模糊風險評估及其在重大環境考量面之鑑別

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摘 要

環境風險評估即為環境評估的風險化，可視為環境評估工作的核心，這些評估工作可以包含環境影響評估(Environmental Impact Assessment)、環境考量面鑑別(Identification of Environmental Aspects)、生命週期評估(Life Cycle Assessment)等。本研究根據英國環境食品農業事務部定義之環境風險評估的五個步驟(危害鑑定、後果鑑定、後果規模的估算、後果發生機率估計與風險顯著性評估)，進而提出一個具有七個步驟的模糊風險評估系統：(1)問題描述：包含鑑別危害來源、受體與危害對於受體造成之效應與損害，在此可以援引生命週期衝擊評估之概念來協助釐清危害來源、受體與效應之因果關係；(2)危害嚴重性評估：評估者根據主觀經驗來進行評估，因此以模糊邏輯(Fuzzy Logic)來模擬之；(3)評估危害之發生機率：發生之機率值如果無法取得詳實的統計資料時，以模糊機率(Fuzzy Probability)處理之；(4)評估受體曝露於危害效應之機率：同時考慮危害造成效應與受體受到效應的機率，該機率值如果無法取得詳實的統計資料時，以模糊機率處理之；(5)評估受體因為曝露危害造成損害發生之機率：發生之機率值如果無法取得詳實的統計資料時，以模糊機率處理之；(6)評估損害之風險：利用模糊之四則運算之頂點法(Vertex Method)將上述之各項評估直整合計算成一風險值；(7)評估風險之顯著性：風險之顯著性以多準則多關聯綜合評估法(Multi-criteria and Multi-connection Comprehensive Assessment, MCCA)來輔助決策。最後，以一塑膠工廠之衝擊評估與一土石方處理工廠之環境考量面鑑別為案例，來說明本模糊風險評估的可行性。

關鍵詞 : 模糊風險評估、生命週期評估、模糊邏輯、多準則多關聯綜合評估法

目錄

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