

EXPERIENCES OF WATERWORKS IN IMPROVING WATER QUALITY OF THE RHINE RIVER

Helmut Haumann¹

Municipal water supply systems came up in communities of the Rhine river basin at the end of the last century. For more than 100 years water extracted from the ground water next to the river yielded additional bank infiltrated river water of drinking water quality. The deterioration of the Rhine water quality after world war II caused taste and odour problems in drinking water. **Waterworks experienced that they had to resolve the resulting problems by themselves.**

They researched on high-tech purification modules to improve the performance of their drinking water conditioning plants and introduced ozonization and activated carbon filtration. In addition, though, they tried to detect the sources of pollution and started monitoring the chemical quality of the river. **Waterworks experienced that neither governmental agencies in charge of water resources management, nor polluters of the river gave appropriate information of relevant pollutants.**

Again it was left to the waterworks to find the right parameters and to pinpoint the needs for sanitation measures. Even though they did a very good job in this respect, **waterworks experienced that the deterioration of the Rhine water quality was not stopped.**

Spills and accidents along the Rhine caused the death of fish. Water that poisons fish is not good for drinking water supply. **Waterworks experienced the need to become organized on an international level in order to fight pollution.**

The international association of waterworks in the Rhine basin (IAWR) derived intromission standards and claimed for sanitation measures in their memorandum. **Waterworks experienced that their standards were taken over in the EU-directive for surface water that is used for drinking water production.**

The nations riparian to the Rhine made treaties concerning the reduction of river pollution with chloride and dangerous chemicals. It was important that at the same time the European community introduced a directive that was almost identical with the treaties. The EU directive assured that no unbalanced competition would arise along the Rhine. **Waterworks experienced that the regulations worked before they were put into action, thus resulting in first improvements in water quality development.**

A new water law asked for minimum emission standards and introduced charges on some typical parameters of waste water. **Waterworks experienced the successful sanitation of the river concerning easy degradable substances.**

The laboratories of the waterworks improved their analytical capabilities and became increasingly successful in detecting organic micropollutants. The measurements were published. **Waterworks experienced that pollutants that caused problems were stopped.**

Governmental agencies improved their monitoring systems and installed an early warning system. **Waterworks experienced a fruitful cooperation in monitoring the river.**

In order to define the priorities for sanitation waterworks applied testing filters. They can distinguish fractions of pollutants in surface and waste water that are neither biological degradable nor adsorbable and therefore might enter the drinking water. **Waterworks experienced cooperation with the chemical industry in research projects leading to changes in production processes and further sanitation.**

And hopefully waterworks will not experience another deterioration of the river quality.

¹ President of the International Association of Waterworks in the Rhine River Basin (IAWR); Gas-, Elektrizitäts- und Wasserwerke Köln AG, Parkgürtel 24, 50823 Köln, Germany