

研究报告

# 渗滤液溶解性有机物对土壤Cd、Pb有效性的影响

付美云<sup>1, 2</sup>, 周立祥<sup>1</sup>

<sup>1</sup>南京农业大学资源与环境学院环境工程系, 南京 210095; <sup>2</sup>湖南环境生物职业技术学院, 衡阳 421005

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**摘要** 在Cd、Pb污染土壤中, 通过生物盆栽试验, 研究了2种不同填埋年龄的垃圾渗滤液溶解性有机物(DOM)对黑麦草生长的影响及其对重金属Cd、Pb吸收的影响. 鲜样、水阁样分别为填埋年龄0和12年的垃圾渗滤液. 结果表明, 垃圾渗滤液DOM施入土壤, 残留在土壤中的DOM平均浓度为对照的1.39倍(鲜样)和1.47倍(水阁样). 2种垃圾渗滤液DOM处理的土壤水溶态Cd、Pb和交换态Cd、Pb均在前期呈波动变化, 到后期则上升. 在Cd污染土壤中, 鲜样和水

阁样垃圾渗滤液DOM处理土壤水溶态Cd、交换态Cd分别高出对照37.44%、4.81%、48.97%、14.94%; 在Pb污染土壤中, 鲜样和水阁样垃圾渗滤液DOM处理土壤水溶态Pb、交换态Pb分别高出对照8.56%、7.22%、18.99%、11.47%. 鲜样和水阁样垃圾渗滤液DOM处理黑麦草总Cd浓度分别高于对照19.59%和104.4%, 总Pb浓度分别高36.03%和44.66%; 但两处理的黑麦草总生物量下降14.03%~52.24%. 因此, 垃圾渗滤液DOM进入污染土壤后, 有利于土壤重金属生物有效性的提高和植物体内重金属的累积, 却抑制植物的生长, 尤以填埋年龄长的垃圾渗滤液DOM影响更大.

**关键词** [垃圾渗滤液](#) [DOM](#) [污染土壤](#) [重金属](#) [生物有效性](#)

分类号

## Effects of dissolved organic matter in landfill leachate on soil Cd-and Pb bioavailability

FU Meiyun<sup>1,2</sup>, ZHOU Lixiang<sup>1</sup>

<sup>1</sup>College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing 210095, China ; <sup>2</sup>Hunan Environment Biological Polytechnic, Hengyang 421005, China

### Abstract

A pot experiment was conducted to study the effects of dissolved organic matter (DOM) in landfill leachate on ryegrass growth and its uptake of soil Cd and Pb. Fresh sample and Shuige leachate were collected from the municipal waste landfills established 0 and 12 years, respectively. The results showed that after the landfill leachate added, the average concentration of DOM remained in soil was 1.39 (fresh sample) and 1.47 (Shuige) times higher than the control (CK). The bioavailability of Cd and Pb in the soils treated with the two leachates was fluctuated in early period, and then raised. Compared with CK, the bioavailability of soil Cd was increased by 4.81% (fresh sample) and 48.97% (Shuige), and that of soil Pb was enhanced by 7.22% (fresh sample) and 18.99% (Shuige). The total concentrations of plant Cd and Pb in the treatments of fresh sample and Shuige were 19.59% and 104.4%, and 36.03% and 44.66% higher than CK, respectively, while the total biomass of ryegrass was decreased by 14.03%~52.24%, in compared with CK. It could be inferred that the dissolved organic matter (DOM) in landfill leachate, especially in that from the landfills established for a longer time, could enhance the bioavailability of soil heavy metals and their accumulation in plant, and thus, suppress the growth of plants.

**Key words** [Landfill leachate](#) [Dissolved organic matter \(DOM\)](#) [Polluted soil](#) [Heavy metal](#) [Bioavailability](#)

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