

Abstract

Thailand exports the highest amount of concentrated natural rubber latex in the world. Since the latex has been used in a wide range of applications, the goal of reaching its sustainable and friendly production is necessary and this may be accomplished by a good management. In this work, Life Cycle Assessment (LCA) is adopted as a tool to evaluate and quantify the environmental impacts in the production of concentrated natural rubber latex. The scope of the study is considered as a “gate to gate approach” where the assessment ranges from buying field rubber latex from the farmers, the production, the storage, wastewater treatment and the production of skim block which is a by-product from skim latex. The impact assessment was performed with Sigma Pro 7.1 using the method of Eco-indicator 99. The findings show that the production of concentrated rubber latex has the environmental impact of 60% mainly from centrifugation of the field latex to yield concentrated rubber latex. This process used a high input of electricity which of course reflects fossil fuel utilization. In addition, the impact to human health of 26% is due to ammonia used to stabilize the concentrated rubber latex, sulfuric acid used to coagulate the skim rubber and the consumption of the oven's diesel oil to produce the skim block. A suggestion was made for biogas production from wastewater in order to replace electricity and diesel used for skim block production. It turned out that biogas option could reduce the impact in a small scale. Other management options should be pursued including production planning, regulating and implementing cleaner technology seriously, equipment modification to cut down the electricity usage, as well as the appropriate promotions from governmental sector for both technology and funding. Albeit several government organizations are there to deal with Thailand rubber industries, the government should set up a hub which helps facilitate the corporation among organizations as a holistic solution to the environmental problems.