

2nd Global Summit on

RECYCLING AND WASTE MANAGEMENT

July 22-23, 2019 | Tokyo, Japan

Lead (Pb) recycling from old batteries in Dong Mai village in Vietnam and its effect on local human health

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The present study investigated the status of lead (Pb) recycling from old batteries in the Dong Mai Village, Chi Dao Commune, Van Lam District, Hung Yen Province, Northern Vietnam. This traditional village has been recycling Pb since the 1970s. A total of 200 questionnaires collected from local people about the situation of recycling Pb from old batteries showed that the average amount of old battery collected is 30-50 tons/month, the largest is 300 tons/month. The average amount of Pb produced per evening is 9 tons; the average amount of Pb produced per household is 10-20 tons/month. It also showed that 100% of workers working at Pb recycling factories got Pb poisoning. More than 80% of workers said that their family members had diseases related to respiration and digestion. In addition, we found some serious cases, for example, a worker that has

been working for 20 years at the Pb recycling was detected heavily poisoned, and he had two children that also had a high Pb level in their blood. In the case of other workers, they got trouble with the nervous system and brain disease. Analysis of 32 soil samples collected at seven sites in Pb recycling area in Dong Mai village indicated the contents of Al, Fe, As, Cr, Cu, Zn, Cd, and Pb were 6200–32,600, 11,300–55,500, 5.4–26.8, 24.9–290, 66.0–252, 143–455, 0.71–1.67, and 370–47,400 mg/kg, respectively. The values of As, Cr, Cu, Zn, Cd, and Pb in soil samples exceeded the allowable limits at three, one, five, six, one, and seven of the seven sites tested, respectively. Contents of Pb and Cd in 5 of 6 samples of the irrigation ditch and wastewater exceeded the allowable limits from 9 - 50 times and from 2 – 15 times, respectively.

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