

## ABSTRACT

The rapid increase in solid waste causes the problem of storage, transportation, disposal and environmental impact. Removal of solid wastes by burning is a popular way in municipal subdistricts because it is convenient and highly effective in the solid waste minimization. This research studied how to reduce air pollution from the solid waste incineration. This study used tools for trapping dust, smoke and air pollutant. This research studied on four different systems of incineration. The first system was the solid waste incineration that did not turn on the air pollution control system. The second system was the air pollution control with the smoke burning alone. The third system was the air pollution control with the wet scrubber alone. The air pollutants were treated with water. The fourth system was the air pollution control with the smoke burning and the wet scrubber. The weight of solid waste used in this study was 1, 2, 3, 4 and 5 kg in every system. The objectives of this research were the evaluation of relationship between the internal temperatures in incinerator to time at various waste quantities and the performance evaluation of the air pollution control systems. The results of this study found that the solid waste incineration in the first system which this system was used in the comparison, had a lot of smoke and soot and black smoke. The efficiency of the solid waste incineration of this system was  $90.44\% \pm 4.58\%$ . The air pollution control with the smoke burning alone found that the smoke and soot from the solid waste incineration were decreased than in the first system. This second system had the efficiency of the solid waste incineration was  $90.04\% \pm 4.84\%$  and the efficiency of the air pollution control system was  $12.90\% \pm 5.69\%$ . The results of this study also showed the air pollution control system with the wet scrubber alone. They found that the smoke and soot from the solid waste incineration were decreased more than in the first and second system because the water was sprayed to eliminate air pollutants. The internal temperatures in incinerator were higher than the first and second system. This third system had the efficiency of the solid waste incineration was  $89.53\% \pm 4.91\%$  and the efficiency of the air pollution control system was  $40.75\% \pm 3.97\%$ . The last system was the air pollution control with the smoke burning and the wet scrubber. The results of this study showed that this system could control air pollution more than all the systems that were tested. This fourth system had the highest efficiency of the solid waste incineration and the air pollution control system were  $92.50\% \pm 3.57\%$  and  $52.31\% \pm 7.02\%$ , respectively.