

Abstract

This research investigated the spent fluorescent management in both policy planning and technique. This work has been carried using Thammasat University as a model. The university has signed waste management collaboration with Pollution Prevention Department to revoke and recycle in a standard process. Approximately 86% of spent fluorescents could be taken care. For the technical issue, mercury vapor (one of the hazardous material in spent fluorescents) was studied over sodium sulfide treatment by the ratio of 1:1 and 2:1. Initial concentration of mercury was set at 10mg/l. It was found that sodium sulfide solution with ratio of 2:1 performed the best mercury removal more than 98%. This result was used to evaluate the environmental impacts on both recycle and non-recycle fluorescent disposal processes using LCA tool. Sima Pro 7.1 with the Eco-indicator 99 method was used. The spent fluorescents management with solidification and glass recycle system could reduce environmental impact of ecosystem from 9×10^{-3} PAF/m²/year to 1.8×10^{-8} PAF/m²/year.

Keywords: Spent-fluorescent, mercury, LCA