Komsak Rattanapirom 2008: Application of ISC-AERMOD Program for Evaluation of Air Pollutant Dispersion in Siriraj Hospital. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Narumol Vongthanasunthorn, D.Eng. 115 pages.

This research was to determine the direction of sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and carbon monoxide (CO) dispersion and their concentrations from the boiler stack at Siriraj Hospital by using ISC-AERMOD program. The SO_2, NO_2 and CO concentrations in the atmosphere and from the mobile sources surrounding Siriraj Hospital were also determined and used as the background concentrations for evaluating the values of their maximum concentrations in order to compare with the ambient air quality standard in Thailand. The prediction results from the stack revealed that the annual dispersion of SO_2, NO_2 and CO was directed from western to eastern of the hospital area. Also, the maximum average concentration of SO_2 for 1hr, 24hr and yearly, NO_2 for 1 hr, CO for 1hr and 8 hr were 110.401 $\mu g/m^3$, 20.085 $\mu g/m^3$, 8.297 $\mu g/m^3$, 7.233 $\mu g/m^3$, 0.205 $\mu g/m^3$, and 0.034 $\mu g/m^3$, respectively. The results showed that the maximum background average concentration of SO_2 for 1hr, 24hr and yearly, NO_2 for 1 hr, CO for 1hr and 8 hr were 28.913 $\mu g/m^3$, 28.853 $\mu g/m^3$, 28.825 $\mu g/m^3$, 111.975 $\mu g/m^3$, 2,513.508 $\mu g/m^3$; 2,442.821 $\mu g/m^3$, respectively.

As included the background and predicted maximum average concentrations for SO_2 for 1hr, 24hr and yearly, NO_2 for 1 hr, CO for 1hr and 8 hr, it was found that their maximum concentrations were 138.898 $\mu g/m^3$, 48.895 $\mu g/m^3$, 37.096 $\mu g/m^3$, 118.997 $\mu g/m^3$, 2,513.713 $\mu g/m^3$; 2,442.855 $\mu g/m^3$, respectively. As compared to the ambient air quality standards in Thailand, these concentrations are acceptable and have a slight effect on human health.

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