

## Development of Geosphere Environmental Informatic Universal System GENIUS

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Studies of geosphere environments have been conducting to clarify regional variations and the anthropogenic or natural contamination by metals in soils. However, particularly in Japan, those results were held by individual research institute and nationwide database have not been systematized. In this study, an integration of geosphere environmental information and database architecture were carried out by using a geographical information system (GIS). GENIUS: Geosphere Environmental Informatic Universal System was developed. GENIUS includes geosphere environmental information such as geology, topography, soil, vegetation, satellite image, position of mineral deposit, alteration and heavy metal concentration in groundwater, in river-bed sediments and in soils. The topographic map, geologic map, position of mineral deposit and geochemical map in Japan published from the Geological Survey of Japan, AIST were overlaid on the GIS and evaluated Pb concentration distribution at each watershed. As the result, mineral deposits were the most probable main resource of Pb. We also evaluated the relationship between the Pb concentration and the geology at the backland of sampling points. After analyzing the exposed ratio of various types of rocks at each watershed and calculating the correlation coefficient between the ratio of rock exposure and the value of Pb concentration, we found that some sedimentary rocks exposed along rivers and a certain kind of metamorphic rock showed a little good correlation with Pb concentration. It is expected that the geosphere environmental information database can be used in a determination of anthropogenic pollution, determination of health risk, and reflection to national land use plan.