

# UBRO - A COMPUTER MODEL FOR DESIGNING SALT CAVERN LEACHING PROCESS DEVELOPED AT CHEMKOP

A.S. Kunstman and K.M. Urbańczyk  
CHEMKOP

## A b s t r a c t

The *UBRO*-code was developed at CHEMKOP in 1977 (the oldest version) and successively improved since then. Despite the relatively simplified hydrodynamics, due to its original algorithm of cavern wall movement, the model favourably matches the results of actual leaching. The model is capable of predicting the course of leaching by direct or reverse circulation, with or without protection of the cavern roof by an oil blanket. The operation of blanket movements can be simulated. Inhomogeneity of rock salt can be accommodated for. Sedimentation of insoluble parts as well as volume contraction are also taken into account in the balance formulae. This is possible because a special formula for dependence of brine density on concentration, basing on laboratory measurements (which differ from tabulated data of pure NaCl solution), are incorporated in the code. The original, laboratory tested leaching rate formula with physically meaningful coefficients is the part of the *UBRO* model.

Explicit finite-difference approximation methods are used to solve the conservation equations. The actual version of *UBRO*-code is working on *IBM-PC* computers.

The theoretical basis of the model algorithm and selected results are presented.