Abstract

The sewage sludge's characterisation is necessary to reuse it in a safe way or to dispose of it in an environmental friendly manner. The present paper focuses on the seasonal characterisation of the municipal sewage sludge from wastewater treatment plant located in the town of Boumerdes, Algeria, and on the comparison of the obtained results with literature. This work describes the sewage sludge's physical, chemical, mineralogical and morphological features during the four seasons of year 2013 and identifies their seasonal changes. The analysis showed a small variation in the organic matter and heavy metals content. Approximately half sewage sludge's weight is organic matter which is composed of several functional groups that were identified by Fourier transform infrared spectroscopy. The atomic absorption spectrometer analysis revealed a low concentration of heavy metals, which is much lower than the Algerian's standard. The X-ray fluorescence analysis showed the presence of some oxides especially SiO_2, Al_2O_3, Fe_2O_3 and CaO. In order to deepen the understanding of sewage sludge's microstructure and crystalline phase respectively, it was analysed with an X-ray diffraction and a scanning electron microscopy. The analyses have revealed the presence of the same major crystalline phases in all four seasons' samples. The analysis have also confirmed the low density of the sewage sludge, its high porosity, its porous shape, its different particles' size and its irregular morphology.