

**Texte 36/2003**

**Wasserbeschaffenheit der wichtigsten Seen in der  
Bundesrepublik Deutschland**

**Datensammlung 1981-2000**

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## **Abstract**

The report provides an overview on the state of the largest and most important lakes in Germany. The selection of lakes was agreed by the Joint Water Commission of the Federal States (Länderarbeitsgemeinschaft Wasser LAWA).

The greatest problem faced by lakes remain excessive nutrient inputs and the resulting eutrophication. Since nutrients are stored in the sediments of still water systems and can, under certain circumstances, be released again, algal growth in lakes reacts very slowly to a reduction in nutrient inputs. Often the concentrations of nutrients have to fall below a threshold value before algal growth is getting limited. The transformation of nutrients into vegetable biomass depends not only on the available levels of nutrients – in most cases, phosphor determines the extent of growth – but also on the form and position of the lake's basin, and on its hydrology. Deep lakes with stable thermal strata in the summer, a small catchment area and slow rates of exchange are naturally less productive, i.e. their "potentially natural" or "reference" state is oligotrophic (low in nutrients), while shallow, continually circulating lakes tend to produce more growth from their nutrients, i.e. their reference state is eutrophic (high in nutrients). It is assumed that polytrophic (excessive nutrients) and hypertrophic (maximum nutrients) lakes result only from human influence, and do not therefore occur as reference states.

Lakes can be returned to their reference state, for example with improved waste water treatment technology, as in the lower Alpine lakes of Bavaria.

In the past the lakes in the New States were heavily polluted, as a result of inadequate waste water treatment technology and diffuse agricultural inputs. Nonetheless, recent improvements in waste water treatment have already significantly reduced phosphor levels in these lakes.

Improved sewage treatment and the introduction of phosphate free detergents has significantly reduced the impact of sewage on eutrophication. In future, measures to combat limnic eutrophication must concentrate on reducing diffuse agricultural inputs. Even then, some types of lake will require additional internal measures/remedial action to reduce eutrophication, such as reaerating the hypolimnion, treating sediment or calcite precipitation. Of course, these measures are only meaningful once nutrient inputs from the catchment area have been reduced dramatically.

Another important problem of all lakes – with the exception of lake Stechlinsee - is the destruction of the lakeshore.