

PA20) 지역 구분에 의한 울산지역의 대기질 변화분석

Air Quality Analysis in the Areas with Different Characteristics

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1. INTRODUCTION

During the last 30 years of 20th century, the population and urbanization of Korea have increased rapidly. Rapid industrialization has caused a lot of environmental problems. The increase of energy consumption exhausts many pollutants into the air. The increase of air pollution level is harmful for human health and makes the human life uncomfortable. For those reason, Korean government has enforced many environmental protection policies, however they cannot manage all the environmental problems.

Ulsan is an industrial city which has been known about its rapid industrialization resulting in serious air pollution. Currently, the government of Ulsan metropolitan city has operated 14 air monitoring systems. To get the average air quality of Ulsan, they have just added all monitoring data from these air monitoring systems and made only the average air quality. This average air quality might not be representative for the air quality in the various areas which have different emission characteristics. Thus it is necessary to evaluate the useful average air quality for given areas based on their activities or emission characteristics.

2. METHODS

This study obtained the average air quality in the categorized areas based on their activities or emission characteristics.

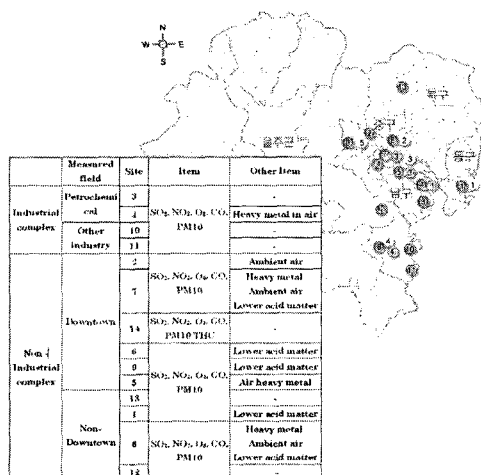


Fig. 1. Map showing the TMS areas classification in Ulsan.

The data obtained from the air monitoring network systems for 2 years (2003 and 2004) have been used for analysis of the air quality change in the categorized areas.

3. RESULTS AND DISCUSSION

Table 1. Annual average concentrations of air pollutants in the areas with different characteristics

| | SO ₂ (2003) | SO ₂ (2004) | NO ₂ (2003) | NO ₂ (2004) | O ₃ (2003) | O ₃ (2004) | PM ₁₀ (2003) | PM ₁₀ (2004) | CO (2003) | CO (2004) |
|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|--------------------------|----------------------------|----------------------------|--------------|--------------|
| Industrial Complex | 0.017 | 0.018 | 0.017 | 0.025 | 0.022 | 0.022 | 33.678 | 51.198 | 0.790 | 0.723 |
| Non-industrial Complex | 0.007 | 0.007 | 0.018 | 0.021 | 0.020 | 0.022 | 42.071 | 49.491 | 0.667 | 0.446 |
| Downtown | 0.008 | 0.007 | 0.019 | 0.021 | 0.017 | 0.021 | 44.636 | 51.096 | 0.865 | 0.524 |
| Non-downtown | 0.006 | 0.006 | 0.016 | 0.02 | 0.023 | 0.023 | 39.506 | 46.816 | 0.469 | 0.316 |
| Whole City | 0.01 | 0.013 | 0.017 | 0.023 | 0.02 | 0.022 | 40.261 | 50.344 | 0.74 | 0.584 |

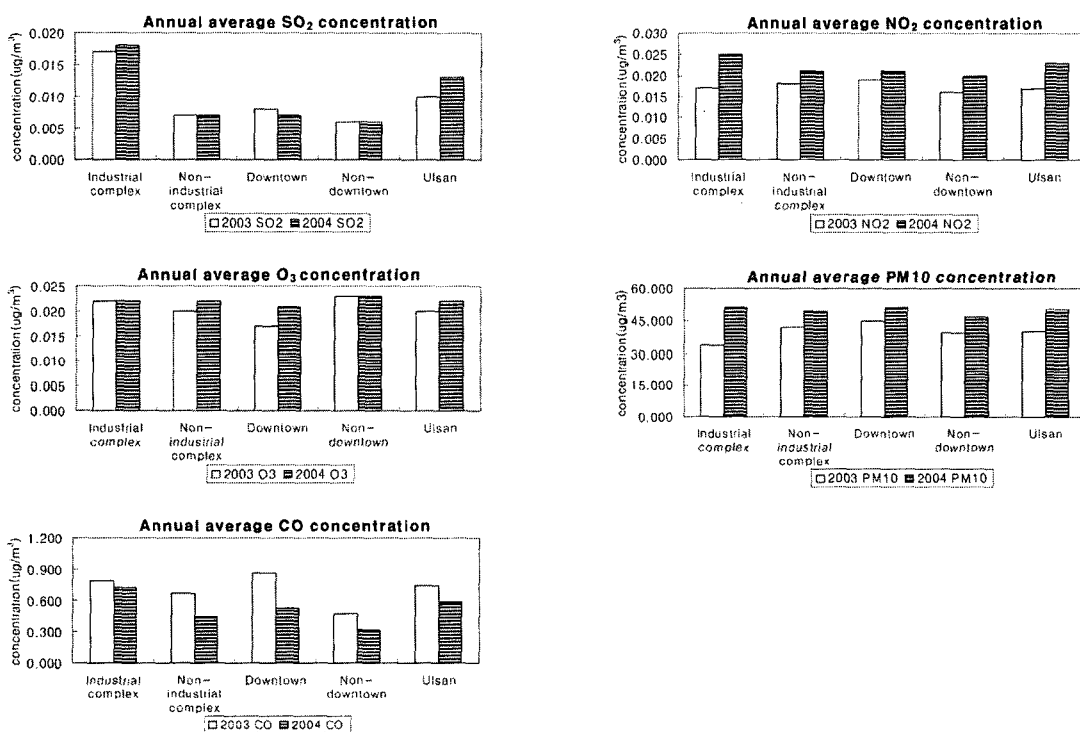


Fig. 2. Annual average concentrations of air pollutants.

Table 1 shows the annual average concentrations of air pollutants in the categorized areas of Ulsan in 2003 and 2004. Concentrations of air pollutants such as SO₂, NO₂, CO generated from the industrial complex areas were higher than those from the non-industrial complex areas. Concentrations of SO₂, NO₂, PM₁₀ in the downtown areas were higher than those in the non-downtown areas due to the heavy traffic in the downtown areas. The average concentrations of O₃ in all of areas were similar. However, the O₃ concentrations in the non-downtown areas were higher than those in the downtown areas.

Even though the annual average concentration of SO₂ in the all areas of Ulsan was quite low, the

annual concentrations of SO₂ in the industrial complex areas approached the annual ambient standard level in Ulsan. Evaluated the air quality based on the area activities and emission characteristics, the air pollution level in different areas might be determined more accurately.

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