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Danube, Meuse and Rhine MEMORANDUM 2008

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The following associations represent the interests of around 106 million people in 17 riparian nations of these catchments:

- **IAWR**—the International Association of Waterworks in the Rhine Catchment Area, with its three member organizations
  - **AWBR**: Arbeitsgemeinschaft Wasserwerke Bodensee-Rhein (Working Group of Waterworks—Lake Constance-Rhine),
  - **ARW**: Arbeitsgemeinschaft Rhein-Wasserwerke/ (Rhine Waterworks Working Group),
  - **RIWA-Rijn**: Vereniging van Rivierwaterbedrijven Rijn (Dutch River Waterworks Association—Rhine),
- **IAWD**: the International Association of Waterworks in the Danube Catchment Area,
- **RIWA-Maas**: Vereniging van Rivierwaterbedrijven Maas (River Waterworks Association—Meuse)

Around 160 drinking water supply companies have joined forces in these organizations. Their common strategy and vision for the provision of drinking water is set out in this memorandum.

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These companies feel responsible for the sustainable use of water resources, which is even more important in view of possible climate changes. The provision of drinking water must be given priority over all other uses for water bodies.

Their goal is to achieve a water quality that allows them to produce drinking water using only natural treatment methods. The precondition for the provision of drinking water, according to this principle, is the extensive protection of the water resources.

This preventive water protection, also in the interests of sustainability, must be given top priority. This applies to the drinking water companies themselves as well as to all other social or economic stakeholders that use water resources in many different ways. The protection of water bodies is a common social responsibility.

In order to achieve this goal, the associations published the Ground Water Memorandum in 2004, and have now written this Danube, Meuse and Rhine Memorandum 2008, which is based on the IAWR Rhine Memorandum of 2003 and the Danube Memorandum.

The Danube, Meuse and Rhine MEMORANDUM 2008, which refers to the implementation process of the EU Water Framework Directive and its subdirectives, puts forward concrete requirements for sustainable water protection with target values for surface water quality. The memorandum also takes the drinking water interests in the Elbe river basin into account.

This memorandum is intended to assist and guide politicians, authorities and decision-makers in industry and water management to make the necessary quality improvement of surface water bodies providing drinking water.

1 Water protection for drinking water supply

The European Water Framework Directive 2000/60/EC (WFD) that took effect in 2000 does not sufficiently cover the water protection requirements for the provision of drinking water.

While Article 7 of the WFD specifically states the goal of improving water protection to reduce the treatment required for the production of drinking water, the prescribed water quality objectives in the Directive are weakened to the degree that they no longer serve their purpose. These weaker requirements are inadequate to replace previous quality standards that have now expired (for example, those of the EU Surface Water Directive 75/440/EEC).

Furthermore, the monitoring requirements of the WFD do not ensure a sufficient sampling frequency to reliably determine the range between minimum and maximum values, thus rendering the judgment of water quality based on mean values unsuitable.

IAWR, IAWD and RIWA-Meuse therefore feel obliged to put forward water quality targets that form an irrefutable basis for water protection and sustainable drinking water supply.

The associations stand for the sustainable protection of our heritage water and the preservation of it for future generations.

The associations therefore welcome the standpoint of the European Commission in its Communication COM (2007) 414 of 18 July 2007, which provides for the priority of public water supply.

The European Water Framework Directive also states, correctly, in preamble 1: *"**Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such***."

Water must, therefore, be protected *as such*. Nobody has a right to pollute water, rather an obligation to return it to the water cycle in a clean state.

Accordingly, there are no beneficiaries of water in good condition, only causers of a situation that requires improvement. This must be taken into account in the application of the polluter pays principle and the recovery of costs for water services.

In the implementation of the WFD, it is important to achieve ecologically intact water bodies in their natural state. In terms of the state of the water, this goal can only be achieved through clear improvements in the quality of the water bodies.

2 Preconditions of drinking water supply

For the provision of drinking water, it is temporarily taken from the natural water cycle, purified and made available in sufficient quantity and quality for distribution.

Waterworks use surface water, groundwater, or bank filtrate as the sources for drinking water production.

Source water pollutants can be reduced through technical treatment methods.

All treatment methods have, however, some limits:

- They cannot eliminate 100% of a substance.
- They do not selectively remove just *one* undesirable substance.
- Their effectiveness does not remain constant over time.
- The treatment method itself can produce new chemical compounds.

The precautionary principle and the ideal of pure and wholesome drinking water require that source water entering the treatment process is already clean enough to allow the exclusive use of natural purification methods, e.g., bank and sand filtration, for the production of drinking water.

Surface water that complies with the target values in the following table generally enables drinking water to be provided using methods such as these.

If the surface water quality is actually better than the stated target values, this may not be abused to increase the pollutant load (stand-still principle).

The following are, therefore, irrefutable components of preventive water protection:

- Avoidance
- Reduction and
- Monitoring of substances which impact waterworks and drinking water.

Impact on waterworks is assigned to non-natural anthropogenous substances with low biodegradability. They can be identified in test filter assays.

Impact on drinking water is assigned to persistent anthropogenous substances that even evade complete elimination by active carbon filtration.

Substances that are insufficiently degradable in filter tests may contaminate the drinking water supply sources, if they are released into the natural water cycle. These substances must be contained or substituted by biodegradable substances. This applies particularly to substances with drinking water impact.

Even modern sewage treatment plants fail to retain these persistent substances. But sewage and waste water are not the only sources of these substances. Their application in everyday life is an important source of diffuse pollution. This should be reflected in substance approval procedures.

Preventive water protection includes the responsibility of government authorities to record and monitor all

relevant forms and sources of water pollution. Accordingly, official monitoring programs must be extended and improved on the basis of insights gained through effluent monitoring.

In addition, industries must intensify their effluent control and optimize accident prevention.

3 Demands for water protection

1. Drinking water supply should be given absolute priority over other water uses.
2. Drinking water production by means of natural purification methods should be recognized as a specific water protection objective.
3. The 'polluter pays' principle must be applied and the cost must not be recovered through the so-called 'beneficiaries'.
4. The anti degradation policy must be implemented (application of stand-still principle).
5. Water bodies must be kept free from non-natural anthropogenous substances.
6. The environmental fate of substances should be considered prior to approval.
7. Industries should intensify their effluent control and optimize accident prevention.
8. Water quality monitoring programs should be adjusted to reflect new information and knowledge.

4 Target values

Parameters	Target value	
Oxygen	mg/L	>8
Electrical conductivity	mS/m	70
pH value	–	7–9
Temperature	°C	25
Chloride	mg/L	100
Sulphate	mg/L	100
Nitrate	mg/L	25
Fluoride	mg/L	1.0
Ammonium	mg/L	0.3
Composite organic parameters		
Total organic carbon (TOC)	mg/L	4
Dissolved organic carbon (DOC)	mg/L	3
Adsorbable organic halogen compounds (AOX)	µg/L	25
Adsorbable organic sulphur compounds (AOS)	µg/L	80

Specific parameters	Target value µg/L
Anthropogenous non-natural substances with known biological effects	
Pesticides and their metabolites per individual substance	0.1*
Endocrine active substances per individual substance	0.1*
Pharmaceuticals (incl. antibiotics) per individual substance	0.1*
Biocides per individual substance	0.1*
Other organic halogen compounds per individual substance	0.1*
*Unless toxicological information necessitates a lower value.	
Evaluated anthropogenous non-natural substances with no known effects	
Substances with low biodegradability per individual substance	1.0
Synthetic complexing agents per individual substance	5.0

4.1 Hygienic-microbiological quality

Surface water status should allow the production of hygienically and microbiologically safe drinking water with natural purification methods only.

This means that the hygienic and microbiological quality of surface waters needs to be improved in the future. The goal should be to maintain an *excellent* bathing water quality as defined by the EU Bathing Water Directive 2006/7/EEC.

4.2 Explanation of the target values

The target values apply to surface waters used for the production of drinking water.

They are maximum permissible values and must at least be complied with at the waterworks intake points. It is worth noting that there are no defined water intake points in the case of bank filtration, and that the water quality must be maintained even under extreme flow conditions.

The target values were determined on the basis of two specific drinking water criteria:

- The water quality status allows the production of drinking water by means of exclusively natural purification methods.
- Legal quality requirements (drinking water standards) are met.

They were derived on the basis of the following viewpoints:

1. Existing drinking water standards should be applied to surface water in those cases where natural treatment is

not expected to lead to any significant reduction in concentrations. Example: inorganic substances.

2. In certain cases, more strict requirements than those applied to drinking water are justified for the condition of water bodies if these are necessary for the protection of the vital drinking water infrastructure. Example: the concentration of neutral salts and, hence, conductivity levels, must be significantly lower than the drinking water standards in order to prevent or diminish corrosion of water mains.
3. Nitrate is another particular exception. Seriously contaminated groundwater resources can often only be used for drinking water production after blending with surface water with lower nitrate levels.

With regard to ammonium, the target value must be lower than the drinking water standard for safety reasons, because nitrate can be converted to ammonium under anaerobic conditions.

4. For many non-natural organic substances the existing drinking water regulations do not specify limit values. In line with the precautionary drinking water standard for pesticides, an *acceptance* threshold of 0.1 µg/L for substances that affect biological systems is held to be justifiable for surface water bodies.

In view of the fact that these substances generally cannot be eliminated through natural processes alone, their occurrence in these waters must be reduced to a minimum.

5. If other non-natural organic substances have passed proper toxicological screening and are regarded as harmless, a target value of 1 µg/L is justified, similar to other official precaution targets.

Only for complexing agents is a temporary value of 5 µg/L acceptable for technical reasons.

6. The specification of composite organic parameters facilitates a comprehensive description of the surface water quality status. A guidance value of twice the background level is used because natural treatment methods on average achieve around 50% elimination.

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