

10.1 **Toward an industry-oriented and unified geological nomenclature for oil shale**

Väino Puura, Alvar Soesoo, Mare Konsa, Margus Voolma

Tallinn University of Technology, Tallinn, Estonia

A new era of great interest to the oil shale (OS) industry is forthcoming. Modification of classical and development of new technologies of OS utilization is in progress. While searching for new possible deposits to develop, one meets the lack or incompatibility of existing data needed for the preliminary assessment of resource value. The basic nomenclature of the “big brother” of OS – coal - has been worked out on the basis of primary organic matter (OM), content of the mineral matter (MM) and degree of coalification. Impurities (sulphur, trace elements) are also important. Unlike the “simple” coal, much more variable content and composition of OM and MM and numerous impurities of OS require introduction of a number of additional universal and case-dependent criteria and parameters in the nomenclature, which are required both for geological and industrial purposes. Our experience comes from an attempt to compare compositions and qualities of OS using the available information generalized worldwide (including Estonia, Sweden, Russia, the Ukraine, Jordan, Syria, Egypt, Morocco, Uruguay etc) or across basins/deposits. The essential classification criteria regarding OS quality are: [a] depositional environment: marine (oxic/anoxic) or lacustrine (fresh/saline), [b] nature of organic matter (algae/plants, etc.), [c] main mineral components (MM) (carbonates/mixed carbonate-silicate/silicate-siliceous), [d] exceptional MM (evaporite salts/phosphates/ mineral-organic sulphur), [e] trace elements (toxic, radioactive, heavy and rare elements of commercial value), [f] degree of OM maturity, in context of areal lithification and metamorphism, [g] total content of organic matter. Important industrial properties depend on the above geological/genetic aspects, such as: [h] physical properties (porosity, density, moisture content), [j] total energetic potential, [k] oil yield (depending on b, f, g, h), [l] calorific value (depending on b, c, g, h), [m] specific influence on retorting and/or burning processes (b, c, d, e, f, g, h, j, k, l), [n] environmental risks (dependent on c, d, e, h). Selection of the basic universal and case-dependent criteria is a matter for future discussion. However, methodology/ techniques of geological survey and research of the quality and composition of OS should be unified internationally.