Land pollution of eastern part of Ulaanbaatar city
Batkhishig, O. and Nyamsambuu, N. (Mongolian Academy of Science)

Land pollution of Ulaanbaatar city becoming serious problem recent years, threatening living condition of peoples. Objective of our research is identifying soil pollution level and influence of them to the ground water quality, in case study of Central Water Resource (CWR) area of UB city. Study area located in south-east part of Ulaanbaatar, extends from Gachuurt to the Orgil covering more than 40-50 km² area. Human negative impact on this area remarkable increases since 2000, as a consequence of population growth of capital city and construction activity. Main pollutant source of CWR area is solid waste. Illegal take out gravels for the construction purpose and cut of trees, bushes accelerated soil erosion, pollution movement down to the ground water, becoming additional impact of land contamination. In the soil and water samples analyzed heavy metal content (Cd, Pb, Zn, Ni, Cu, Co, Cr, Hg) and microbiological pollution (total number of Bacteri, Colifrom, Perfringens). Also in soil samples analyzed general soil chemical-physical properties: texture, humus, exchangeable Calcium Magnesium, pH, available Phosphorus, Potassium, Calcium carbonate, Dissolved ions and bulk density. On the floodplains distributed Alluvial soils, but result of human impact soil degraded and soil properties changed. Topsoil or humus layer some places disappeared on the surface exposed alluvial gravel sediment. Plant species reduced, dominated basically Artemisia Adamsii, Carex duriuscula. Soil heavy metal level contents varied, some places accumulated high concentration of Lead (Pb 45.8-51.6 ppm), and Chrome (Cr 152-318 ppm). In the waste accumulation points nearby Well No. 36 occurred high concentration of Mercury up to 6.9 ppm. This is mostly occasional distribution. General content of heavy metal is below standard level. Heavy metals pollution in the 30 meter depths ground water is normal. Soil general microbiological pollution level is medium. The 23.3 % of soils polluted by strong, 48.8 % medium, 27.9 % of slightly polluted and clean soil not found. Comparatively high microbiological pollution caused by solid wastes. Microbiological pollution level of deep water well is normal, but in the some single wells marked value exceeding standard. It is, possible to say increasing tendency of soil pollution by depths. Only small precipitation (200-300 mm) not allowed to deep penetration of soil pollutants. Deep water well chemical content ranges below the standard level. But in the northern part or more close to "Ger horooool" area marked high level of Chloride, Nitrate, Calcium, Magnesium, Electrical Conductivity and other chemical values. This is seems to be influence of sludge from "Ger Horooool" area. Need comprehensive activities to prevent land pollution, including monitoring system, administrative measures and public awareness.

Key words: soil pollution, heavy metal, microbiological pollution, Ulaanbaatar city

Permafrost in Mongolia
Battogtokh, D., Jambaljav, Ya. (Mongolian Academy of Science)

This paper presents a summary of existing permafrost study as well as permafrost condition in Mongolia. Permafrost study in Mongolia officially began in the end of 1950 years. At the first time, our senior researchers concentrated on the regional characteristics of permafrost distribution and on the engineering geocryological problems. At present, we