

Hermann A. G., Knipping B. 1993. Waste disposal and Evaporites. Contribution to Long-Term Safety. *Lecture Notes in Earth Science*, 45. Springer-Verlag, Berlin, Heidelberg, New York, etc.; 194 pp. (39 Figures and 21 Tables).

The content of this slightly provocative book is brought in three parts subdivided in 19 sections. A comprehensive and updated list of references is compiled on 17 pages (175-190) and is not only supporting the whole written text, but could make a good survey to the subject, also. Included are all available text books and monographs as well as papers dealing with the subject everywhere. Some historical sources are in the list and they, probably, could be referred for comparisons and reminders from the older times. Predominating part of them are in German, but other languages are also represented. The sources in slavic languages are given with the titles translated in English. So, the reviewed Lecture Notes could serve as a good reference book for the subject appearing interesting for the recent human society. From the same standing point the selective Subject Index in a separate section (21) at the end (191-193) should be considered, however it is rather short and probably not adequate. Geographical, lithostratigraphic and regional terms seem predominating in it.

A list of the whole Lecture Notes Series is also placed at the very end of the book.

Very informative and directing is the Preface to the book, where the creative philosophy of the authors is combined with the research statements, regional overviews on the subject and listed rich original materials.

Part I (1-52) is dealing with the natural geochemical cycles and the deposition of anthropogenic wastes, focusing therefore on the leading role of the geological media in the contemporary environmental controversy, existing and bothering the human beings.

The Nature should be taken as a mixture of past and present scenes, giving reasons for future developments on the planet Earth. A studying goal should be the safe isolation of the hazardous anthropogenic wastes from the biosphere being a natural environment of the Homo sapience.

The causal relationships are observed and the doing philosophy upon wastes is looking dually divided:

- (a) the avoidance, reduction and processing of wastes;
- (b) the disposal of wastes.

The major attention should be concentrated on all three points of group (a), instead of common stressing on (b).

The present waste situation including long-term impact of all wastes is considered in detail on rich data from Germany, mainly presented in tables and diagrams. The migration and geochemical cycles on the earth are considered in the light of the recent practice when the wastes can be disposed of in geological environments either at the earth surface (landfills) or in the underground (mines). However, concluding from the geochemical cycles, there are no alternatives at the earth's surface to the long-term safety of underground repositories in the deep lithosphere. The aim is to find or to build them. With this in mind all possible means (mines, caverns, deep drill holes, tunnels, caverns in salt domes) together with physical capabilities of all rocks are observed. Some case examples from Germany and the limitations are described. Concluded is that all constructive solutions are to be made under critical self-regulation of every individual step. The chances of the contemporary builders to evaluate proper isolation of underground repositories are miserable.

Part II (53-110) is geologically rather technical dealing with all possible fluids in marine evaporates considered by many as the best media for storage repositories. The scientific fundamentals are covering rocks themselves, including all properties, fracturing, cracking, texture and structures. Case formations are described, also. Broad information is covering the gas-bearing evaporites of Zechstein. The predominant data is concerned with the fluids of any type, origin and isotope composition. Special attention is paid to the rock- and fracture-bound gases.

Part III (111-174) contains deversive data about composition and distribution of salt domes, known worldwide and providing excellent facilities for studies and utilization as areas of good repositories. Although most geologically oriented, this part concentrates again on Zechstein sequences which are well studied. The part is well and comprehensively illustrated and data filled. Among evaporites, salt should be taken as the most promising field for the environmental solutions of the waste problems with respect to the disposal, which, as said above, is the last chance to reduce the direct impact of all kind of wastes anthropologically produced.

The book is interesting to handle, to read and to stimulate thinking and decision making in waste/environmental everyday arising problems. And to work for the measures mentioned in (a) above, instead of fighting with wastes, when they are produced and waiting to interfere. Sometime it is hopeless. The book could be recommended to involved professionals, studying students and all environmentalists. It could be of good help for the general reader audience, being aware of what is going on the planet in this technologically attractive time.

Vassil T. Vuchev
Geological Institute,
Bulgarian Academy of Sciences
1113 Sofia, Bulgaria