GIS AS A TOOL FOR MINERAL RESOURCES ADMINISTRATION

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Techniques of Geographical Information Systems were usedan tested to support the decision-making process in MineralResources Administration, to guide the concession system and toindicate favorable areas for different mineral commodities, takingenvironmental constraints into account, in a project with financialsupport of the Foundation for Support of Research of the State ofSão Paulo and the National Department of Mineral Production.Map and attribute data of the information planes (Geology,Geochemistry, Geophysics, Topography, Land Use,Environmental Protection, Mineral Titles) of the Iporanga 1:50,000quadrangle were converted and georreferenced to make the GIS,which was analysed searching for favorable areas for lead andgold mineralization, using a knowledge-driven approach and asimple Boolean map combination method. Vein-type hydrothermalmodel for lead and exhalative and alluvial models for gold wereused for making exploration models. Geologically favorable areaswere further limited by eliminating areas subject to environmentalpreservation (by the Forest Code or by designation asconservation units) and areas already claimed for concessions,licenses or authorizations to mine. The methods and programs used (Idrisi and IntergraphMapping Office) proved efficient to locate favorable areas, ascompared with known mineral occurrences. The process was keptsimple enough to be used in routine mineral administration work,at lower costs and more efficient than the manual methods usedtoday.