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Maksimovich N.G., Kulesheva M.L., Shimko T.G. Complex screens to protect groundwater at sludge sites. // Protection of groundwater from pollution and seawater intrusion.-Bari,1999.-P.14.

COMPLEX SCREENS TO PROTECT GROUNDWATER AT SLUDGE SITES

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Storing of wastes of gas treatment at the metallurgical-cement plant in the Perm district (Russia) had led to groundwater pollution in the vicinity of the waste sludge storage. The investigations on the liquid waste fraction showed that the latter is characterized by alkaline reaction and high content of Cu, Cd, Pb, Zn, Ni, Mo, As and Ti which form metal-organic complexes. In order to provide groundwater protection against pollution at the new sludge storage site, the authors basing on numerous modeling results suggested to create the complex multi-layer screen at the base of the site.

It is expedient to make the upper layer of the local clay with gypsum to decrease the alkalinity of the filtering solution, which in turn causes hydrolysis and partial sedimentation of heavy metals. The medium layer, which performs the main function of pollutant interception, should be made of the mixture of peat and pyrites remnants thus creating anaerobic reduction conditions and binding metals into sulfides. Peat provides reactive availability of the surface of pyrites remnants. The lower layer is composed of local clays and serves as the additional sorption screen.

Laboratory investigations and calculations show that application of this method provides groundwater protection against above pollutants during the whole period of sludge storage site exploitation.

