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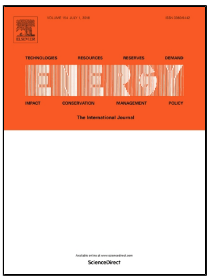

Developing the ecological compensation criterion of industrial solid waste based on emergy for sustainable development

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Developing the ecological compensation criterion of industrial solid waste based on emergy for sustainable development

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Abstract: How to quantitatively measure the eco-environment loss caused by industrial solid waste (ISW), and to determine the ecological compensation criterion reasonably, become a difficulty for the government. This study uses emergy theory to calculate emergy loss of ISW with different treatments for quantitatively measuring the eco-environment loss. Then the ecological compensation criterion of ISW is established to compensate for the loss based on sustainability, the pollution tax of ISW is studied to balance the pollution-control effectiveness and the eco-environment loss, and the government fines for the discarded ISW is described. An example is applied to validate the data of phosphogypsum emission in a city. The results show that the ecological compensation criterion is 37.4 CNY/ton, and its pollution tax should be 44.9 CNY/ton, and the government fines should be no less than 350.5 CNY/ton for the discard phosphogypsum. This shows that the phosphogypsum pollution tax (30 CNY/ton, National standard) is not satisfied with the pollution of the city's ecologic environment losses. This study gives an effective reference standard for the government decision makers in pollution tax of the industrial waste.

Keywords: Sustainability development; Emergy; Industrial solid waste; Ecological compensation criterion

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