo canal (43), Tisa river (569)	Receiving crude oil coming through the BARÁTSÁG-II pipeline and storing in 4 pieces of 20000 thousands m3 tanks above the surface then transporting to be processed	4,480,000	**6.651**
32.	Szerencsi Cukorgyár Rt Proprietor: Beghin Say	Szerencs			Szerencs-brook 25,5 Sajó 9,3-Tisa 491,9	Sugar beet processing, sugar production	4,054,000	**6.608**
42.	Terszol Szövet-kezet	Szolnok	201.000	733.000	Görbe-watercourse (1)	Galvanic and paint sludge	2,527,000	**6.403**
57.	Tiszai Vegyi Kombinát Rt	Tiszaújváros			Tisa 484		2,175,000	**6.337**
20.	VÁROSÜZEMELTETÉSI KHT.	Nyíregyháza, Szállási u. 72.	850.813	296.037	VIII/1. tributary (11), VIII. sz. main river (5), Lónyay c (22), Tisa (559)	Closed building with proper protection for collecting and storing hazardous wastes	1,485,400	**6.172**
7.	Mol Rt. BFL Logisztika	Füzesabony			Eger-brook 25, Kis- Tisa 25,8	Storing and selling mineral oil products	1,145,000	**6.059**
21.	NYÍREGYHÁZI EROMU KFT.	Nyíregyháza, Bethlen G. u. 92.	850.813	296.037	VIII/2. tributary (4), VIII.main river (11), Lónyay c. (22), Tisa (559)	Production of electric energy and hot steam using natural gas and oil	1,100,000	**6.041**
9.	Firm: MÁD-OIL Raktározási és Szállítási Kft.	Mád			Mádi-brook 8,1 Takta 29,8	Storage and trading of mineral oil products	1,073,900	**6.031**
16.	TARTALÉK-GAZDÁLKODÁSI KÖZHASZNÚ TÁRSASÁG	Nyírbátor			Nyírbátor-Vasvári canal (16) Kraszna (34) Tisa 682	storage of fuel	1,000,000	**6.000**
54.	Columbian Tiszai Korom-gyártó KFT Proprietor: Columbian Chemikal Company USA	Tiszaújváros			Tisa 484	Production industrial soot of oil	520,000	**5.716**
38.	TVM Rt.	Szolnok	199.000	733.000	Tisa (330)	Production of fertilisers, phosphor, paint	514,250	**5.711**
25.	NYÍRSÉGVÍZ RT. Nyíregyháza I. sz. site for sewage treatment	Nyíregyháza, Westsik V. u.	850.813	296.037	VIII. sz. main river (9), Lónyay canal (22), Tisa river (559)	treatment of municipal sewage after weighting, then filtering and sand trap to DOR type deposit then airing and another DOR type depositor	300,000	**5.477**
59.	MOL Rt Tiszai Finomító	Tiszaújváros			Tisa 483-600	Treatment of industrial waste water	300,000	**5.477**
7.	MÁV ZÁHONY PORT Division	Komoró drawing-off oil 070 site number	880.061	333.181	Belfo canal (45), Tisa river (569)	Drawing-off pakura and gasoline from wide-track tanks into tanks with normal gauge	250,000	**5.398**
2.	Firm:STRONG és MIBET Épito-elemgyár Kft.	Alsózsolca			Sajó 45, Tisa 491,9		231,000	**5.364**
37.	Treatment plant for municipal sewage Proprietor Munici-pality	Szolnok	201.000	735.000	Tisa (332)	Treatment of municipal sewage	225,400	**5.353**
13.	MÁV DEBRECENI ÜZLETIGAZGATÓSÁG SZERTÁRFONÖKSÉG	Mátészalka, Zöldfa u. 102.	895.501	296.69	Kraszna river (20) Tisa river (682)	storage of fuel	154,200	**5.188**

23.	MÁV DEBRECENI ÜZLETIGAZGATÓSÁG NYÍREGYHÁZI SZERTÁRFONÖKSÉG	Nyíregyháza, Kinizsi u.			VIII/2. tributary (4) VIII. main river (11) Lónyay c (22) Tisa (559)	storage of fuel	147,100	**5.168**
41.	Rethmann Rt.	Szolnok	206.000	734.000	Kisgyepi (8,2) Zagyva (7)Tisa (335)	Communal service, receipt of hazardous wastes	143,000	**5.155**
60.	CLAAS Hungária Kft. German property	Törökszentmiklós	203.000	755.000	Public sewerage	Production of agricultural machinery	140,000	**5.146**
11.	Legero Tisza Cipogyár-tó Kft. Italian proprietor	Martfu	187.000	744.000	Tisa (305)	Production of shoes	115,000	**5.061**
4.	MÁV ZÁHONY PORT ÜZELETIGAZGATÓSÁG SZERTÁRFONÖKSÉG	Eperjeske	886.748	338.509	Belfo canal (51) Tisa river (569)	storage of fuel	105,000	**5.021**
61.	MÁV ZÁHONY PORT ÜZELET-IGAZGATÓSÁG SZERTÁRFONÖKSÉG	Záhony	884.127	344.953	Belfo canal (57) Tisa river (569)	storage of fuel	104,500	**5.019**
5.	MÁV ZÁHONY PORT ÜZELETIGAZGATÓSÁG SZERTÁRFONÖKSÉG	Fényeslitke	878.822	329.465	Belfo canal (43) Tisa river (569)	storage of fuel	100,000	**5.000**
39.	Magyar Honvédség	Szolnok Repülotér	199,000	740,000	Alcsi Holt-Tisa (5 km) Tisa (337+200 km)	Operation of military vehicles in air and on the land	100,000	**5.000**
26.	MVM Rt - GTER KFT Proprietor:MVM Rt	Sajószöged			Sajó 23, Tisa 491,9	Gas-turbine with fast starting	97,000	**4.987**
1.	MOL Rt. Kut. Term. Ág. Kutatás-1 Iroda	Algyo	738	111	Tisa 187,85	Mining	77250	**4.888**
17.	CEREOL NÖVÉNYOLAJIPARI RT.	Nyírbátor, Táncsics u. 2-4.	882.459	283.179	Nyírbátor-Vasvári canal (16), Kraszna (34), Tisa (682)	Production of vegetable oil (production of raw oil, refining and packaging Production of fodder for animals out of the side products	64,000	**4.806**
28.	Szarvasi Vas-Fémipari Rt.	Szarvas	768399	172086	Rainfall canal, Szarvas-Békésszent-andrási-dead channel	production of metal goods	44,000	**4.643**
50.	MOL Tiszai Finomító	Tiszaújváros			Tisa 483-600	Waste manage-ment	40,000	**4.602**
34.	Mezogép Rt. Centre	Szolnok	201.000	731.000	Public sewerage. Tisa (332)	Production of agricultural machinery Painting	28,000	**4.447**
43.	KGYV-Dunaferr Steel Factory Co.	Tápiószele, Györgyei street 14.			Tápió – Zagyva 30,5 Tisa 335,5	Energy production	22,300	**4.348**
40.	Holland Colors Kft. - Dutch property	Szolnok	199.000	733.000	Tisa (330)	Production of paint	21,400	**4.330**
44.	Metallo-globus Rt.	Tarnaszen-miklós	243.000	750.000	Hanyi-water course (10) Tisa (387)	Dismantling accumulators Trade of wastes	21,200	**4.326**
12.	Tisza Cipogyártó Kft.	Martfu	187.000	744.000	Tisa (305)	Production of shoes	18,000	**4.255**
22.	TAURUS MG.ABRONCS	Nyíregyháza, Derkovits u. 137.	850.813	296.037	VIII/2. tributary (4), VIII.main river (11), Lónyay c. (22), Tisa (559)	production of tyres for agriculture (using sot from the industry and synthetik rubbert, sulphur)	18,000	**4.255**
24.	SZABOLCS VOLÁN RT.	Nyíregyháza, Korányi F. u. 12.	850.813	296.037	VIII. sz. main river (10) Lónyay canal (22) Tisa river (559)	storage of fuel	16,500	**4.217**
47.	Ecomissio KFT. Proprietor: TVK Rt	Tiszaújváros			Tisa 484	Combustion of hazardous wastes	15,000	**4.176**
35.	Rethmann Rt.	Szolnok	206.000	734.000	Kisgyepi (8,2)Zagyva (7) Tisa (335)	Communal service, receipt of hazardous wastes	13,000	**4.114**
10.	CEREOL Rt. French proprietor.	Martfu	188.000	745.000	Tisa (308)	Production of vegetable oil, pressing, refining	11,100	**4.045**
8.	PANNÓNIA Rt. F.a. Hungarian proprietor.	Kunszent-márton	167.000	743.000	Körös (18) Tisa (244)	Tanning in fur industry	11,000	**4.041**
3.	Dispomedicor Rt.	Egyek-Félhalom			Tisafüred canal (13) Tisa 430,5	Production of medical instruments	10,000	**4.000**
8.	Zsigmondi Béla Viziközmuveket üzemelteto Rt.	Hódmezová-sárhely	749.000	118.000	Hódtó-KisTisai canal 15,43 Tisa 185,66	waste water treatment plant	10,000	**4.000**
9.	Bácsvíz Rt.	Kecskemét	701.000	163.000	Csukás watercourse 44,677 Tisa 227,11	waste water treatment plant	10,000	**4.000**
29.	Jász-Plasztik Kft.	Szászberek	220.000	729.000	Zagyva (27) Tisa (335)	Production of accumulators	10,000	**4.000**
30.	Szegedi Vízmu Kft	Szeged	731	93	Tisa 168,36	waste water treatment plant	10,000	**4.000**
31.	Szentes-Víz Kft.	Szentes	745	142	Tisa 231,515	waste water treatment plant	10,000	**4.000**
33.	Dac-Car Kft.	Szolnok	206.000	734.000	K-3 (1) Kisgyepi (1,5) Zagyva (6) Tisa (335)	Receipt of hazardous wastes	10,000	**4.000**
62.	13. MOL Rt.	ZSÁMBOK			Tapio 18,9 -Zagyva 30,5 – Tisa 335,5	Fuel transported by pipeline crossing watercourses	10,000	**4.000**
15.	Miskolc municipal waste water treatment plant	Miskolc			Sajó 49,1 Tisa 491,9	treatment of municipal sewage	6,880	**3.838**
45.	Tiszavíz Vizieromu Kft.	Tiszalök			Tisa (512)	Transformer site	5,300	**3.724**
14.	Drótárú és Drótkötél Ipari és Keres-kedelmi Rt. Szlovák tul.	Miskolc			Sajó 51 Tisa 491,9	Production of wire and metal rope	4,400	**3.643**
						Summe	537,998,110	**8.7**

A.) Industry - POTENTIAL ACCIDENTAL RISK SPOTS > DANUBE-DRAVA < RIVER SUB-BASIN 2001.

N°	Name and proprietor of the company	Place, settlement	EOV coordinates		Receiving watercources (km)	Activity of the company (type of technology)	Sum of water risk class equivalents	Water risk index
			X	Y				
107.	MOL RT	Ercsi	635.232	210.251	Duna	Gas and oilindustry, storage activity	72,414,050	**7.860**
116.	MOL RT.Komárom-i Bázistelep	Komárom	581.310	264.810	Duna	Gas and oilindustry, storage activity	43,600,000	**7.639**
108.	Garé vesz.hull. tároló	Garé	585.471	64.981	Hegyadó p.-Dráva	waste processing, storing	16,000,000	**7.204**
125.	MOL RT. Dunai Finomító	Százhalombatta	639.322	219.091	Duna	Gas and oilindustry, storage activity	15,028,120	**7.177**
73.	MOL RT. bázistelep	Budapest, 21. kerület	651.494	231.184	Duna	Gas and oilindustry, storage activity	2,800,000	**6.447**
129.	1.MAGYAR OLAJTAROLÓ RT.	Tolna	627.903	121.444	Fényes ér, Duna	Oilstorage, translead	2,500,000	**6.398**
76.	CSEPELI EROMU Rt.	Budapest, 21. kerület	651.494	231.184	Duna	power supply	1,568,700	**6.196**
8.	ÉSZAK-PESTI SZENNYVZTISZTITÓ T.	Budapest, 04. kerület	652.907	249.101	Duna	wastewater usage	1,400,000	**6.146**
117.	M.Viscosa RT. Nyergesujfalu.	Nyergesújfalu	612.333	263.543	Duna	Trade	1,103,300	**6.043**
114.	Tarjánpusztai üza.storage	Gyorasszonyfa	556.739	239.334	Duna	Fuel storage	1,000,000	**6.000**
84.	DÉLPESTI SZENNYVZTISZTITÓ TLP.	Budapest, 23. kerület	657.473	227.612	Duna, Gyáli cs.	wastewater usage	800,060	**5.903**
13.	TUNGSRAM RT.VTG Fóti u 141	Budapest, 04. kerület	652.907	249.101	Duna	Electricity and gear matter	556,710	**5.746**
106.	DUNASTYR RT	Ercsi	635.232	210.251	Duna	Styrol production	521,400	**5.717**
124.	DUNASTYR Rt.	Százhalombatta	639.322	219.091	Duna	Stirol production	521,400	**5.717**
93.	AVANTI RT OLAJKIKÖTO ES ÜZA.	Dunaföldvár	636.914	160.836	Duna	Fuel distribution, storage	444,000	**5.647**
11.	GEL-E TUNGSRAM RT.Váci u 77	Budapest, 04. kerület	652.907	249.101	Duna	Electric equipment production	377,420	**5.577**
45.	BUDAPESTI EROMU - Angyalfold	Budapest, 13. kerület	651.017	244.553	Duna	power supply	321,280	**5.507**
120.	Sellyei Agrokémia Kft	Sellye	557.602	60.025	Dráva	Fertilizer and Pesticides mufacturing, trade	306,650	**5.487**
6.	BUDALAKK KFT Dunasor 11	Budapest, 04. kerület	652.907	249.101	Duna	Paint production, storage	302,400	**5.481**
90.	Richter G.Vegyészeti Rt. Dorog	Dorog	627.293	263.664	Kenyérmezoi p.-Duna	chemical industry, distribution	214,920	**5.332**
55.	Ferihegyi Repülotér	Budapest, 18. kerület	657.166	233.529	Duna	Aerial transport	185,000	**5.267**
118.	Paksi Atomeromu Rt.	Paks	631.612	141.796	Duna	Energy production	149,030	**5.173**
7.	EISELE.HUNGÁRIA Kft. Váci u 117	Budapest, 04. kerület	652.907	249.101	Duna	Machine-tool production	140,550	**5.148**
52.	EVM.RT,	Budapest, 17. kerület	661.717	231.657	Duna	chemical industry, distribution	137,930	**5.140**
37.	RICHTER Rt.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Pharmaceutical manufakturing, trade	132,000	**5.121**
15.	CHINOIN RT.	Budapest, 04. kerület Tó u. 1-5.	652.907	249.101	Duna	Pharmaceutical manufakturing	107,504	**5.031**
27.	POLISTORE storageozási KFT.	Budapest, 09. kerület	653.043	235.768	Duna	Storage	105,194	**5.022**
4.	GANZ ANSALDO VILL RT	Budapest, 02. kerület	644.846	245.182	Duna	Electric equipment production	80,150	**4.904**
54.	TENZOR Kft.	Budapest, 17. kerület	661.717	231.657	Duna	Fémtömegcikk gyártás	80,000	**4.903**
36.	MUGYANTA Kft.. Ujhegyi u.3.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	chemical industry, distribution	78,000	**4.892**
23.	Budapesti Vegyimuvek	Budapest, 09. kerület	653.043	235.768	Duna	chemical industry	75,900	**4.880**
79.	CHINOIN Rt. Nagytétényi Telepe	Budapest, 22. kerület	646.315	230.628	Duna	Pharmaceutical manufakturing, trade	70,040	**4.845**
32.	ERECO Rt.PAPIRÜZEM MAGLÓDI 18.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Paper production	50,000	**4.699**
88.	MATERIAL Vegyipari Sz.	Budapest, 23. kerület	657.473	227.612	Duna, Gyáli cs.	chemical industry	50,000	**4.699**
89.	P+M POLIMER KÉMIA KFT.	Budapest, 23. kerület	657.473	227.612	Duna, Gyáli cs.	Plastics, stock production	50,000	**4.699**
31.	EGIS Rt	Budapest, 10. kerület	658.487	238.291	Duna, Rákos		46,410	**4.667**
2.	MATERIAL Vegyipari Sz.	Alsónémedi	659.656	218.639	Duna	chemical industry	25,000	**4.398**
110.	Budapesti Vegyimuvek	Gyál	662.942	225.444	Gyáli csatorna	chemical industry	22,500	**4.352**
123.	Dunamenti Eromu RT	Százhalombatta	639.322	219.091	Duna	Energy production	20,000	**4.301**
74.	SYNTAN Vegyianyaggyártó Kft.	Budapest, 21. kerület	651.494	231.184	Duna	chemical industry, distribution	18,000	**4.255**
34.	FMV Finommechanikai Rt.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Prrecisson mechanics	15,000	**4.176**
97.	ÁFOR üza. kút	Dunakeszi	656.136	255.304	Duna	Fuel distribution, storage	14,400	**4.158**
102.	SCHELL	Dunakeszi	656.136	255.304	Duna	Fuel distribution, storage	13,800	**4.140**
91.	KEMIKÁL Építoanyagipari Rt.	Drávagárdony	538.334	67.419	Dráva	Building matter industry	13,500	**4.130**
92.	KEMIKÁL Építoanyagipari Rt.	Drávatamási	535.327	67.942	Dráva	Building matter industry	13,500	**4.130**
98.	AGIP benzinkut	Dunakeszi	656.136	255.304	Duna	Fuel distribution, storage	13,000	**4.114**
10.	Fov.Vízmuvek RT.Váci u 121	Budapest, 04. kerület	652.907	249.101	Duna	Treatment of drinking water	12,000	**4.079**
51.	IV. Váci ut 121. Vízmu	budapest, 15. kerület	661.573	242.125	Szilas p.	Treatment of drinking water	12,000	**4.079**

81.	Magyar általános Gyufaipari KF	Budapest, 22. kerület	646.315	230.628	Duna	Match production	12,000	**4.079**
39.	TAURIL GUMI.Kft.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Gum, gumproduce, distribution	11,164	**4.048**
121.	SzigetChem Kft	Sellye	557.602	187.131	Drava	Vegetable oil manufacturing	11,100	**4.045**
3.	AGROKER Bajai Kir.	Baja	644.143	93.603	Duna	Agricultural chemical trade, storage	10,000	**4.000**
9.	FCSM RT.ép-i telep Tímár u 1	Budapest, 04. kerület	652.907	249.101	Duna	Sewers	10,000	**4.000**
14.	ÚJP.MOSODA Kft.Attila u 156	Budapest, 04. kerület	652.907	249.101	Duna	Dry cleaning	9,100	**3.959**
100.	JET üzemanyagtölto	Dunakeszi	656.136	255.304	Duna	Fuel distribution	9,000	**3.954**
104.	DUNAMENTI EROMU Rt	Ercsi	635.232	210.251	Duna	power supply	8,000	**3.903**
112.	GRABOPLAST Textil és muborgyár	Gyor	546.195	259.385	Duna	Plastic leather production	8,000	**3.903**
68.	Csepel Fémmü	Budapest, 21. kerület	651.494	231.184	Duna	Metal tooling	7,800	**3.892**
78.	BUSZESZ Rt.Bfoki é. Szeszgyár	Budapest, 22. kerület	646.315	230.628	Duna	Spirit product	5,500	**3.740**
21.	AGA GAZ kft.	Budapest, 09. kerület	653.043	235.768	Duna	Gas storage, distribution	5,450	**3.736**
22.	Budapest Husnagyker.Vallalat	Budapest, 09. kerület	653.043	235.768	Duna	Cooling system operating	5,100	**3.708**
94.	DUNAUJVAROSI PAPIRGYAR KFT	Dunaföldvár	636.914	160.836	Duna	Paper production	5,000	**3.699**
103.	FINOMPAPIRGYÁR RT.	Dunaújváros	638.653	178.435	Duna	Paper production	5,000	**3.699**
115.	FINOMPAPIRGYÁR	Kisapostag	639.706	173.601	Duna	Paper production	5,000	**3.699**
40.	Újhegyi u. 3. Mügyanta kft.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	chemical industry	4,000	**3.602**
49.	Délker Tranzit Rakt. Kft.	Budapest, 15. kerület	661.573	242.125	Szilas p.	Fodd storage, cooler	4,000	**3.602**
50.	Harsányi . Délker	Budapest, 15. kerület	661.573	242.125	Szilas p.	Cooling system operating	4,000	**3.602**
70.	Csepeli Transzform.Gyár Rt.	Budapest, 21. kerület	651.494	231.184	Duna	Electric equipment production	4,000	**3.602**
77.	Budapesti Vegyimuvek Rt.Nagyt.	Budapest, 22. kerület	646.315	230.628	Duna	chemical industry	4,000	**3.602**
85.	ELSO VEGYI INDUSTRIA RT. 1.tp.	Budapest, 23. kerület	657.473	227.612	Duna, Gyáli cs.	Chemical industry, production, distribution	4,000	**3.602**
132.	Schöller Budatej Bt.	Törökbálint	639.885	233.994	Duna	Milkindustry activity	4,000	**3.602**
25.	LINDE Gáz Magyarorszag Rt.	Budapest, 09. kerület	653.043	235.768	Duna	Gasindustry, gas-services	3,420	**3.534**
24.	HERZ Szalámigyár Rt.	Budapest, 09. kerület	653.043	235.768	Duna	Flesindustry activity, coller	3,000	**3.477**
30.	ATHENAEUM NYOMDA Rt.KOZMA U.2.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Printing activity	3,000	**3.477**
56.	IX. Herz RT.	Budapest, 18. kerület	657.166	233.529	Duna	Flesindustry activity, coller	3,000	**3.477**
57.	IX. Landhof kft.	Budapest, 18. kerület	657.166	233.529	Duna	coolerindustry activity	3,000	**3.477**
61.	IX. Herz RT.	Budapest, 19. kerület	656.912	247.639	Duna	Flesindustry activity, coller	3,000	**3.477**
62.	IX. Landhof kft.	Budapest, 19. kerület	656.912	247.639	Duna	coolerindustry activity	3,000	**3.477**
65.	IX. Herz RT.	Budapest, 20. kerület	655.724	231.995	Duna	Flesindustry activity, coller	3,000	**3.477**
66.	IX. Landhof kft.	Budapest, 20. kerület	655.724	231.995	Duna	coolerindustry activity	3,000	**3.477**
86.	IX Herz RT.	Budapest, 23. kerület	657.473	227.612	Duna, Gyáli cs.	Flesindustry activity, coller	3,000	**3.477**
87.	IX. Landhof kft.	Budapest, 23. kerület	657.473	227.612	Duna, Gyáli cs.	coolerindustry activity	3,000	**3.477**
75.	UNIVERTRANS Kft.	Budapest, 21. kerület	651.494	231.184	Duna	Fuel storage	2,600	**3.415**
113.	RABA MVG Rt.	Gyor	546.195	259.385	Duna	Machine industry, production	2,600	**3.415**
26.	MIRELITE Budapest Rt.	Budapest, 09. kerület	653.043	235.768	Duna	coolerindustry activity	2,500	**3.398**
58.	IX. Mirelite	Budapest, 18. kerület	657.166	233.529	Duna	coolerindustry activity	2,500	**3.398**
63.	IX. Mirelite	Budapest, 19. kerület	656.912	247.639	Duna	coolerindustry activity	2,500	**3.398**
67.	IX. Mirelite	Budapest, 20. kerület	655.724	231.995	Duna	coolerindustry activity	2,500	**3.398**
42.	Caola 1. gyártelep	Budapest, 11. kerület	647.507	235.014	Duna	Cosmetica and Domestic chemicalindustry product	2,430	**3.386**
29.	ATHENAEUM NY.Rt.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Printing activity	2,400	**3.380**
60.	IX. Bp. Husnagyker	Budapest, 19. kerület	656.912	247.639	Duna	Flesindustry activity, coller	2,100	**3.322**
64.	IX. Bp. Husnagyker.	Budapest, 20. kerület	655.724	231.995	Duna	Flesindustry activity, coller	2,100	**3.322**
18.	ELSO VEGYI INDUSTRIA RT. 1.tp.	Budapest, 07. kerület	651.526	240.664	Duna	chemical industry	2,000	**3.301**
33.	FEFE INVEST Kft.JASZBER.U.18.-	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Battery	2,000	**3.301**
44.	Kender-Juta Politextil Rt.	Budapest, 13. kerület	651.017	244.553	Duna	Hemp processing	2,000	**3.301**
53.	Kobányai Sörgyár	Budapest, 17. kerület	661.717	231.657	Duna	Beer production	2,000	**3.301**
59.	Kobányai Sörgyár	Budapest, 18. kerület	657.166	233.529	Duna	Beer production	2,000	**3.301**
96.	Budapesti Vegyimuvek	Dunaharaszti	654.481	223.115	Duna	chemical industry	2,000	**3.301**
99.	Hütoipari Vállalat	Dunakeszi	656.136	255.304	Duna	coolerindustry activity	2,000	**3.301**
105.	Dunamenti Eromu RT	Ercsi	635.232	210.251	Duna	Energy production	2,000	**3.301**
17.	Városligeti Müjégpálya	Budapest, 06. kerület	650.795	241.136	Duna	Ice production	1,800	**3.255**
19.	Városligeti Müjégpálya	Budapest, 07. kerület	651.526	240.664	Duna	Ice production	1,800	**3.255**
20.	Városligeti Müjégpálya	Budapest, 08. kerület	652.568	238.849	Duna	Cooling system operating	1,800	**3.255**

41.	KOBANYAI EROMU	Budapest, 10. kerület, Bihari u. 10/a	658.487	238.291	Duna, Rákos	power supply	1,800	**3.255**
46.	Népstadion és Int. Vár.Müjégp.	Budapest, 14. kerület	654.776	243.191	Duna, Rákos	Icesport	1,800	**3.255**
48.	Városligeti Müjégpálya	Budapest, 14. kerület	658.487	238.291	Duna, Rákos	Ice production	1,800	**3.255**
128.	Polarkerm Tata	Tata	594.133	254.124	Fényes ér, Duna	chemical industry, distribution	1,560	**3.193**
80.	HUNGAVIS Budafoki KFT	Budapest, 22. kerület	646.315	230.628	Duna	Wine, champagne distribution	1,440	**3.158**
82.	Nagytétényi ut Hungavis	Budapest, 22. kerület	646.315	230.628	Duna	Fodd storage, huto	1,440	**3.158**
130.	MOL RT UZA. BAZIS TOLNA	Tolna	627.903	121.444	Fényes ér, Duna	Gas and oilindustry activity	1,400	**3.146**
16.	Mirelite	Budapest, 05. kerület	649.560	240.012	Duna	Cooling system operating	1,000	**3.000**
71.	Fovárosi Vízmuvek	Budapest, 21. kerület	651.494	231.184	Duna	Treatment of drinking water	1,000	**3.000**
72.	MIRELIT Bp. Hótôipari Rt.	Budapest, 21. kerület	651.494	231.184	Duna	coolerindustry activity	1,000	**3.000**
122.	Dunai Finomltó	Százhalombatta	639.322	219.091	Duna	Petroleum refinement	950	**2.978**
95.	Messer Hungarogáz KFT	Dunaföldvár	636.914	160.836	Duna	Gasindustry, gas-services	940	**2.973**
83.	POLISTORE storageozási KFT.	Budapest, 22. kerület	646.315	230.628	Duna	Storage	650	**2.813**
12.	MESSER GRIESHEIM H. Kft.	Budapest, 04. kerület	652.907	249.101	Duna	Gasindustry, gas-services	550	**2.740**
5.	MAGYAR FILMINTEZET	Budapest, 02. kerület	644.846	245.182	Duna	Filmproduction	500	**2.699**
101.	MÁV Vagongyártó és Jav. Kft.	Dunakeszi	656.136	255.304	Duna	Wagon production, repair	500	**2.699**
119.	SZÁZHALOMBATTA MOL RT	Ráckeresztúr	632.514	216.200	Duna	Petroleum refinement	450	**2.653**
126.	MOL RT. Dunai Finomító	Szigetcsép	642.717	214.295	Duna	Gas and oilindustry, storage activity	450	**2.653**
127.	MOL RT. Dunai Finomító	Szigethalom	647.006	220.888	Duna	Gas and oilindustry, storage activity	450	**2.653**
131.	MOL Rt. Dunai Finomító	Tököl	643.747	220.579	Duna	Gas and oilindustry, storage activity	450	**2.653**
35.	KÖBAL Kft.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Metal tooling, cutting	320	**2.505**
111.	CEREOL Növényolajipari Rt	Gyor	546.195	259.385	Duna	Vegetable oil manufacturing	300	**2.477**
43.	Ferrokemia Szovetkezet	Budapest, 13. kerület	651.017	244.553	Duna	Metal tooling, surface treatment	220	**2.342**
38.	SKW BIOTECH.Rt.SZÁLLÁS U.3.	Budapest, 10. kerület	658.487	238.291	Duna, Rákos	Biotechnology	200	**2.301**
109.	AGROPLAST Gy. Körösi ét	Gyál	662.942	225.444	Gyáli csatorna	Agrarian packermatter production	200	**2.301**
69.	Csepeli Munkás ÁFÉSZ	Budapest, 21. kerület	651.494	231.184	Duna	Gas storage	170	**2.230**
28.	ZWACK Ker.BULIV termelo Kft	Budapest, 09. kerület	653.043	235.768	Duna	Drink production	160	**2.204**
47.	SANOSIL Hungária Kft	Budapest, 14. kerület	654.776	243.191	Duna, Rákos	chemical industry, distribution	110	**2.041**
						Summe	163,766,892	8.214226108

B.) Agriculture - POTENTIAL ACCIDENTAL RISK SPOTS > TISA < RIVER SUB-BASIN 2001.

N°	Name and proprietor of the company	Place, settlement	EOV coordinates		Receiving watercources (km)	Activity of the company (type of technology)	Sum of water risk class equivalents	Water risk index
			X	Y				
3.	Agricultural Co-operative	Egyek			Tisafüredi main canal (19)	Agricultural storage	601,000	5.779
14.	AGROKER RT.	Nyíregyháza, Kinizsi u. 2.	850.813	296.037	VIII/2. tributary (3), VIII. main river (11), Lónyay c (22), Tisa (559)	Storing and selling pesticides	426,000	5.629
20.	AGROCHIM-TRANSPACK	Tuzsér outskirts	880.784	337.448	Belfo canal (50), Tisa (569)	storage of pesticides and fertilizers	92,000	4.964
4.	AGROKER RT.	Fehérgyarmati Kirendeltség	910.093	301.274	Vármegyei canal (7) Túr- canal (18) Tisa river (692)	storage of pesticides and fertilizers	60,000	4.778
5.	AGROKER RT.	Kisvárdai Kirendeltség	876.145	326.445	Belfo canal (35), Tisa river (569)	storage of pesticides and fertilizers	60,000	4.778
7.	BIOGARTEN Bt.	Mátészalka, Munkácsi M. út 16.	895.501	296.69	Kraszna river (20) Tisa river (682)	storage of pesticides	60,000	4.778
8.	AGROKER RT.	Mátészalkai Kirendeltség	895.501	296.69	Kraszna river (20) Tisa river (682)	storage of pesticides and fertilizers	60,000	4.778
9.	BIGE-HOLDING Kft.	Nagykálló	860.462	286.476	VII. sz. main river (25), Lónyay canal (30), Tisa (559)	storage of pesticides and fertilizers	60,000	4.778
12.	NAVAKER Kft.	Nyírbátor	882.459	283.179	Nyírbátor-Vasvári canal (16), Kraszna river (34), Tisa river (682)	storage of pesticides and fertilizers	60,000	4.778
13.	AGROKER RT.	Nyírbátori Kirendeltség	882.459	283.179	Nyírbátor-Vasvári canal (16), Kraszna river (34), Tisa river (682)	storage of pesticides and fertilizers	60,000	4.778
15.	UNK Kft.	Nyíregyháza, Simonyi út	850.813	296.037	VIII/2.sz. tributary (1), VIII. sz. main river (12), Lónyay canal (22), Tisa (559)	storage of pesticides	60,000	4.778
16.	KEMOKER Kft.	Nyíregyháza, Westsik V. u.	850.813	296.037	VIII. main canal (11) Lónyay canal (22) Tisa river (559)	storage of pesticides and fertilizers	60,000	4.778
17.	AGROFOCUS '97 Kft.	Nyíregyháza-Kolapos	850.813	296.037	VIII/1.sz. tributary (7), VIII. sz. main river (4), Lónyay canal (22), Tisa (559)	storage of pesticides and fertilizers	60,000	4.778
19.	FARMIX Kft.	Szamosszeg (raktár)	898.742	306.923	Nord+F65 main canal (5), Kraszna (5), Tisa (682)	storage of pesticides and fertilizers	60,000	4.778
10.	KITE Rt.	Nagykálló	860.462	286.476	VII. sz. main river (25), Lónyay canal (30), Tisa (559)	storage of pesticides and fertilizers	40,000	4.602
2.	IKR Rt.	Demecser	865.332	313.993	Nagyhalász-Pátrohai canal (15), Belfo canal (9), Tisa (569)	storage of pesticides and fertilizers	36,000	4.556
6.	Agroker Rt.	Mályi			Hejo-brook 11,3 Szarda canal	Pesticides and fertilisers, trade of spare parts for agriculture	34,000	4.531
11.	GITR		862.011	293.772	VII/2. tributary (10), VII. main river (10), Lónyay canal (30), Tisa (559)	storage of pesticides and fertilizers	24,000	4.380
18.	JNK Gabona Kft	Rákóczifalva	741.304	193.781	Tisa	Fertilizer storage, allocation	10,000	4.000
1.	META Kft.	Abádszalók	233.000	767.000	Mirhó-Gyócsi canal. 8,51 km Tisa 402 fkm	Liquid manure from pig-farm	5,000	3.699
						Summe	1,928,000	6.285

B.) Agriculture - POTENTIAL ACCIDENTAL RISK SPOTS > DANUBE-DRAVA < RIVER SUB-BASIN 2001.

N°	Name and proprietor of the company	Place, settlement	EOV coordinates		Receiving watercources (km)	Activity of the company (type of technology)	Sum of water risk class equivalents	Water risk index
			X	Y				
22.	Bólyi Agrokémia	Mohács	622.477	74.446	Danube	Fertilizer storage, trade	1,000,000	6.0
21.	Termelo Solg. ÉrtSzövetkezet	Mezofalva	628.076	93.603	Danube	Agricultural chemical trade, storage	500,000	5.7
26.	Sellyei Agrokémia Kft	Sellye	557.602	274.186	Drava	Agricultural storage	450,000	5.7
18.	Martoseed Rt	Martonvásár	630.025	259.385	Danube	Agricultural chemical trade, storage	234,000	5.4
15.	Agricultural Szövetkezet	Kalocsa	646.666	206.024	Danube	Pesticides storage, allocation	120,000	5.1
17.	Petofi Mg.Szöv.	Kalocsa	646.666	219.891	Danube	Pesticides storage, allocation	100,000	5.0
23.	Agro Centrál Bt	Sellye	557.602	237.747	Drava	Agricultural chemical trade, storage	70,000	4.8
4.	Hajnal Földbérlo Szolg.Szöv.	Besnyo	628.494	280.801	Danube	Pesticides storage, allocation	50,000	4.7
12.	Sallai Szövetkezet	Drávaszerdahely	581.579	280.801	Drava	Pesticides storage, allocation	50,000	4.7
16.	Aranykalász Agrárszöv.	Kalocsa	646.666	252.814	Danube	Agricultural chemical trade, storage	40,000	4.6
13.	Péti Nitrogénmuvek RT	Ercsi	635.232	236.446	Danube	Pesticides storage, allocation	30,000	4.5
25.	Petofi Mg.Szöv.	Sellye	557.602	206.03	Drava	Pesticides storage, allocation	30,000	4.5
30.	AGROKEMIA TOLNA	Tolna	627.903	121.444	Danube	Fertilizer storage, allocation	22,000	4.3
9.	Új Élet Mg.Szöv.	Drávafok	549.838	104.414	Drava	Pesticides storage, allocation	20,000	4.3
14.	Mezogazd.Szövetkezet	Felsoszentmárton	545.966	206.024	Drava	Pesticides storage, allocation	20,000	4.3
24.	Agroker Kft	Sellye	557.602	209.374	Drava	Pesticides storage, allocation	20,000	4.3
28.	Agroker Kft	Tata	594.133	237.747	Fényes ér, Danube	Pesticides storage, allocation	20,000	4.3
8.	Mezogazdasági Rt.	Drávafok	549.838	61.626	Drava	Agricultural storage	18,000	4.3
7.	Északmagyarországi Vegyimuvek Rt	Drávafok	549.838	170.392	Drava	Pesticides storage, allocation	15,000	4.2
29.	Intercooperation Rt	Tata	594.133	254.124	Fényes ér, Danube	Fertilizer storage, trade	15,000	4.2
20.	Béke Mg.Szöv.	Mezofalva	628.076	170.29	Danube	Pesticides storage, allocation	12,000	4.1
2.	Mezogazd.Szövetkezet	Baja	644.143	173.768	Danube	Pesticides storage, allocation	10,000	4.0
3.	Agro-Berek	Beremend	602.939	224.997	Drava	Pesticides storage, allocation	10,000	4.0
5.	AGROKER	Budapest, 15. kerület	661.573	357.277	Danube	Pesticides storage, allocation	10,000	4.0
19.	Új élet Mg.Szövetkezet	Martonvásár	630.025	91.745	Danube	Pesticides storage, allocation	10,000	4.0
27.	SzigetChem Kft	Sellye	557.602	60.025	Drava	Fertilizer storage, trade	10,000	4.0
11.	Hunyadi Mg.Szöv.	Drávaszerdahely	581.579	197.378	Drava	Fertilizer., Pesticides manufacturing	7,000	3.8
1.	AGROKER Bajai Kir.	Baja	644.143	60.025	Danube	Fertilizer. Pesticides manufacturing, trade	6,000	3.8
10.	Agro Centrál Bt	Drávaszerdahely	581.579	56.285	Drava	Fertilizer storage, allocation	6,000	3.8
6.	Intercooperation Rt.	Budapest, 15. kerület	661.573	242.125	Szilas brook, Danube	Fertilizer storage, trade	5,000	3.7

ARS Slovenia

SLOVENIA - Inventory of potential pollution sources in the Danube Basin

N°	Nameand proprietor of the companyof the Company	Place, settlement	Recipient river (length of stream in km)	Company activities / type of production process, technology used	Dangerous substances	Toxic properties WGK	Total amount handled/ stored (metric)	Storage facilities	Free operational volume (%)	Remarks	Total quantity in kg/l	Water risk class equivalent	Sum of water risk class equivalents	Water risk index
1.	**Rudnik Mežica MPI,d.o.o.**	Crna na Koroškem Northern region of Slovenia (Koroška region)	Meža (21.7) Drava Sava	Metallurgy	Slag from metallurgy process Artificial Substances-plastics Rubber Brick Waste furnace pads	1	83.000 m^3 deposited	Land-fill site for industrial solid wastes	0%	Closure of the site-operation in 1999.	83,000,000		830000	**5.9**
2.	**Petrol d.d.** **Ljubljana**	Pesnica, Maribor Nort_east-ern region of Slovenia (Štajerska region)	Gacniški potok (0.8) Pesnica (48.6) Drava Sava	Land-fill site	Acid tar	1	15.000 m^3 deposited	Deposited in the water	0%		15,000,000		150000	**5.2**

Remark: data in the column 5 (dangerous substances) are indicated in accordance with the inventory of the land-fill sites in Slovenia.

Summe	980000	**6.0**

ARS Croatia

INVENTORY OF POTENTIAL ACCIDENTAL RISK SPOTS IN DANUBE BASIN - CROATIA

N°	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/year)	STORAGE FACILITIES	FREE OPERATIONAL VOLUME (%)	REMARKS	Total quantity in kg/l	Water risk class equivalents	Sum of water risk class equivalents	Water risk index
1.	**PETROKEMIJA D.D.** JOINT STOCK COMPANY	TOWN KUTINA	KUTINICA (3) ILOVA (10) SAVA (567) DUNAV (1170)	fertilizers, soot and bentonite clay production	waste fluorine water (pH 2,1)	1	5,242 000 m3	lagoons inside a 6 m hig^{3}h earthen dike	46	In case of accident ,waste fluorine water could be spread over off stream detention	5,242,000,000	52420000	52420000	7.7
2.	**PETROKEMIJA D.D.** JOINT STOCK COMPANY	TOWN KUTINA	KUTINICA (6) ILOVA (10) SAVA (567) DUNAV (1170)		Amonia phosphatic acid fluorine silicic acid weak phosphatic acid sulphuric acid nitric acid heavy fuel oil oils	2	8000 2875 200 1500 5000 2000 2500 4000	metal tank in concrete safety pool metal tanks metal tank metal tanks in concrete safety pool earthen pool storage metal tank in concrete safety pool metal tank in concrete safety pool metal tanks in concrete safety pool	(*)	The content of 5 tanks of phosphatic and 1 tank of fluorine silicic acid could be held in detention storage D-1	8,000,000 2,875,000 200,000 1,500,000 5,000,000 2,000,000 2,500,000 4,000,000	800000 287500 20000 150000 500000 200000 250000 400000	2,207,500	6.3

3.	**HEP D.D. POGON TERMOELEKTRANA SISAK**	TOWN	SAVA (603)	production of electric energy	stoking oil	2	64000	metal tanks in concrete safety pool			64,000,000	6400000	6,443,600	6.8
	CROATION ELECTRIC MANAGEMENT COMPANY, THERMAL POWER PLANT SISAK	SISAK	DUNAV (1170)					tin barrels						
	JOINT-STOCK COMPANY				oil for turbines		99	transformator and metal tanks	(*)		99,000	9900		
					transformator oil		225	rubber-coated tanks			225,000	22500		
								rubber-coated tanks						
					natrium hidroxide		60				60,000	6000		
					chloric acid		52				52,000	5200		
4.	**INA D.D. RAFINERIJA NAFTE SISAK**	TOWN	SAVA (603)	oil processing	oil	1	220000	metal tanks in concrete safety pools			220,000,000	2200000	7,049,250	6.8
	INA OIL RAFINERY	SISAK	DUNAV (1170)					metal tanks in concrete safety pools						
	JOINT-STOCK COMPANY				oil products		480000	metal tanks in concrete safety pools	(*)		480,000,000	4800000		
								metal tanks in concrete safety pools						
					MTBE		3700	metal tanks in concrete safety pools			3,700,000	37000		
								metal tanks in concrete safety pools						
					NaOH		580				580,000	5800		
					HCl		435				435,000	4350		
					TEO I TMO		210				210,000	2100		

5.	**JANAF D.D.** ADRIATIC OIL PIPELINE TERMINAL SISAK JOINT-STOCK COMPANY	TOWN SISAK	SAVA (603) DUNAV (1170)	oil storage	oil	2	85000	metal tanks in concrete safety pools	25-30		85,000,000		8,500,000	6.9
6.	**SKLADIŠTE ZABOK** OWNER: REPUBLIC OF CROATIA	TOWN ZABOK	KRAPINA (25) SAVA (741) DUNAV (1170)	oil products storage	diesel petrol	2	20000 10000	metal tanks			20,000,000 10,000,000		3,000,000	6.5
7.	**INA INDUSTRIJA NAFTE D.D. ZAGREB III STRUGE BB,** JOINT-STOCK COMPANY	TOWN ZAGREB	SAVA (686) DUNAV (1170)	oil products storage	oil products	2	75000	8 metal tanks in concrete safety pool 11 double-plated metal tanks placed under ground			75,000,000		7,500,000	6.9
8.	**HEP D.D. POGON TE-TO, KUŠEVACKA BB, ŽITNJAK** THERMAL POWER PLANT JOINT-STOCK COMPANY	TOWN ZAGREB	SAVA (686) DUNAV (1170)	production of electric energy	heavy stoking oil	2	18500	steel anks in clay pool			18,500,000		1,850,000	6.3
9.	**INA INDUSTRIJA NAFTE D.D. ZAGREB MAZIVA, RADNICKA CESTA 175** JOINT-STOCK COMPANY	TOWN ZAGREB	SAVA (686) DUNAV (1170)	production of oil products (lubricants)	oils stoking oil heavy fuel oil oil based additives	2	6370 11280 200 975	metal tanks in concrete safety pool			6,370,000 11,280,000 200,000 975,000		1,882,500	6.3

10	**DIOKI D.D.** **LOKACIJA OKI, ŽITNJAK BB** JOINT-STOCK COMPANY	TOWN ZAGREB	SAVA (686) DUNAV (1170)	production of plastics	31% chloric acid 40% natrium hydroxide phenyl-ethylene	1	90 95 1720	special steel metal tanks in concrete safety pools			90,000 95,000 1,720,000		19,050	4.3
11.	**INA INDUSTRIJA NAFTE D.D. ZAGREB** **OIL INDUSTRY** JOINT-STOCK COMPANY	VILLAGE ŽUTICA	CANAL "LONJA - STRUG" (94) SAVA (560) DUNAV (1170)	crude oil exploitation and transport	crude oil	2		metal tanks (2*5000m^3) in concrete safety pool	I	n case of accident, crude oil could be spread over off stream detention storage "Lonjsko polje"				
12.	**INA INDUSTRIJA NAFTE D.D. ZAGREB** **OIL INDUSTRY** JOINT-STOCK COMPANY	VILLAGE STRUŽEC	CANAL "LONJA - STRUG" (78) SAVA (469) DUNAV (1170)	crude oil exploitation and transport	crude oil	2		metal tanks (4*5000m^3) in concrete safety pool		In case of accident, crude oil could be spread over off stream detention storage "Lonjsko polje"				
13.	**INA INDUSTRIJA NAFTE D.D. ZAGREB** **OIL INDUSTRY** JOINT-STOCK COMPANY	VILLAGE LIPOVLJANI	CANAL "LONJA-STRUG" (33) SAVA (469) DUNAV (1170)	crude oil exploitation and transport	crude oil	2		metal tanks (2*5000m^3) in concrete safety pool		In case of accident, crude oil could be spread over off stream detention storage "Mokro polje"				
14.	**INA INDUSTRIJA NAFTE D.D. ZAGREB** **OIL INDUSTRY** JOINT-STOCK COMPANY	VILLAGE ĐELETOVCI	BOSUT (65) SAVA (317) DUNAV (1170)	crude oil exploitation and transport	crude oil	2		metal tanks (2*5000m^3) in concrete safety pool						
15.	**LOLA RIBAR D.D.** JOINT STOCK COMPANY	TOWN KARLOVAC	MREŽNICA (3) Korana (6) KUPA (136) SAVA (603) DUNAV (1170)	textile industry	heavy fuel oil	2	200	metal tank in concrete safety pool			200,000		20,000	4.3

16.	**J.P. TOPLANA** PUBLIC ENTERPRISE	TOWN KARLOVAC	KUPA (136) SAVA (603) DUNAV (1170)	heat energy production	heavy fuel oil	2	950	metal tank in concrete safety pool			950,000		95,000	5.0
17.	**HERBOS D.D. SISAK** JOINT STOCK COMPANY	TOWN SISAK	SAVA (603) DUNAV (1170)	production of pesticides	cianuril chloride natrium hydroxide isopropilamine monoethilamine atrazine	1	50 140 20 20 40	plastic containers metal tank in concrete safety pool metal tank in concrete safety pool metal tank in concrete safety pool metal tanks	 10 10 		50,000 140,000 20,000 20,000 40,000		2,700	3.4
18.	**ŽELJEZARA SISAK D.D.** IRON FOUNDARY JOINT-STOCK COMPANY	TOWN SISAK	SAVA (603) DUNAV (1170)	production of steel an steel products	chloric acid natrium hydroxide sulphuric acid	1	30 30 70	rubber-coated steel metal tanks in concrete safety pools	50 50 50		30,000 30,000 70,000		1,300	3.1
19.	**METEOR D.D.** CHEMICAL INDUSTRY JOINT-STOCK COMPANY	TOWN ĐAKOVO	JOŠAVA (26) BIĐ (11) BOSUT (118) SAVA (317) DUNAV (1170)	chemical industry	chloric acid natrium hypoklorite	1	20 20	metal tank in concrete safety pool metal tank in concrete safety pool			20,000 20,000		400	2.6
20.	**PLIVA D.D.** **PRILAZ BARUNA FILIPOVICA** JOINT-STOCK COMPANY	TOWN ZAGREB	SAVA (686) DUNAV (1170)	pharmaceutical and chemical industry	98% sulphuric acid chloric acid natrium hydroxide ammonium hydroxide chlorine sulfonic acid	1	182 182 154 94 171	metal tanks in concrete safety pools			182,000 182,000 154,000 94,000 171,000		7,830	3.9

21.	**PLIVA D.D.** **SAVSKI MAROF** JOINT-STOCK COMPANY	ZAGREBAC. ŽUPANIJA (ZAGREB COUNTY)	SAVA (716) DUNAV (1170)	pharmaceutical and food industry	Methanol acetic acid ethanol acetone heavy fuel oil	1	160 104 206 122 1000	metal tanks in concrete safety pools			160,000 104,000 206,000 122,000 1,000,000		15,920	4.2
22.	**PLIVA D.D.** **HRVATSKI LESKOVAC** JOINT-STOCK C.	ZAGREBAC. ŽUPANIJA (ZAGREB COUNTY)	SAVA (686) DUNAV (1170)	pharmaceutical industry	heavy fuel oil	2	250	metal tank in concrete safety pool			250,000		25,000	4.4
23.	**BELIŠCE D.D.** JOINT-STOCK COMPANY	TOWN BELIŠCE	DRAVA (54) DANUBE (1383)	production of cellulose, containers and paper; destilation of the woods	heavy fuel oil chloric acid natrium hydroxide sulphur chlorine colouring matter	2	10000 350 300 3370 10 25	metal tank in concrete safety pool		No direct risk to the river Danube.	10,000,000 350,000 300,000 3,370,000 10,000 25,000		1,065,000	6.0
24.	**INA INDUSTRIJA NAFTE D.D. ZAGREB** **OIL INDUSTRY** JOINT-STOCK COMPANY	VILLAGE BENICANCI	PUTNA STARA (3) VUCICA (14) VUCICA (33) DRAVA (29) DUNAV (1383)	crude oil exploitation and transport	crude oil	2	200000	metal tanks (4*5000m^3) in concrete safety pool		No direct risk to the river Danube.	200,000,000		20,000,000	7.3
25.	**TVORNICA ŠECERA OSIJEK D.D.** **SUGAR FACTORY OSIJEK** JOINT-STOCK COMPANY	TOWN OSIJEK	DRAVA (12) DANUBE (1383)	production of sugar	waste water from sugar production with organic nitrogen content heavy fuel oil	1	1999000				1,999,000,000		20,040,000	7.3

							5000	2000 t metal tank in concrete safety pool			5,000,000			
26.	**SAPONIA D.D.** CHEMICAL, FOOD AND PHARMACEUTICAL INDUSTRY OSIJEK JOINT-STOCK COMPANY	TOWN OSIJEK	DRAVA (12) DANUBE (1383)	production of detergents, and cosmetic products	chloric acid natrium hydroxide tensides stearic acid	1	100 786 2305 480	metal tanks			100,000 786,000 2,305,000 480,000		36,710	4.6
27.	**HEP D.D. "TE-TO"** **OSIJEK** CROATION ELECTRIC MANAGEMENT COMPANY THERMAL POWER PLANT OSIJEK JOINT-STOCK COMPANY	TOWN OSIJEK	DRAVA (12) DANUBE (1383)	production of electric energy and water steam	heavy fuel oil chloric acid natrium hydroxide sulphuric acid	1	5000	metal tanks in concrete safety pool (for heavy fuel oil) metal tank (10 t) in a concrete safety pool (for sulphuric acid)			5,000,000		50,000	4.7
28.	**BOROVO D.D.** JOINT-STOCK COMPANY	TOWN VUKOVAR	DANUBE (1333)	production of rubber footwear and other rubber products	heavy fuel oil	2		2000 t metal tank in concrete safety pool		Destroyed during the war. Possible direct risk to the river Danube.	2,000,000		200,000	5.3
29.	**TVORNICA ŠECERA VIROVITICA D.D.** **SUGAR FACTORY VIROVITICA** JOINT-STOCK COMPANY	TOWN VIROVITICA	MANTEC (9) ŽUPANIJSKI KANAL (26) DRAVA (125)	production of sugar, cleaning industrial waste water and municipal waste water from town Virovitica on waste water treatment plant	waste water from sugar production with organic nitrogen content	1	330 000 m^3 waste water from sugar factory	earthen pool for waste water		No direct risk to the river Danube.	330,000,000		3,300,000	6.5

			DANUBE (1383)											
30.	**INA INDUSTRIJA NAFTE D.D. ZAGREB** OIL INDUSTRY JOINT-STOCK COMPANY	VILLAGE MOLVE	KOMARNICA (1) BISTRA (7) DRAVA (203) DUNAV (1383)	gas exploitation and transport	sulphids phenols mercury	1		300 m^3 metal tank for gas		No direct risk to the river Danube.	300,000		3,000	3.5

Summe **135734760** **8.1**

Note : (*) - Metal tanks in concrete safety pools.
In accordance with Croatian regulations the volume of concrete safety pools must be the same as the metal tanks.

The Hazards and Risks to the Waters cased by War Damage

tion might cause the long term consequences to the soil and water environment. Those cases, such as the spillage of Polychlorinated biphenyls from destroyed el

ARS Bulgaria

Inventory of Potential Accidental Risk Spots

Bulgaria –High risk spots in the Danube River Basin

No	Object / Owner/ User	Location / district	Receiver watercourse /length (km)	Company's object / type of technology used /type of production	Dangerous substances	Toxic properties	Total quantity handled/stored (tones;tones per day)	Storage facilities: Tailing deposits/Ponds (total volume in m^3)	Free operating volume (%)	com-ments	WGK	Total quantity in kg/l	Water risk class equivalent	Sum of water risk class equivalents	WRI
	1	2	3	4	5	6	7	8	9	10					
1.	Liquid fuel storage facilities in the duty-free area of Vidin/ Emelda Textile Sanay Ltd. Vidin	Northeast to the town of Vidin, on the right bank of the Danube river, Vidin region	Danube river (km793)	Loading / unloading station	Petroleum products	2		Tanks - 400 m^3 (4 x50 m^3 and 2x100 m^3)	30%			400000		40000	**4.6**
2.	Petrol storage facilities, terminal for petrol and reservoirs/ Ecopetroleum-Ltd.-Sofia / Vidin region		Danube river (788)	Liquid fuel storage facilities, terminal and station	Petroleum products	2		Total capacity 6 727 m^3 (2 x2000 m^3; 1 x1000 m^3; 1 – 700 m^3; 1 – 451 m^3; 3 – 100 m^3; 4 – 50 m^3; 2 – 38 m^3)	30%				400000 100000 70000 45100 10000 5000 3800	633900	**5.8**
3.	G.Boukovetz/Chiprovetz Tailing pond - Chiprovtzy	T. Chiprovtzy, Montana region	Chiprovska Ogosta river (124), tributary of Danube river; Near the Ogosta dam $V=550.10^6 m^3$	Flotation procedure	Suspended solids; Fe, Mn, As, Pb	1	Total capacity 2,8 $.10^6 m^3$	Tailing pond Total capacity- $7,6.10^6 m^3$		There is a project for conserv ation				76000000	**7.9**
4.	Chimco AD ; 57%-IBI TRANS OF NEW YORK; 25%-private; 14%-state; 3%- private restituted (restored); 1%- others	T. Vratza, Vratza region	Dabnika river (km 10), tributary of Ogosta river (km 54), tributary of Danube river (km 690)	Production of ammonia, carbamide, carbon disulphide, ammonium disulphide, ammonium water, liquid ? ? $_2$, Ar, gases, liquid gases, , heat and electricity energy production; ICI technology of gas production;	142 l/s waste water with high nitrogen content (as NO_3^-; NO_2^-; NH_4^+)	2									**5.3**
					ammonia	2	300 t	2 spherical tanks with total capacity 2000 m^3 (1200t)	75%					200000	

5.	Elisejna EAD; state owned– Tailing pond	Elisejna; Vratza region	Iskar river (km128), tributary of Danube river (km 643)	Copper production	25,5 l/s waste water with high content of: nitrogen (as NO_2^-), ?? ,COD, conductivity, soluble substances, solid substances, SO_4 ions, heavy metals, As	1								**4.4**
					Calcium sulphite –		14-15 000 t/year	Tailing pond – Total capacity 250 m^3	Almost exhausted	There is a project			25000	
6.	Metizy AD; Slag dam	T. Roman, Vratza region	Iskar river (km 84), tributary of Danube river (km 643)	Steel production	Slag %: F_2O_3-58,8 CaO-13,2 A_2O_3 –3,5 SO_3-7,8 SiO_2-1,5	1	10 t / 2000 . (14 m^3/2000 .)	Tailing pond	30%				20000	**4.3**
7.	Kremikovtzi -industrial site	Near the south hillside of Stara Planina mountain, about 13 ?m from Sofia	Lesnovska river (12), tributary of Iskar river (185), tributary of Danube river (km 643)	Ores mining and processing ; steel and several nonferrous products									2.6E+08	**8.4**
7.1	Kremikovtzi mine	-"-	-"-	Ores mining and processing	-Explosive materials- area 36.10^3 m^2	1		Storage – 480 m^2						
					-Explosive	1		Storage – 96 m^2						
					-ammonium nitrate	1		Storage – 120 m^2						
7.2	Coke chemical plant	-"-	-"-	Coke production; coke chemical products	-pits for coal-tar – chemical content: Water-3-6%; phenols-1-1,5%; ? - 6-10%; naphthalene: 8-12%; antracen – 4-6% and other polycicle hydrocarbons	2		5 pits - 58 000 m^3	50 000 m^3				5000000	
					Pits for acid tar: Chemical content of acid tar: water –20%; coal-tar substances–80 %	2		40 000 m^3	20 000 m^3				2000000	

					Naphthalene– 6%; ? $_2SO_4$ – 2%; ammonium sulphate – 10% and polycicle hydrocarbons; chemical content: coal-tar 15%; water 5%; coal and coke particles– 80%, S-1%; ash – 3%										
7.2.1	Primary chemical processing plant	-"-	-"-		-crude coal benzene	2	25 m^3/d	Reservoirs: 1 x 50 m^3; 8 x 100 m3; 4 x 200 m3;					5000 80000 80000		
					-H_2SO_4	1	30 t/d	3 x 100 m3; 2 x 15 m3;					3000 300		
					-NaOH	1	1 t/d	1 x 15 m3; 1 x 50 m3;					150 500		
					-ethanol amine	1	0,5 t/d	1 x 50 m3;					500		
					-lubricants	1	8 t/d	1 x 50 m3; 1 x 100 m3					500 1000		
					-carbocicle hydrocarbons	1	By request	2 x 18 m3;					360		
					-tar	1	115 t/day	2 x 45 m3; 1 x 100 m3;					900 1000		
7.2.2	Tar distillation	-"-	-"-		-coal –tar	1	130 t/day	Reservoirs: 1 x 100 m3; 1 x 200 m3; 4 x 1000 m3;					1000 2000 40000		
					-fire mixture	2	105 t/day	3 x 100 m3; 1 x 200 m3;					30000 20000		
					-antracene oils	3	-	2 x 400 m3;	2 x 400 m3;				800000		
					-naphthalene fraction	3	-	3 x 50 m3; 1 x 76 m3;					150000 76000		
					-light oil	2	By request	2 x 18 m3; 2 x 59 m3;					3600 11800		
7.3	Metallurgical fireproof products plant	-"-	-"-	Lime and dolomite production	-phosphoric acid	1		Reservoirs: 6 x 10 m3;					600		
7.4	Cold rolled products plant	-"-	-"-	Cold rolled metal products	- H_2SO_4	1		Reservoirs: 3 x 125 m3;	2 x 125 m3; 2 x 20 m3;				2500 400		
					-HCl	1		2 x 60 m3; 2 x 100 m3;	1 x 100 m3;				1000		
					- solution	0		2 x 300 m3;					600		
					-used solution	0		2 x 300 m3;					600		

7.5	Mechanization and transport	-"-	-"-	Transport	-diesel fuel	2		Reservoirs: 1 x 313 261 l; 1 x 31 383 l;					 31326 31338		
7.5.1	New oil station														
7.5.2	Old oil station				- petroleum	2		1 x 31695 l; 1 x 31 470 l;					3170 3147		
					- petroleum	2			Reservoirs: 1 x 24520 l; 1 x 10512 l 1 x 10680 l				 2452 1051 1068		
7.6	Railway management department	-"-	-"-	Railway services	-petroleum	2		4 x 8 m3; 1 x 30 m3; 1 x 10 m^3;					3200 3000 1000		
					-heavy petroleum	2		Reservoirs: 3 x 50 m3;					 15000		
					-used oils	2		1 x 5 m3;					500		
					-diesel fuel	2		1 tank							
7.7	Energy management department	-"-	-"-	Electric energy and vapor production; repair and services of el. equipment and water supply system		0									
7.7.1	Heavy petroleum fraction unit I														
7.7.2	Heavy petroleum fraction unit II														
7.7.3	Water preparatory installation for softening and desalting ? 1							Reservoirs: 1 x 5000 m3; 2 x 1000 m3;					 5000 2000		
7.7.4	Water preparatory installation for softening and desalting ? 2							Reservoirs: 2 x 5000 m3;					 10000		
					- H_2SO_4	1		Tanks: 1 x 60 m3; 1 x 50 m3; 1 x 25 m3;					 600 500 250		
					-NaOH	1		3 x 10 m3; 1 x 20 m3; 1 x 60 m3;					300 200 600		
					-salt solution	0		1 x 100 m3; 6 x 10 m3; 1 Tank x 100 m3					100 60 100		
7.8	Chief mechanic directorate	-"-	-"-	Equipment and spare parts production; repair and services											

7.8.1	Oil regeneration station													
					-fresh oils	2		Reservoirs : 17 x 25 m3; 1 x 18 m3;					42500 1800	
					-used oils	2		6 x 20 m3;					12000	
7.9	Tailing pond for ore processing and ore-dressing	Lesnovska river - 1 ?m northeast to v. Chelopechene	-"-	Landfill for hazardous waste – slag and waste water from ore processing and ash from filters	Chemical content of the slag: Fe-27,4%; CaO – 3%; MgO- 1,4%; Pb – 0,5%; SiO_2-6,4%; Mn- 5,3%; Ba-3,3%; Chemical content of treated water in mg/l: ammonia – 0,54-1,66; Fe – 0,26-2,34; Mn – 0,19-0,43;	1	Slag deposit: 618605 t /year 1999; 309302,5 m^3 Deposit till now – 25005341 t/ 12502670 m^3	Area – 1847,9 .10^3 m^2	After the third stage of construction to elevation 539- there will be enough place for storage slag till year 2011.				3093025 1.3E+08		
7.10	Slag dam – Kremikovtzy	Between villages of D. Bogrov, G. Bogrov; Musachevo; near Lesnovska river	-"-	Landfill: slag, phenol wastewater , emulsions	Chemical content of slag in % - water – 26,8;Mn-1,27;Cu-0,21; Cr-0,40; P-0,04; Pb – 0,64; Fe-28,8; Ca –8,34; Mg – 0,73; Si-12,06; Al –1,10; Na-0,16; K-0,22; Ba-0,35; Ni-0,03; Chemical content of drainage water: Nitrite – 0,1-0,48; ammonia – 4-35; phenols – 0-1,9; cyanides – 0,02-0,78	1	Volume of the deposit sludge - 9000000 m^3; water volume of sludge - 600000 m^3	Slag dam– Total capacity about 11.10^6 m^3	About 1,4.10^6 m^3				1.4E+07 1.1E+08		

7.11	Drainage and storm waste water treatment plant	On the right bank of Lesnovska river Chelopechene village, Sofia region	-"-	Drainage and storm waste water treatment, waste water over -flow treatment	Hazardous substances – sludge from industrial treated water. Chemical content %: Fe-32,8; Mn- 0,95; Pb – 0,45; Zn – 0,5; Cu-0,08; S-0,55; Organic substances – 29,2	1	Flow- 40 –1000 l/s. About 960 l/s flow to Botunetz lake and use for industrial water supply. Chemical content of treated water: ammonia –0,3-1,56; cyanides – 0,01-0,08; phenols – 0-0,05; petroleum products– 2-8: Fe-0,26 – 2,88; Mn- 0,07-0,25; Stored till now : 57000 t/ 14250 m^3	2 ponds x 7500 m3 4 drying beds x 3000 m3	5000 m^3 5000 m^3				50000 142500 50000		
7.12	Waste water treatment plant	On the right bank of Lesnovska river, 4 km of Kremikovtzi area	-"-	Treatment of wastewater from the factory premises (50 l/s). Treatment of municipal waste waters (30 l/s) from Kremikovtzi, Buhovo and Seslavtzi regions.	Chemical content of the treated water in mg/l: Ammonia –0,26-1,50; cyanides – 0,01; heavy metals- Fe-0,06 – 0,74; Mn- 0-0,16;	1	Sludge as a result of treatment. Additional treatment in drying beds situated in the factory premises. Treated sludge is used for manure in agriculture.								
8.0	Plama AD, Town of Pleven	T. Pleven	Vit river (35 ?m), tributary of Danube river (km 616)	Petroleum production and processing	Petroleum products	2	About 10000 m^3 of petroleum products in tanks	Ponds- total capacity 111 940 m^3, full with 45 550m^3 water and petroleum products	50%	Possible pollution risk in flood			1000000 455500	1455500	**6.2**
9.0	Petroleum product base-Somovit – Petrol AD, Pleven	v. Somovit , Pleven region	Danube river (km 612)	Loading / unloading of petroleum products	Petroleum products	2	About 2 500 m^3 of petroleum products	10 reservoirs.1 000 m^3	75%	Possible pollution risk in flood period			1000000	1000000	**6.0**
10.0	Ideal standard Bulgaria AD, Vabko Standard trein . – 43,42%; American Standard Inc.- 31,08%; American Standard International Inc. –25,49%	T.Sevlievo, Gabrovo region	Rositza river (39), tributary of Yantra river (87), Tributary of Danube river(540)	Ceramics production, plumbing products	$BaCO_3$ Compressor oils	1	20 t 1,075 t	Storage – in paper packages. 50 kg Plastic tanks. 200 l Tanks x 200 l					200000	214000	**5.3**

					Epoxide resin and solvents		1400 t						14000		
					Ion exchange substances			In paper packages. 25 kg							
							0,400 t								
11.0	Petrol AD, town of Pleven	T. Pavlikeny Veliko Tarnovo region	Rositza river (69), tributary to Yantra river (87), Tributary to Danube river(540)	Storage, loading/ unloading of petroleum products	Petrol	2	-	Metal reservoirs	100%					6000	**3.8**
					Gasoline		20 t		97%				2000		
					Diesel fuel		40 t		96%				4000		
					Mineral oils				100%						
12.0	Vidima AD-1	T. Sevlievo, Gabrovo region	Rositza river (39), tributary of Yantra river (87), tributary of Danube river(540)	Plumbing products	H_2SO_4	1	4t	Tank					40	340	**2.5**
					HCl		4t	Tank					40		
					Bisulphite		4t	Tank					40		
					HNO_3		4t	Tank					40		
					NaOH		4t	Tank					40		
					used oils		4t	Tank					40		
					other acids		10 m^3	reservoir					100		
13.0	Vidima AD-2	v.Gradnitza , Gabrovo region	Vidima river (22), tributary of Rositza river (74), tributary of Yantra river (87), Tributary of Danube river(540)	Plumbing products	H_2SO_4	1	1t	Plastic tanks					10	80	**1.9**
					HCl		1t	Plastic tanks					10		
					NaOH		1t	Plastic tanks					10		
					Bisulphite		1t	Plastic tanks					10		
					used oils		4t	Tank					40		
14.0	Sugar factory AD Alcohol factory	T.Gorna Orjahovitza, Veliko Tarnovo region	Second category gully, situated on 1,2 km of Yantra river, tributary of Yantra river(120), tributary of Danube river(540)	Alcohol production	Sludge	1 -				Waste water flow –18,45 l/s					
15.0	Sugar factory, Energy department	-"-	-"-	Heat and energy production	Slag and ash	0	30 t / d	600 000 m^3	10%				600000	600000	**5.8**
16.0	Sugar Factory , Biological drying beds	-"-	-"-	Sugar production by diffusion technology	Sludge	0	30 t / d	120 000 m^3	50%				120000	120000	**5.1**
17.0	"Arkus" AD	T. Ljaskovetz, Veliko Tarnovo region	Broda gully , 5 km of discharging in Dobridjalsky dam, tributary of Yantra river (107), tributary of Danube river(540)	Mechanical and thermal processing of metals; metal production	HCl,	1	36 t	Plastic tanks (4 m^3)					360	62783	**4.8**
					H_2SO_4,		4 t						40		
					NaOH,		11 t						110		
					Calcinated paint and oils,		5 t	Tanks (50, 100, 200 l)					50		
							9 t						90		
					acetone, technical alcohol,		92 t						920		
					petrol,		0,080 t	Fuel and petroleum products storage							
					diesel fuel, heavy petroleum fractions		0,500 t	Tank					5		
							0,256 t	Tank					3		
							148 t	Tank	50%				1480		
							1567 t	Reservoirs					15670		

								4 tanks with total capacity 2000 t					20000		
					$Ba(Cl)_2$, Fe_2O_5, Hg, $SnCl_4$, KOH, Copper Sodium nitrate, Sodium sulfite, Chromic $Zn(Cl)_2$ 	1	0,125 t 2,572 t 0,008 t 0,084 t 0,122 t 0,066 t 1,000 t 0,542 t 0,075 t 1,000 t	Storage for chemicals	70%				40 5 10		
					Hazardous Used Sludge from Sludge	3	 20 t 3 t 1 t	 Storage Drying beds Temporary place					 20000 3000 1000		
18.0	Sviloza AD, and slag dam	T. Svishtov	Danube river (558 ?m)	-sulphate bleached cellulose; -synthetic silk; -electric energy production; -heat production	Paint	0	4 t 0,25 t/d	Storage	-				4	1.8E+07	**7.3**
					Lubricants	0	4 t 0,31 t/d	Storage	-				4		
					Heavy petroleum	2	150 t 16,5 t/d	Reservoirs capacity 4000 m^3	3800 m^3				380000		
					Sodium hydroxide	1	220 t 70 t/d	Reservoirs capacity 2390 m^3	2000 m^3				200000		
					HCl	1	320 t 9,6 t/d	Reservoirs capacity 320 m^3	-				3200		
					Sodium chlorate	1	100 t 3,8 t/d	Storage	-				1000		
					SO_2	1	20 t 0,23 t/d	Reservoir capacity 100 m3	50 m^3				500		
					H_2SO_4	1	500 t 1,6 t/d	Reservoir capacity 1800 m^3	1300 m^3				13000		
					Chlorine acetic acid	1	24 t 2,6 t/d	Storage	-				240		
					Carbon disulphide	1	80 t 4,77 t/d	Reservoirs capacity 500 m^3	400 m^3				4000		
					Ammonia	2	32 t 0,33 t/d	Refrigerators- 90 t	-				9000		
					Slag and ash	0	1500000 t 107 t/d	Slag dam $3 . 10^6$ m^3	$1,6 . 10^6$ m^3	Side by side			1600000		
					Gas purification	1	68500 t 18 t/d	Slag dam $3 . 10^6$ m^3	$1,6. 10^6$ m^3	storage and			16000000		
19.0	Toploficatcia Veliko Tarnovo EAD, state owned	T. Veliko Tarnovo Veliko Tarnovo region	From sewerage system to Yantra river (132), tributary of Danube river	Heat production	Heavy petroleum fractions	2	1400, 80	Reservoir 7400 Concrete reservoir - 9500	80%	-			950000	950000	**6.0**
20.0	Toploficatcia – Gabrovo EAD, state owned	T. Gabrovo, Gabrovo region	Yantra river (177), tributary of Danube river (540)	Heat and electricity production	Heavy petroleum fractions	2	700 t	12 000 m^3	93%				1200000	1200000	**6.1**

21.0	Tonel Ltd.	T. Polsky Trambesh, Veliko Tarnovo region	Eliya river (8), tributary of Yantra river	Trade of petroleum products	Petroleum products	2	20 t	Reservoir – 1800 m^3	90%				180000	2150000	**6.3**
22.0	Agromedica- Chimsnab AD, (Joint – stock company)	T. Gorna Oryahovitza, Veliko Tarnovo region	Yantra river– 3 km, tributary of Danube river (540)	Trade of liquid chemicals	-	1	None	Reservoirs : 6 x 100 m3= 600 m3 11 x 50 m3= 550 m3					 6000 5500	11500	**4.1**
23.0	"Trema" AD (Joint – stock company)	T. Tryavna, Gabrovo region	Trevnenska river (13), tributary of Yantra river(138), tributary of Danube river(540)	Mechanical processing of munitions	H_2SO_4 HCl NaOH Cr^{6+}	1 1 1 3	Tank - 3 m^3 " " "	Tank - 3 m^3 " " "		Trema does not have tanks larger than			30 30 30 3000	3090	**3.5**
24.0	"Orgachim" AD (Joint – stock company)	East industrial area of Rousse, Rousse region	Danube river (?m 488.800)	Paint, varnish, synthetic resin	-octanol -o-xilol	1 1	200 t ; - 600 t; 60 t/d	250 m^3 2500 m^3	- 25%				2500 25000	27500	**4.4**
25.0	Toplofikatzia Rousse ? ? D, state owned	t. Rousse, Rousse region	Danube river (?m 489)	Heat and electricity production	-HCl - NaOH $-FeCl_3$ -heavy petroleum fractions	1 -"- 1 -"- 0 Highly flammable liquids 2	120 t;2 t/day 110 t;1,8 t/day 77 t;0,4 t/day 2558 t; 5,5 t/day	240 m^3 25 m^3 124 m^3 2 x 3000 m^3 1 x 5000 m^3	50% 50% 60% 30%				2400 250 1240 600000 500000	1103890	**6.0**
26.0	"Orgachim" AD (Joint – stock company)	West industrial area of the town of Rousse, Rousse region	Beli Lom river (5), tributary of Roussenski Lom river (29), Tributary of Danube river (490)	Paints, varnish, synthetic resin	-octanol -solvent	1 -"- 0	83t;15t/day 50 t; 8t/day	100 m^3 700 m^3	- -				1000 700	1700	**3.2**
27.0	"Zhiti"AD (Joint – stock company)	Rousse, Rousse region	-"-	Metal products	$-H_2SO_4$	1	147 t; 1t/day	100 m^3	20%				1000	1000	**3.0**
28.0	"Balkan- Pharma"AD (Joint – stock company)	T. Razgrad, Razgrad region	Beli Lom river (58), tributary of Roussenski Lom river (29), tributary of Danube river (490)	Production of drugs and pharmaceutical materials	$-HNO_3$ -HCl -butylacetate -heavy petroleum fractions	1 1 1 1 1 2	36 t; 0,39 t/day 120 t ; 0,72 t/day 70 t; 2 t/d 2100 t; -	100 m^3 160 m^3 300 m^3 10 500 m^3	70% 35% 80% 80%				1000 1600 3000 1050000	1055600	**6.0**
29.0	"Amilum-Bulgaria" AD (Joint – stock company)	T. Razgrad, Razgrad region	Lipnik dam near Beli Lom river (62), tributary of Roussenski Lom river (29), Tributary of	Corn processing	-HCl	1 -"-	213 t; 6,84 t/per day	378 m^3	50%				3780	16460	**4.2**

			Danube river (490)		-NaOH	1 Highly flammable liquids	268 t; 7,29 t/day	378 m^3	50%				2680		
					-industrial gasoline and petrol	2	90 t; -	100 m^3	50%				10000		

Summe 3.7E+08 **8.6**

Abbreviation:
t. =>Town
v. =>Village

ARS Romania

THE INVENTORY OF THE USERS WITH STORAGE CAPACITY OF POTENTIALLY POLLUTING SUBSTANCES IN CRISURI HYDROGRAPHIC BASIN

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
1	CNCAF MINVEST, SC Devamin SA, Branch Mine Brad - UP Gura-barza, Rabita Pond (P)	Brad/ Hunedoara	Crisul Alb (41,5)	ores mining and processing/ flotation procedures	cyanides, heavy metals (Pb, Zn, Cu, Mn)	R50-53	flatland pond; slag made dam	8,700,000 m^3 ~ 10,875,000 tones*	1	108,750,000	108,750,000	8.0
2	CNCAF MINVEST, SC Devamin SA,Branch Mine Baita - UP Baita, Fanate Pond (P)	Stei/ Bihor	Crisul Baita(13) CrisulNegru (27)	nonferrous ores mining and processing/ flotation procedures	cyanides, heavy metals (Pb, Zn, Cu)	R50-53	flatland pond; slag made dam	2,553,000 m3 ~ 3,191,250 tones*	1	31,912,500	31,912,500	7.5
					Lower Risk Spots							
3	CNCAF Minvest, SC Devamin SA, Branch Mine Brad - Sector Mine Barza (P)	Brad/ Hunedoara	Crisul Alb (31,5)	copper and gold ore mining	heavy metals (Pb, Zn, Cu, Mn)	R51-53	mine waters; unsuitable capacity of wastewater treatment		2			
4	CNCAF Minvest, SC Devamin SA, EM Brusturi - UP Lucsoara (P)	Halmagiu/ Arad	Valea Banestilor (0,6) Crisul Alb (70)	copper and gold ore mining and processing	heavy metals (Pb, Zn, Cu)	R51-53	coastal pond; slag dam 745000 m^3	storage 495000 m^3 ~ 618750*	1		6,187,500	6.8
5	SC Bauxita Min SA Dobresti pond I (P)	Dabresti/ Bihor	Valea lui Vasile (10) Topa (25) Holod (37) Crisul Negru(80)	bauxite ore mining and processing/ flotation	susspended solids containing Fe	R52	coastal pond dam 3800000 m^3	1,800,000	1		18,000,000	7.3
6	SC Nutrientul SA Ciumeghiu Farm (S)	Palota/ Bihor	Channel Barmond (0,6)	chicken farm	oxigen consumer substances	R52	earth dam	7200*	1		72,000	4.9
7	RA Apaterm, cleaning station and biological pond (S)	Oradea/ Bihor	Crisul Repede(121)	cleaning urban wastewaters	suspensions, oxygen consumer substances, heavy metals (Cu, Zn, Cr), cyanides, phenols	R50-53	2 biological ponds		3			

8	SC Sinteza SA, luquid storage (P)	Oradea/ Bihor	Crisul Repede(129,1)	producing of inorganic pigments	heavy metals (Cu, Zn, Cr), cyanides	R50-53	dig out and sealed pnd 590000m^3	437500*	1		4375000	6.6
9	SC Suinprod SA, biological pond (S)	Palonta/ Bihor	Crisul Repede(125)	intensive livestock rising hogs	suspensions, oxygen consumer substances, ammonium, suspensions	R52	2 biological ponds		2			
10	SN Petrom SA, Branch Suplacu de Barcau (S)	Suplacu de Barcau/ Bihor	Barcau (50,5)	oil extraction	oil products, chlorides, phenols, ammonium	R50-53	oil residues pond 40000 m^3	43750*	1		437,500	5.6
11	SN Petrom SA, Branch Suplacu de Barcau and Gas Marghita (S)	Marghita/ Bihor	Barcau (77)	oil and gas extraction	oil products, chlorides, phenols	R50-53	oil residues pond 131000 m^3	140000*	1		1400000	6.1
12	SC Petrolsub SA (P)	Suplacu de Barcau/ Bihor	Barcau (51,6)	oil processing	oil products, phenols, ammonium	R50-53	oil residues pond 40000 m^3; pond for dangerous situations 13200 m^3	40000* 12500*	1	52500	525,000	5.7
13	SC Petrol Derna SA (P)	Derna	Valea Derna (1,9)	mineral oil and bitumen producing	oil products residues, phenols, ammonium	R50-53	oil residues pond	5875*	1	5,875	58,750	4.8

* approximation of quantity (tones) multiplying the storage capacity (m^3) with a density of 1.25 g/cm^3

THE INVENTORY OF THE USERS WITH STORAGE CAPACITY OF POTENTIALLY POLLUTING SUBSTANCES IN MURES HYDROGRAPHIC BASIN

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
1	SC BICAPA SA (pond) (P)	Tarnaveni/ Mures	Tarnava Mica(136)	inorganic salts preparation	CN^{+} Cr^{6+}	R50-53	slag made dam; stalling pond	storage 1,000,000	1		10,000,000	7.0
2	EM ABRUD (pond) (P)	Abrud Alba	V. Sesei(22) Aries(66)	nonferrous	heavy metals acid solution suspensions	R50-53	stalling pond valley with anrocaments dam	storage 27,568,400	1		275,684,000	8.4
3	EM Rosia Montana (pond) (P)	Rosia Montana/ Alba	V.Salistei(22) Abrud(17) Aries(49)	gold ores mining and processing	heavy metals acid solution suspensions	R50-53	stalling pond valley with rock dam	storage 6666700 m^3 ~ 8333375* 407000	1		87,403,750	7.9
4	EM Baia de Aries (pond) (P)	Baia de Aries/ Alba	V.Cusii(1) V.Sartas(5) Aries(74)	gold and complex ores mining and processing	cyanides suspensions	R50-53	valley pond with slag made dam	436,000	1		4,360,000	6.6
5	EM Coranda Certej (pond) (P)	Certej/ Hunedoara	Certej(16) Mures(484)	gold and complex ores mining and processing	heavy metals suspensions mine waters	R50-53	valley pond with slag made dam	storage 8,000,000; operation volume 4800000 tones	1	12,800,000	128,000,000	8.1
					Lower Risk Spots							
6	SC AZOMURES SA pond (P)	Tg. Mures/ Mures	Mures (201)	mineral fertilizers production	compounds of phosphorous and nitrogen	R52	flatland pond	250000*	1		2,500,000	6.4
7	SC UPSOM SA pond (P)	Ocna Mures/ Alba	Mures (306)	sodium - chloride production	chloride; NH^{4+}; NH^{3+}	R52	flatland pond	718750*	1		7,187,500	6.9
8	EM Iara pond (P)	Baisoara (6 km NV from Iara)/ Cluj	Iara	ferrous ores and cuartz sand mining and processing	suspensions; Fe^{2+}	R50	coastal clay pond	storage 4546000	1		45,460,000	7.7
9	EM Zlatna pond (P)	Zlatna/ Alba	Ampoi (24)	complex and gold ore mining and processing	heavy metals; suspended solids	R50-53	coastal pond ; rock made dam	storage 200000 m^3	1		2500000	6.4
10	EM Deva pond (P)	Deva/ Hunedoara	V. Devei (1) Mures (490)	complex nonferrous mining processing	heavy metals; suspended solids	R52; R51-53	flatland pond; slag made dam	storage 9500000 m^3	1		118750000	8.1

11	SC SUINTEST SA Gornesti - biological pond (S)	Gronesti/ Mures	Mures (176)	hogs farm	organic substances; ammonium; suspended solids	R52	4 biological ponds	393750*	1		3,937,500	6.6

* approximation of quantity (tones) multiplying the storage capacity (m^3) with a density of 1.25 g/cm^3

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
1	National Company of Uranium SA Bucharest Banat Oravita Department(P)	Oravita CS	Jitin (12) Caras (30) Lisava (20 Caras (14)	uranium mining	water mine with natural uranium and radium 226; NaOH	R45 R21	storage basin Lisava; storage basin Ciudanovita	625* 250* 0.720	1		8760	3.9
2	Department of "Group for the program of mining closure" Deva - Sasca mine (P)	Sasca CS	Nera (47)	nonferrous ores mining	floating slag with Cu, Ni, Mn, Pb, Zn	R50-53	flatland pond; slag made dam	4,195,987	1		41,959,870	7.6
3	SC Moldomin SA (P)	Moldova Noua CS	Danube (1044 km navigable)	nonferrous ores mining	floating slag with Cu, Ni, Pb, Zn	R50-53	Lunca Dunarii pond	37,123,000	1		371,230,000	8.6
4	SC Cantara SA (S)	Ciclova Montana CS	Ciclova (30) Caras (5)	food industry	spoiled beer		metallic tanks 4 x 400 hl; 1 x 100 hl	170	0	170	170	2.2

* approximation of quantity (tones) multiplying the storage capacity (m3) with a density of 1.25 g/cm3

THE INVENTORY OF THE USERS WITH STORAGE CAPACITY OF POTENTIALLY POLLUTING SUBSTANCES IN SOMES-TISA HYDROGRAPHIC BASIN

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
1	SC TERAPIA SA (P)	Cluj-Napoca/ Cluj	Somesul Mic (82) Somes (244)	drugs production	cyanides	R50	3 decianuration	storage 3 x 20 m^3 ~ 3 x 25 =75*	2		8000	3.9
2	SC AURUL SA (P)	Baia Mare/ Maramures	Lapus (5,2) Somes (85)	precious metal mining and processing/ cianuration	cyanides, heavy metals (Pb, Zn, Cu, Mn)	R50-53	flatland pond; slag made dam	2,400,000	1		24,000,000	7.4
3	SM BORSA Colbu Pond (P)	Baia Mare/ Maramures	Cisla (9,8) Viseu (63) Tisa (59)	nonferrous ores mining and processing/ flotation procedures	heavy metals	R50-53	flatland pond; slag made dam	2,880,000	1		28,800,000	7.5
4	SM BORSA Novat Pond (P)	Baia Mare/ Maramures	Novat (10) Vaser(12) Viseu (41) Tisa (59)	nonferrous ores mining and processing/ flotation procedures	heavy metals	R50-53	flatland pond; slag made dam	1,810,000	1		18,100,000	7.3
5	SM BAIA MARE UP Central Flotation Unit, UPSasar (P)	Baia Mare/ Maramures	Lapus (5,2) Somes (95)	nonferrous ores mining and processing/ flotation procedures	cyanides, heavy metals (Pb, Zn, Cu, Mn)	R50-53	flatland pond; slag made dam	41,000,000	1		410,000,000	8.6
6	SC ALLIED DEALS PHOENIX SA (P)	Baia Mare/ Maramures	Sasar (13,5) Lapus (6) Somes (95)	nonferrous smelting, reactive production	heavy metals,sulfuric acid	R14R21 R50-53	reservoir; sludge basin 2600 m^3 ~ 3250*	3250 10000	1	32500 100000	132,500	5.1
7	SM BAIA MARE BM Baia Sprie (pond) (P)	Baia Sprie/ Maramures	Sasar (19) Lapus (6) Somes (95)	nonferrous ores mining and processing/ flotation procedures	heavy metals	R50-53	flatland pond; slag made dam	13,221,000	1		132,210,000	8.1
8	SM BAIA MARE EM Cavnic (pond) (P)	Cavnic/ Maramures	Cavnic (24,5) Lapus (37,7) Somes (95)	nonferrous ores mining and processing/ flotation procedures	heavy metals	R50-53	flatland pond; slag made dam	850,000	1		8,500,000	6.9
9	EM AURUM Ilba Sector (P)	Baia Mare (Ilba)/ Maramures	Ilba (7) Somes (84,5)	nonferrous ores processing	heavy metals from mine waters	R50-53	intermedia-ry storage for packed silt; mine waters; unproper purification		1			

10	SM BAIA MARE-EM Herja (pond) (P)	Baia Mare/ Maramures	Firiza(5) Sasar(14) Lapus(6) Somes (95)	nonferrous ores processing	heavy metals	R50-53	mine waters; reduced and unproper purification		1			
11	CMNPN REMIN BAIA MARE- EM Turt (pond) (P)	Turt/ Satu Mare	Turt (18) Tur (68) Tisa (820)	complex nonferrous ores mining without processing	heavy metals (Cu, Pb, Zn)	R 43, 47, 50 R 54-58	2,200,000 m^3~ 2,750,000 tones*	2,750,000	1		27,500,000	7.4
12	EM AURUM Nistru Section (P)	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		1			
13	CMNPN REMIN SA BAIA MARE-Mining Sub-sidiary Rodna (pond) (P)	Rodna/ Bistrita Nasaud	Somesul Mare (560)	nonferrous ores mining and processing (Zn,Pb); storage of the salg	heavy metals (Pb, Zn)	R50-53	stalling pond: valley - type pond, with main dam built on slag and aditional toc dam	6,300,000 slag (at final quota +740 m) 2,737,930 stored quantity, until +720m quota	1	7,875,000 3,422,412 *	112,974,120	8.1
14	SM BAIA MARE-EM Baiut (pond) (P)	Baiut/ Maramures	Lapus(110) Somes (95)	nonferrous ores mining and processing/ flotation procedures	heavy metals	R50-53	flatland pond; slag made dam	3,650,000	1		36,500,000	7.6
15	SC SOMES SA, Dej (P)	Dej/ Cluj	Somes (233)	pulp and paper processing	organic substances, lignine, tanine	R52	siltstorage	110	1		1,100	3.0
16	SC COMINEX NEMETALIFERE SA-Mining Sub-sidiary Aghires (ponds) (P)	Aghires/ Cluj	Nadas(20) Somesul Mic (82) Somes (244)	caolin sands and metalurgic sands mining	suspensions	R52	3 stalling ponds	100,000	1		1,000,000	6.0
17	SC AGRO-COMSUIN - SA BONTIDA (biological ponds) (S)	Bontida/ Cluj	Somesul Mic (42) Somes (244)	pig farm	organic substances, amonium suspensions	R52	4 biologic ponds	36,000	1		360,000	5.6
Lower Risk Spots												
18	SC ZAHARUL SA (P)	Carei/ Satu Mare	Postei (2) Crasna (53) Tisa (820)	sugar processing from sugar beet by diffusion technology	oxygen consummer substances; susspended solids (CCOCr)	R52	flatland pond 120000 m^3	95625*	1		956,250	6.0

19	SC NUTRISAM SA SATU MARE hogs farm Moftin (S)	Moftin/ Satu Mare	Crasna (66) Tisa (820)	intensive livestock rising hogs	oxygen consummer substances; susspended solids (CCOCr), phenols	R52	flatland pond 6000 m^3	3500*	1		35,000	4.5

* approximation of quantity (tones) multiplying the storage capacity (m3) with a density of 1.25 g/cm3

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
					organic substances; ammonium;		washing waters from ionic filters	0.3 0.10 0.6		0.3 0.10 0.6		
1	SC ANTIBIOTICE IASI (P)	Iasi/ Iasi	Bahlui (19) / Jijia (6)	0	chlorides; miceles	R28, R50-53	in 2 tanks	0.3	3	0.3	1,325.0	3.1

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
					Phenols,	R26-27,		470	2	470		
					Ammonium,	R23,		129		129		
					Ammonium	R52,		4632		4632		
					carbonate,	R52,		120		120		
					Ammonium nitrate,	R51,		60		60		
					Ammonium	R52,		320		320		
					sulfate,	R11,		284		284		
					Cyclohexanon,	R10,		330		330		
					Cyclohexanol,	R10		0		0		
					Cyclohexane,	R11,		70		70		
					Benzene, Hydroxyl	R52,		153		153		
					anime sulfate,	R34,		1257		1257		
					Oleum, Chloride	R34,		169		169		
					acid, Nitric acid,	R24,		54		54		
					Residues	R23,		70		70		
					containing	R26-27,		166		166		
					phenols, Wastes	R39-23-25		323		323		
					containing iron	R50		1306		131		
1	SC FIBREX NYLON SA/ RADICI Group FIBRES (P)	Savinesti Neamt	UHE Chanel (8) Bistrita (55)	fibers of polyamide, ammonium sulfate	oxides, Catalysts activ		reservoirs				873800	5.9
						R23		372		372		
					Ammonia	R34		263		263		
					Nitrogen acid	R34		90		90		
					Chloride acid	R27-28		72		72		
				chemical	Sodium hydroxide	R55		0.06		0.06		
	SC AZOCHIM SA/ SC			fertilizers with	Hydrazine	R55	reservoirs;	0.16		0.16		
		Savinesti	UHE Chanel (8)	nitrogen and	Carbon		plastic					
2	INTERAGRO (S)	Neamt	Bistrita (55)	calcium carbonate	tetrachloride		containers		1		7972	3.9

3	SC MELANA SA (P)	Savinesti Neamt	UHE Chanel (8) Bistrita (55)	acrylic fibers producing	Ethylene carbonate Dibenzol isocyanate Polyethylene glycol	R55 R50 R25	reservoirs 2 x 50 tones ; plastic containers; plastic containers	100 3.7 0.3	2	100 0.37 0.003	10037	4.0
4	SC REFIL SA (P)	Savinesti Neamt	UHE Chanel (8) Bistrita (55)	producing and trading of fi-bers, type wool and cotton from chemical fibers	Sodium nitrate Sodium chloride	R6 R25	sacs; plastic containers; metallic reservoirs	32 1.4 185	1	32 1.4 185	2190	3.3
5	SC SOFERT SA Bacau (P)	Bacau	Bistrita (2)	phosphoric acid, sulfuric acid and chemical fertilizer producing	Sulfuric acid, Phosphoric acid, Chloride acid, Sodium sulfate, Ammonia oil, Ammonia formol	R34 R34 R34 R27/28 R11 R23 R55	reservoirs	2171 1500 37* 70 5000 12000 120	1	2171 1500 37 70 5000 12000 120	208980	5.3
6	SC CHIMCOMPLEX SA Borzesti (P)	Borzesti Bacau	Trotus (60)	chemical industry	Organic sludge, Microelements (Cr, Yn, Fe) inactive isomers	R53 R58	2 sludge pond 86000 m^3 and 1 reservoir 71400 m^3	2 x 107500* 89250*	1	1075 1075 893	30430	4.5
7	SC CAROM SA Onesti (P)	Onesti Bacau	Trotus (60)	synthetic rubber	organic matters, phenols, metals	R40/20/22 R26/27 R52	waste carbon and waste ca-talyst ponds Wastewater and sludge pond		1			
8	SC RAFO SA Onesti (P)	Onesti Bacau	Trotus (60)	oil products processing	Oil sludge, Phenols sludge containing microelements	R11 R26/27 R52	3 sludge pond 127400 m^3	3 x 159250*	1	1593 1593 1593	47790	4.7

* approximation of quantity (tones) multiplying the storage capacity (m^3) with a density of 1.25 g/cm^3

THE INVENTORY OF THE USERS WITH STORAGE CAPACITY OF POTENTIALLY POLLUTING SUBSTANCES IN ARGES HYDROGRAPHIC BASIN

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
1	SN PETROM ARPECHIM Pitesti (P)	Pitesti/ Arges	Dambovnic (62)	petrochemical industry	Organic substances, Suspensions, Chlorides, Sulfats, Ammonium, Cyanides, Phenols, Detergents, Oil products, Fe, Cr6+, Cu, Zn, Cd	R52, R52, R52, R52, R25, R52, R50, R50-53, R50-53			1, 1, 1, 1, 1, 2, 3, 3			

THE INVENTORY OF THE USERS WITH STORAGE CAPACITY OF POTENTIALLY POLLUTING SUBSTANCES IN JIU HYDROGRAPHIC BASIN

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
				Chemical fertilizers producing; Methanol producing facilities; Ammonium producing facilities; Urea facilities; Ammonia producing facilities; Nitric acid producing facilities	Methanol Ammonium; Ammonium chloride; Urea; ammonia carbonate; ammonium nitrate; Acid waters	R28, R50 R25, R52 R25, R52 R25, R52 R25, R52	reservoirs 5 tones storage deposit storage deposit wagons (4,500)	665 to/day and storage 3200 900to/day and storage 15000 900 to/day and storage 10000-15000 900 to/day and storage 4500 720 to/day and storage 3600	2 1 1 1 1	67 + 320 9 + 150 9 +150 9 +45 7 + 36		
	SN PETROM DOLJCHIM		Jiu Amaradia									
1	Craiova (P)	Craiova/ Dolj	collector sewer								8020	3.9

THE INVENTORY OF THE USERS WITH STORAGE CAPACITY OF POTENTIALLY POLLUTING SUBSTANCES IN IALOMITA-BUZAU HYDROGRAPHIC BASIN

No.	Company/ owner	Location/ district	Receiving watercourse;	Company's activity field	Type of dangerous	Toxic properties WRC	Storage facilities	Total quantity handled/	WRC	WR-3	Summ	WRI
1	SC ELECTRICA (P)	Fieni/ Dambovita	Ialomita	producing of electric lamps	galvanic slag	R52	underground storage	110	1		1100	3.0
2	SC ROMLUX (P)	Targoviste	sewerage	light sources and accessories production	chrome, fluor	R50-52	underground sealed storage	18	2		1,800	3.3
3	WINCONSIN TURNING SYSTEM (P)	Targoviste/ Dambovita	sewerage	machinery contruction	galvanic slag	R50-52	metallic containers	28	2		2,800	3.4
4	SC COS (P)	Targoviste/ Dambovita	Ilfov	metallurgy	acids	R52	2 settling ponds with comparti-ments	45	2		4,500	3.7
5	ROMARM Mija department (P)	Mija/ Dambovita	Neagra	machinery construction	chromic and cyanide slag	R50;R52	6metallic con-tainers of 50 m^3; concrete basin 50m^3	88* and stored 6 x 6.25* 6.25*	2	9 37.5 0.6	4,700	3.7
6	ROMARM Moreni department (P)	Moreni/ Dambovita	Cricovul Dulce	defence industry	galvanic slag	R52	metallic reservoirs	336	1		3,360.0	3.5
7	SNP Petrom Petrobrazi department (P)	Brazi/ Prahova	onds, drying beds	oil products processing	oil residues	R52-53	sealed ponds; drying concrete beds	62500* 2200*	1		647,000	5.8
8	SC AMONIL SA (P)	Slobozia/ Ialomita	Ialomita (52.4)	chemical fertilizers	Ammonium; Nitrogen acid	R10; R23; R36; R37; R38; R8; R24; R25; R35	metallic reservoirs 2 x 15000 t and 4 x 198 t	225000 and stored 525; 100000 and stored 197	1		3,250,000	6.5
9	SC COMCEH SA (P)	Calarasi/ Calarasi	Borcea	paper producing	ink, colors, sodium hydroxide, oil, chloride acid	R52; R53	bins, metallic reservoirs	0.015 20 62 25 0.03	2		10700	4.0

ARS Ukraine (no table received)

ARS Republic of Moldova

N°	Name of Company, Owner	Location District	Recipient River	Company activities	Dangerous Substances	WHC	Toxic Proper-ties	Total amount	Storage facilities	Free operational volume	Remarks	Bezugsmenge (kg/l)	Water risk class equivalent	Sum of water risk class equivalents	Water risk index
1.	Apa- Canal (municipal property)	Cahul	Prut 87 km	Waste-water treatment	Chlorine			N/a	N/a	N/a	low				
2.	Oil-tank (private property, "Lukoil)	Cahul	Prut 87 km	Storing and distributing	Oil-products	2	5	9,700 m^3	Cisterns (28 units)	N/a	medium		970000	970000	**6.0**
3.	Apa- Canal (communal	Cantemir	Prut 160 km	Waste-water treatment	Chlorine	2		4,800 tons	Cylinders	N/a	Medium			480000	**5.7**
4.	Thermal network and	Leova	Prut 260 km	Local heating	Oil products	2	5	N/a	Cisterns	N/a	low				
5.	Oil-tank (private property)	Leova, village Iargara	Prut 260 km	Storing and distributing	Oil products	2	5	N/a	Cisterns	N/a	low				
6.	Oil-tank (private property)	Leova	Prut 260 km	Storing and distributing	Oil products	2	5	7.532t	Cisterns	N/a	medium			753200	**5.9**
7.	Petrol-station (private	Leova	Prut 260 km	Storing and distributing	Oil products	2	5	N/a	Cisterns	N/a	low				
8.	Apa- Canal (communal	Leova	Prut 260 km	Waste-water treatment	Chlorine	2		N/a	Cylinders	N/a	low				
9.	Oil-tank (Private property)	Falesti	Prut 472 km	Storing and depositing	Oil products	2	5	3.800 m^3	Cisterns (72 units)	N/a	low			380000	**5.6**
10.	Apa- Canal (communal property)	Ungheni	Prut\ 387 km	Waste-water treatment	Chlorine	2		0.8t	Cylinders	N/a	low			80	**1.9**
11.	Boiler- house	Ungheni	Prut 367 km	Heating supply	Fuel oil	2	5	7.000t	Cisterns	N/a	medium			700000	**5.8**
12.	Oil-tank "Feodora" (private property)	Ungheni	Prut 387 km	Storing and distributing	Oil products	2	5	500t	Cisterns	N/a	low			50000	**5.9**
13.	Oil-tank (state property)	Ungheni	Prut 387 km	Storing and distributing	Oil products	2	5	1,000t	Cisterns	N/a	medium			100000	**5.0**
14.	Petrol-station "Zagoros" (private property)	Ungheni	Prut 387 km	Storing and distributing	Oil products	2	5	500t	Cisterns	N/a	low			50000	**5.9**
15.	Petro-station (private property)	Ungheni	Prut 387 km	Storing and distributing	Oil products	2	5	500t	Cisterns	N/a	low			50000	**4.7**
16.	Apa- Canal (communal property)	Nisporeni	Prut 330 km	Waste water treatment	Chlorine	2		1.3t	Cylinders	N/a	low			1300	**3.1**

17.	Oil-tank (state property)	Nisporeni	Prut 330 km	Storing and distributing	Oil products	2	5	800t	Cisterns	N/a	medium			80000	**4.9**
18.	Apa-Canal (communal	Nisporeni	Prut 330 km	Waste-water treatment	Chlorine	2		0.3t	Cylinders	N/a	low			30	**1.5**
19.	Thermal network (state property)	Hancesti	Prut 270 km	Heating	Fuel oil	2	5	200t	Cisterns	N/a	low			20000	**4.3**
25	Oil-tank “Tirex-Petrol” (private property	Hancesti, village Lapusna	Prut 270 km	Storing and distributing	Oil products	2	5	N/a	Cisterns	N/a	low				
20.	Pesticide depository (communal property)	Hancesti	Prut 270 km	Storing and distributing	Pesticide	3	2 4 7 ($CuSO_4$)	N/a	Jerrycan Metal containers Plastic bags	N/a	low				
21.	22 petrol stations (private property)	Hancesti	Prut 270 km	Storing and distributing	Fuel	2	5	N/a	Cisterns	N/a	low				
22.	Oil-tank (private property)	Comrat	Yalpugh 65km	Storing and distributing	Oil products	2	5	N/a	Cisterns	N/a	low				
23.	Apa-Canal (communal property)	Comrat	Yalpugh 65	Waste-water treatment	Chlorine	2		N/a	Cylinders	N/a	low				
24.	Oil-tank (private property)	Ciadir- Lunga	Yalpugh 30 km	Storing and distributing	Oil products	2	5	N/a	Cisterns	N/a	low				
25.	Apa-Canal (Communal property)	Ciadir- Lunga	Yalpugh 30 km	Waste-water treatment	Chlorine	2		N/a	Cylinders	N/a	low				
26.	Apa-Canal (communal propery)	Vulcanesti	Cahul 20 km	Waste-water treatment	Chlorine	2		N/a	Cylinders	N/a	low				
27.	Petrol- stations (3 units- private property)	Vulcanesti	Cahul 20 km	Storing and distributing	Oil products	2	5	N/a	Cisterns	N/a	low				
													Summe	3634610	**6.6**