



## **Influence of municipal solid wastes compost maturity on the content of total and water soluble forms of some microelements and their uptaking by lettuce**

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The object of investigation were composted municipal solid wastes (MSW) from a big agglomeration of the Upper Silesia in the south part of Poland. The compost was produced according Dano technology. Initial material, leaving technology line as well as material after 1 month, 3 months and 9 months of the composting process were analyzed and used in the pot experiment. During composting process changes of total and soluble (w) forms of Cu ( $Cu_w$ ), Zn ( $Zn_w$ ), Pb ( $Pb_w$ ), Mn ( $Mn_w$ ), Fe ( $Fe_w$ ), Cr ( $Cr_w$ ), Ni ( $Ni_w$ ) i Cd ( $Cd_w$ ), were determined. Compost in various degree of maturity was used in a pot experiment, as a component of media in doses 100 and 400 Mg x ha<sup>-1</sup>. Composts used in the experiment were mixed with light loamy soil. A peat media using in horticulture and light loamy soil without fertilization were the control objects. Lettuce var. Crispino was the tested plant in which content of the microelements was analyzed. The experiment was founded in four replications and each object consisted of two pots and eight plants. Lettuce was harvested after 1 month of planted, in the phase of head forming. The analyzed composts were characterized by high content of total forms of Zn, Pb, Fe and Cu. Content of these elements were significantly increasing during the process of composting. Content of most analyzed soluble forms of microelements were changing with the degree of compost maturity. The highest amount of water soluble forms was detected in the initial material, in the beginning of the composting process. During the process it has been found decreasing of solubility of the analyzed microelements ( $Cu_w$ ,  $Zn_w$ ,  $Pb_w$ ,  $Cd_w$ ,  $Cr_w$ ,  $Ni_w$ ,  $Mn_w$ ,  $Fe_w$ ). The most soluble form was Fe, which solubility during the composting process was closed

to the amount in the initial material. Contents of other microelements, especially  $Zn_w$ ,  $Mn_w$ ,  $Pb_w$ ,  $Cr_w$  and  $Ni_w$  were much more lower in the end of the composting process in relation to the fresh material.