CHAPTER 6

CONCLUSION

Air quality map by using lichens as indicator in Chiang Mai City involved 51 lichen species; 38 species belonging to crustose group and 13 species belonging to foliose group. The lichen species that mostly found in urban area were *Phyllopeltula* cf. *corticola*, *Hyperphyscia adglutinata*, *Pyxine cocoes* and *Rinodina* spp., whereas *Lecanora* spp. and *D. picta* were mostly found.in suburban area

The air quality mapping was refered to the VDI method (1995). Air quality value was varied from 4.33 to 40.83. The air quality results in Chiang Mai province was provided into five air quality classes**.** Air quality class 1 presented very high air pollution with AQI varied from 4.33 to 9.1. This class accounted for 16.4% of total study area. Air quality class 2 showed very high- high pollution with AQI varied from 9.17 to 18.17. The range of values accounted for 50.7%. Air quality class 3 showed high- moderate pollution with AQI varied from 18.33 to 24.17. This class accounted for 24.7%. Air quality class 4 illustrated a moderate pollution with AQI varied from 28.17 to 34.33. This class accounted for 6.9% of total study areas. Air quality class 5 showed moderate- low pollution with AQI was 40.83. This class accounts for 1.4%. Air quality map of isoline presented different zones of air quality in Chiang Mai City, as followed: very high zone found in the center of the city and high traffic area, very high to high found mostly in study sited and expanded to suburban more than Subsri

(2001) study, high to moderate pollution found expanding to suburban area as well, lastly, moderate and moderate to low pollution found less in this study.

Five lichen species were selected to produce lichens distribution map. Each lichen species had different tolerant levels. *Phyllopeltula* cf. *corticola* was found with high frequency in the city center where high traffic and anthropogenic impacts occurred. *Hyperphyscia. adglutinata* distributed in many grid squares especially occured in densely residential areas, higher frequency in the main road areas. This lichen was found in lower frequency in suburban areas with less densely community or traffic occurred. *Pyxine cocoes* was widely distributed but in lower frequency than *H. adglutinata*. *Lecanora* spp. was found less than *P*. cf. *corticola, H. adglutinata* and *P. coces* in urban area but it was widely distributed in suburban. *Dirinaria picta* was found only in suburban and it had the narrowest distribution range than other selected lichens. The result from these lichen distribution maps, it showed that *H. adglutinata, P.* cf. *corticola* and *P. cocoes* were cosmopolitan species which could tolerance to air pollution in wide range while *L.* spp. and *D. picta* were species with less tolerance to pollution. Especially, the distribution of *D. picta* showed that it could be serve as the most sensitive species to air pollution and anthropogenic impacts among these four lichen species.

NO_2 was collected in 19 sites during January- April 2012. The highest concentration of NO_2 was found in February while the lowest concentration found in April. The highest concentration of NO_2 in each month was found in 36A during January- March 2012(6.11, 13.09 and 9.41 ppbv), while 36B was a site with the highest value in April (4.08 ppbv). The lowest of concentration of NO_2 found in 3B in

January and March 2012 (0.21 and 1.67 ppbv) while in February and April 2012 was found in 24B (1.70 and 0.24 ppbv). The level of NO_2 in this study was lower than NO_2 standard level of PCD (PCD, 2012). Level of NO_2 was inversed with AQI value. The area with high NO_2 level had low AQI value. Area with low NO_2 level had high AQI value. The correlation test showed significant correlation between the concentration of NO_2 and AQI. AQI value was significant inverse correlation with the concentration of NO_2.