Genesis and Classification of Oil Polluted Technosols in Southern Tehran

P. Asadi Alasvand* and A. Heidari

Abstract

Technosols are modified soils affected by human activities. This study investigated genesis, classification and physicochemical properties of four pedons of Technosols developed on refused oil refinery materials and compared them with two unpolluted pedons. Mineralogical studies showed smectite as a dominant clay mineral with other clay minerals. These clay minerals adsorb oil compounds in their interlayer spaces and reduce their mobility and decomposition. Different micromorphological features resulting from oil compounds in soils, including depletion zones, types of coatings (quasi and hypocoating) and features due to horizontal and vertical movement of oil compound in soil showed dynamics of oil compounds and their effects on soil forming process. The refused petroleum compounds decrease pH and increase organic carbon, amorphous form of Iron in soils. Taking into account the presence of high amounts of gypsum and carbonate in polluted soil, the studied soils were classified as Typic Calcigypsids in Soil Taxonomy but in WRB system, due to the presence of impermeable geomembrane within 100 cm of soil surface, they were classified as Linic Technosols, showing the more precision of WRB system in their classification.

1. Dept. of Soil Sci., Faculty of Agric. Eng. and Technol. Univ of Tehran, Tehran, Iran.
*: Corresponding Author, Email: Pariasadi399@yahoo.com