

1 探討農用地膜對農作物中鄰苯二甲酸酯類之影響與對人體之健康風險

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5 一、前言

6 二、土壤與農作物中鄰苯二甲酸酯類之污染特徵與健康風險評估

7 三、地膜覆蓋對土壤與農作物中鄰苯二甲酸酯類之污染特徵與風險評估

8 四、地膜覆蓋與殘膜對土壤與農作物中鄰苯二甲酸酯類之污染特徵與風險評估

9 五、結論

10 摘要

11 農用塑膠地膜為覆蓋於種植農作物土壤表面之塑膠膜，可減少土壤水分蒸發並緩解
12 旱地中供水不足之情形進而促進農作物生長，目前已廣泛使用於乾旱與半乾旱地區。塑
13 膠地膜中含有鄰苯二甲酸酯類(Phthalate Esters, PAE)，由於 PAE 不會與聚合物產品產生
14 化學鍵結，因此很容易從產品中遷移出來，並釋放到土壤與農作物中。隨著地膜廣泛應
15 用於農業生產，加上其降解速度慢且回收不完全，故可能導致土壤中含有大量殘膜。因
16 此本篇研究目的為探討使用農用塑膠地膜與殘存之地膜對土壤中 PAE 之影響，並透過
17 危害指數(Hazard Index, HI)或非致癌風險(Non-Carcinogenic Risk, NCR)與致癌風險
18 (Carcinogenic Risk, CR)，評估民眾透過攝食受 PAE 污染農作物後之健康風險。結果顯
19 示，在有地膜覆蓋下，會增加土壤與農作物中 PAE 之濃度，但有無殘膜存在與殘膜量
20 多寡並無顯著影響 PAE 之污染；在人體風險評估方面有地膜覆蓋與殘膜之存在皆會增
21 加致癌與非致癌風險。其中在第一篇文獻中以所檢測到蔬菜樣品中鄰苯二甲酸 2-乙基
22 己基酯(Di (2-Ethylhexyl) Phthalate, DEHP)濃度最大值所求得之 HI 大於 1 與 CR 大於 10⁻⁴
23 ⁴，故需加以關注 DEHP 所帶來之風險；而第二篇文獻中農村民眾風險高於城市民眾，
24 可說明農業是 PAE 重要之來源，因此不可忽略農業所帶來之風險；第三篇文獻中雖 HI
25 與 CR 皆落在可接受範圍內，但由於玉米粒、莖、及葉常用於飼養家畜，因此仍須針對
26 PAE 透過該途徑對動物與人類長期累積下造成之風險做後續追蹤與監測。

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