EMISSION INVENTORY ANALYSIS ON RIBBED SMOKE RUBBER SHEET (RSS) IN THAILAND AS A PRE-PRODUCT OF TIRE IMPORTED TO JAPAN

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ABSTRACT

The emission inventory analysis was conducted on the production and transportation of ribbed smoke natural rubber sheet (RSS) in Thailand following the life cycle inventory analysis (LCI), where the system boundary was defined from transportation of latex after tapping to transportation of RSS to an exporting port to Japan. Pollutant inventory was discussed on CO₂, NOₓ, SOₓ, particulate matter (PM) and particle-bound poly-cyclic aromatic hydrocarbons (PAHs) using available databases and governmental reports as well as reported papers. The emission inventory on the rubber sheet drying process, with few data available, was obtained by the authors through the measurement at a RSS manufacturing factory, so called “Cooperative”, in Songkla province in Thailand. Material flow of RSS over related rubber industries, RSS production amount, transported amounts and travel distance were investigated in Thailand. Emission inventory data evaluated for the tire production in Japan were compared with those for RSS production and transportation in Thailand.

The tire production in Japan was found to share more than 80 % of CO₂ and 90 % of SOx of total emission from latex tapping to tire production while around 60% of particulates and more than 90% of particle-bound PAHs were emitted from the rubber sheet drying process, or, wood burning without any pollution control devices. These results indicate the environmental load in due to hazardous air pollutants such as PAHs and fine smoke particles is critical in Thailand and have to be reduced in view of the sustainability of tire production.

Keywords: Personal exposure, Ultrafine particles, Inertial filter, Mass concentration, PAHs
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