Regional Geochemistry – a basis for development and environment planning?

Abstrak (Abstract)

By the mid-1960s pollution had become a matter of serious international concern, and while predictions had made that there would be world shortage of metalliferous minerals, no comprehensive data existed on the background levels of metals in the

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environment or on the metalliferous mineral potential of large areas of the earth's crust. Since that time, many country have initiated programmes to prepare regional geochemical maps at the national scale, showing the surface distribution of chemical elements of economic and environment significance. Such maps can be used for a range of purposes, including:

1. Mineral exploration – to identify occurrences of metalliferous minerals of potential economic significance.
2. Mineral Resource Assessment and Land Use Planning to identify areas of potential mineralization, so that they are not sterilised by inappropriate development.
3. Pollution studies – to provide reliable information on the natural and artificial levels of elements, so that realistic assessment of contamination can be made.
4. Agriculture and medical geography – to provide data which can be used directly in statistical studies of the epidemiology and degenerative diseases of man, animals and crop.
5. Geological mapping – to provide information on lithological compositional and regional structures which may be difficult to detect by other means.
6. Studies of the geochemical aspect of crustal development and ore forming processes to develop metallogenic models and derive exploration criteria for exploration.

Examples of the value of such map to the exploration industry, which is trying to operate in a climate of increasing environmental concern, are discussed and the availability of appropriate data worldwide is considered. Methods of preparing geochemical maps are reviewed including the advantages and disadvantages of different sampling media (such as rocks, soils, stream sediments, overbank and water samples) and different sub-sampling and analytical strategies and methods of data processing and presentation.