

The Development and Application of Environmental Indicators in Industry-Paper Mills

陳、魏連邦

E-mail: 9607386@mail.dyu.edu.tw

ABSTRACT

Environmental management in industry has already been developed into a stage of highly integration. The environmental performance of enterprises needs to be concerned with both ecology and economy. Accordingly the eco-efficiency related environmental indicators are developed to conducive to achieve the goal of sustainable development. The eco-efficiency indicators take environmental protection and production efficiency into account, and therefore provide with important information for decision making in industry. The process of developing environmental indicators involves: (1) development and harmonization of a framework to organize the information; (2) definition of selection criteria, indicator sets, and analytical methods or tools; (3) data search and development of databases; (4) establishment of participatory and consultative network. In this study, case analysis and domestic application of environmental indicators are involved. The year 2000 data of environmental management accounting for Mackenzie, Canada and SCA Graphic Laakirchen(Austria) paper mills were adopted to develop the eco-efficiency indicators, including total paper production(metric tons)/major materials used(metric tons), total paper production(metric tons)/water consumption(m³), total paper production(metric tons)/wastewater treated(m³), total paper production(metric tons)/end of pipe treatment cost(US dollars), and total paper production(metric tons)/total waste cost (US dollars). For Mackenzie, the figures are 0.94, 0.032, 0.038, 0.058, and 0.040 in sequence and for SCA Graphic Laakirchen 1.30, 0.048, 0.057, 0.057, and 0.010. The difference between these two paper mills is owing to the material inputs and processes they involved. Mackenzie uses wood chip processing and SCA Graphic Laakirchen is related to recovered paper. Based on the results of the domestic questionnaire survey and field visits for paper industry, the development of eco-efficiency indicators by means of environmental management accounting is widely accepted. If the Enterprise Resource Planning (ERP) system is installed to collect the relevant information, it will be beneficial to promote the application of eco-efficiency indicators.

Keywords : environmental indicators in industry ; eco-efficiency ; eco-efficiency indicators ; environmental management accounting ; paper mills

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