sodium chloride composition to earth-alkaline sulphate composition with high salinity. Zn, Cd, Pb, W, V, and Ni increase significantly, whilst Ba, Fe, and Mn are scarcely mobilised. Despite dilution during streamflow, considerable amounts of heavy metals reach the coast.

936032
Geochemical classification of mine drainages and natural drainages in mineralized areas
Ficklin, W H; Plumlee, G S; Smith, K S; McHugh, J B
Proc 7th International Symposium on Water-Rock Interaction, Park City, 13-18 July 1992 *V1, P381-384. Publ Rotterdam: A A Balkema, 1992*

Many different mineral deposits have been worked in the Colorado Mineral Belt. A study has been made of the influence of both host rock geology and mineral deposit type on the chemistry of mine drainage and impact on natural drainage. Water samples from throughout the state were collected and analysed. A classification has been developed for mine drainage and related natural drainage, which summarizes the relation between pH and metals.

936033
Geochemical modeling of deep injection well disposal of acid wastes into a Permian aquifer/aquitard system in Texas, USA
Gardiner, M A; Myers, J
Proc 7th International Symposium on Water-Rock Interaction, Park City, 13-18 July 1992 *V1, P385-388. Publ Rotterdam: A A Balkema, 1992*

Disposal is proposed of acid mine wastes in the San Andres dolomite formation, which is overlain by the Graybury formation anhydrite aquitard. The geochemical computer codes EQ3NR/EQ6 have been used to simulate effects of injection of combined waste stream, undiluted acid waste, and unmodified Grayburg groundwater. The acid waste will react with the dolomite such that it and its reaction products will come into contact with the Grayburg rocks. The ability of the aquitard to resist dissolution and retard vertical flow of waste is evaluated.

936034
Geological and geochemical controls on the composition of mine drainages and natural drainages in mineralized areas
Plumlee, G S; Smith, K S; Ficklin, W H; Briggs, P H
Proc 7th International Symposium on Water-Rock Interaction, Park City, 13-18 July 1992 *V1, P419-422. Publ Rotterdam: A A Balkema, 1992*

The geochemistry of acid mine drainage from many sites in the Colorado Mineral Belt has been studied and factors controlling pH and metal concentrations evaluated. Important factors are acid buffering capacity of gangue minerals and host rock, types and abundance of sulphide minerals in the ores, and availability of sulphides and dissolved oxygen for weathering. Ore deposit geology and mining methods used are primary factors affecting drainage acidity. Sorption and precipitation reactions may control concentrations of some metals. Prediction of mine drainage chemistry is possible.

936035
Pollution of limestone aquifer due to urban waste disposal around Raipur, Madhya Pradesh, India
Bodhankar, N; Chatterjee, B
Proc 4th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, Panama City, Florida, 25-27 January 1993 *P73-77. Publ Rotterdam: A A Balkema, 1993*

Pollutants entered domestic dug wells and tube wells at Raipur City, India, during the rainy season in the area around an abandoned limestone quarry, now used as an urban waste disposal site. Factors facilitating the spread of pollution were investigated. Karstic features in the limestone bedrock act as continuous conduits allowing unchecked hydrological communication between surface waters and the aquifer. A number of sources of pollution were identified in addition to the old quarry.

936036
Groundwater investigation to determine contaminant movement in the karst aquifers of Lewisberg, Tennessee area
Crawford, N C; Ulmer, C S
Proc 4th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, Panama City, Florida, 25-27 January 1993 *P79-87. Publ Rotterdam: A A Balkema, 1993*

Dye tracing experiments were carried out to study groundwater flow routes following a major spill of organic liquids and discovery of unrelated organics in wells around Lewisberg. Confining layers between karstic aquifers were seen to have significant influence in determining groundwater flow routes. Solution-enlarged conduits form at the confining layer/aquifer interface. Potential for cross-contamination of aquifers via open hole completed wells was found to be high.

Properties of Rocks and Soils

Composition, structure texture and density

See also: 936243, 936259, 936295

936037
Procedure for partitioning bulk sediments into distinct grain-size fractions for geochemical analysis
Barbanti, A; Bothner, M H
Environ Geol *V21, N1/2, April 1993, P3-13*

A method to separate sediments into discrete size fractions with minimum destruction or formation of aggregates has been developed. It is based on gentle sieving and settlement of wet samples. It has been applied to a range of sediments to check its reproducibility. Effects of sonication and freeze drying pretreatments on size distributions are examined in parallel experiments and a significant increase in the silt/clay ratio is found.

936038
Application of multilayer digital image processing techniques to the description of soil thin sections
Terribile, F; FitzPatrick, E A
Geoderma *V55, N1/2, Oct 1992, P159-174*

Sixteen images of the same microscope field were digitised from photomicrographs obtained with different light polarisations combined with different colour filters. The ERDAS digital image system, normally applied to remote sensing, was