

Concentration Distribution of Heavy Metals from Road Dust Sediment on Highway

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Introduction

- As the severity of air pollution caused by fine dust increases, national “fine dust management measures” are established, and interest in air environment improvement continues to increase.
- In the case of roads, automobiles pass through, and various air pollutants are generated by the combustion of automobile fuel, so it is an important place for monitoring and managing air pollution.
- Recently, interest in not only the generation of air pollutants due to fuel combustion but also the generation of pollutants due to wear of pavement surfaces and tires has been increasing.
- This study, the distribution of heavy metal components was analyzed by analyzing the sediments generated on the highway.

Scope & Results

Scope of research

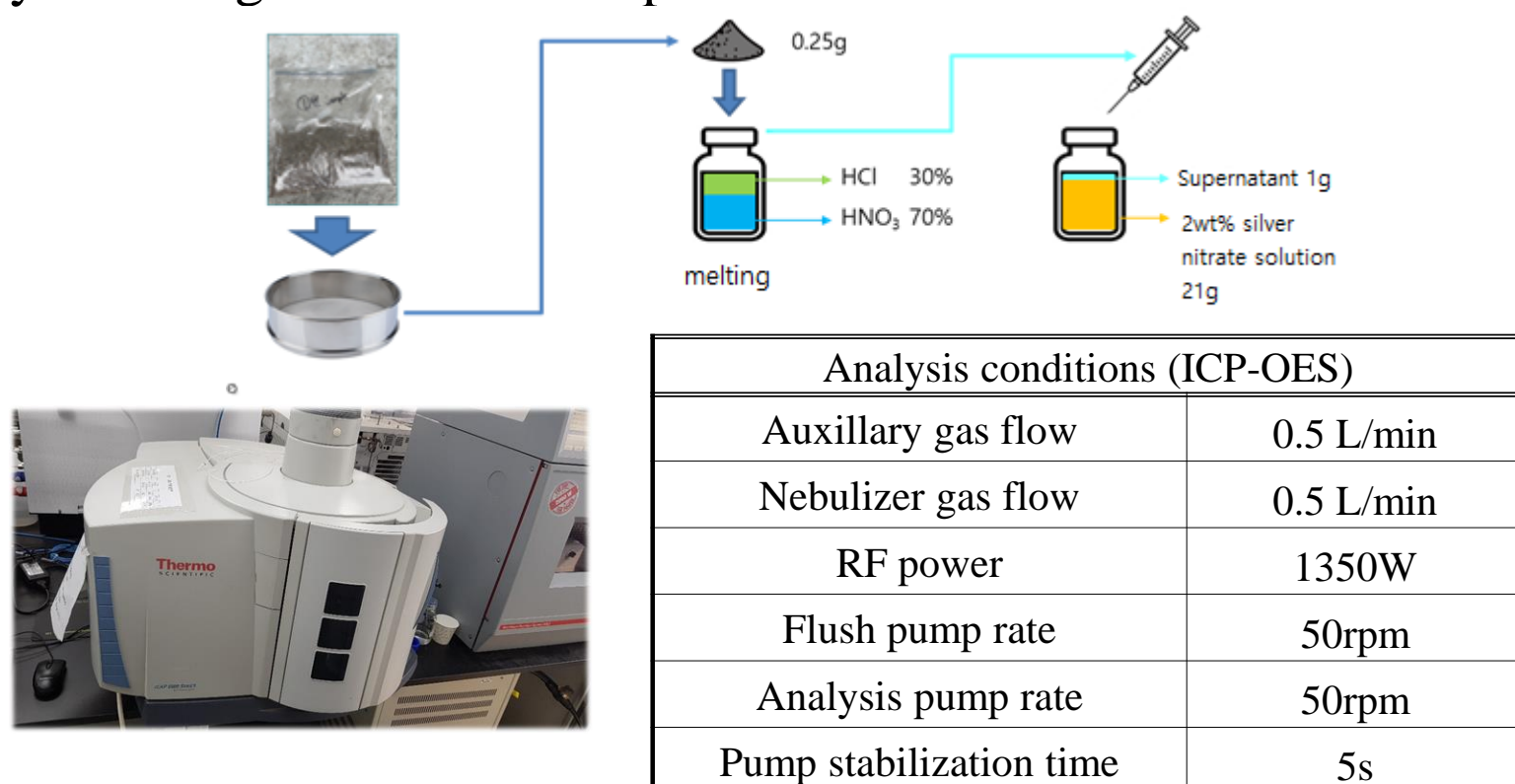
<< Sampling >>

- Sampling sites : among the preliminary survey targeting 30 areas with a large amount of air pollutants (re-scattering dust), three locations with similar traffic volume and similar air pollutant generation conditions were selected.
- Sediments generated in an area of 1m x 3m in each location were collected from the roadside and used as a sample for analysis.



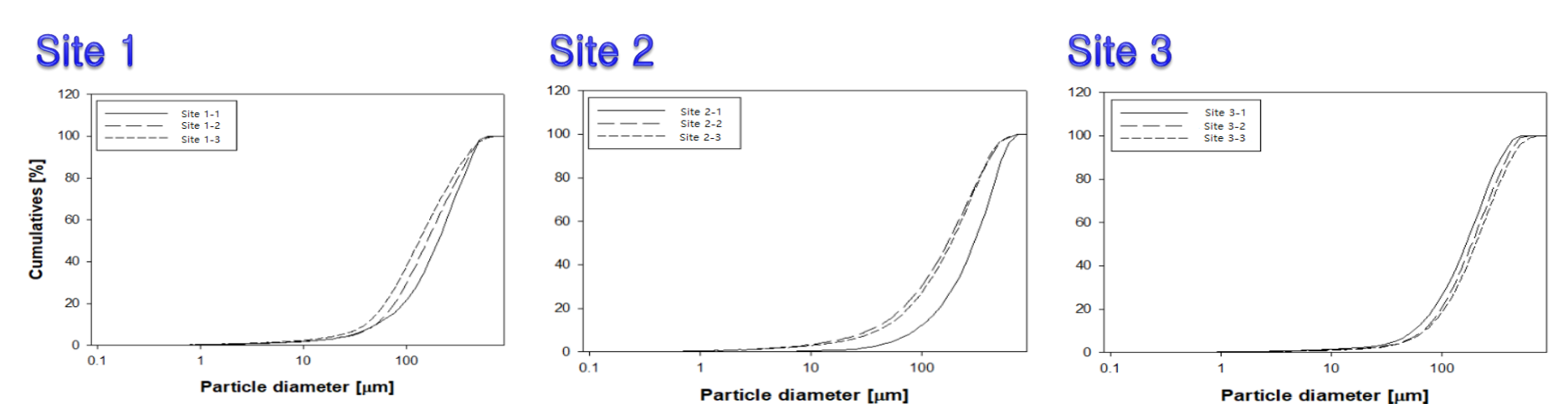
<< Instrumental analysis >>

In order to identify the heavy metal component in the sediment, it was analyzed using ICP-OES after pretreatment

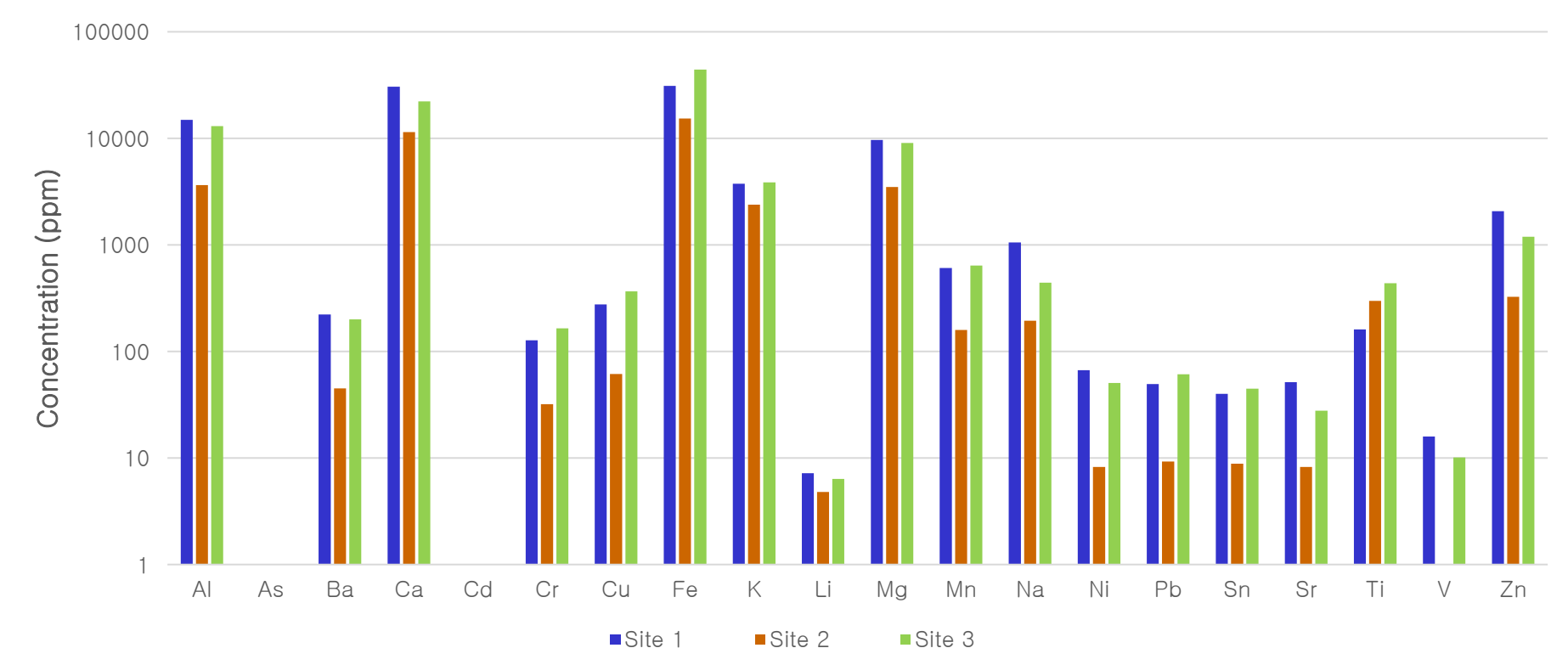


Results of research

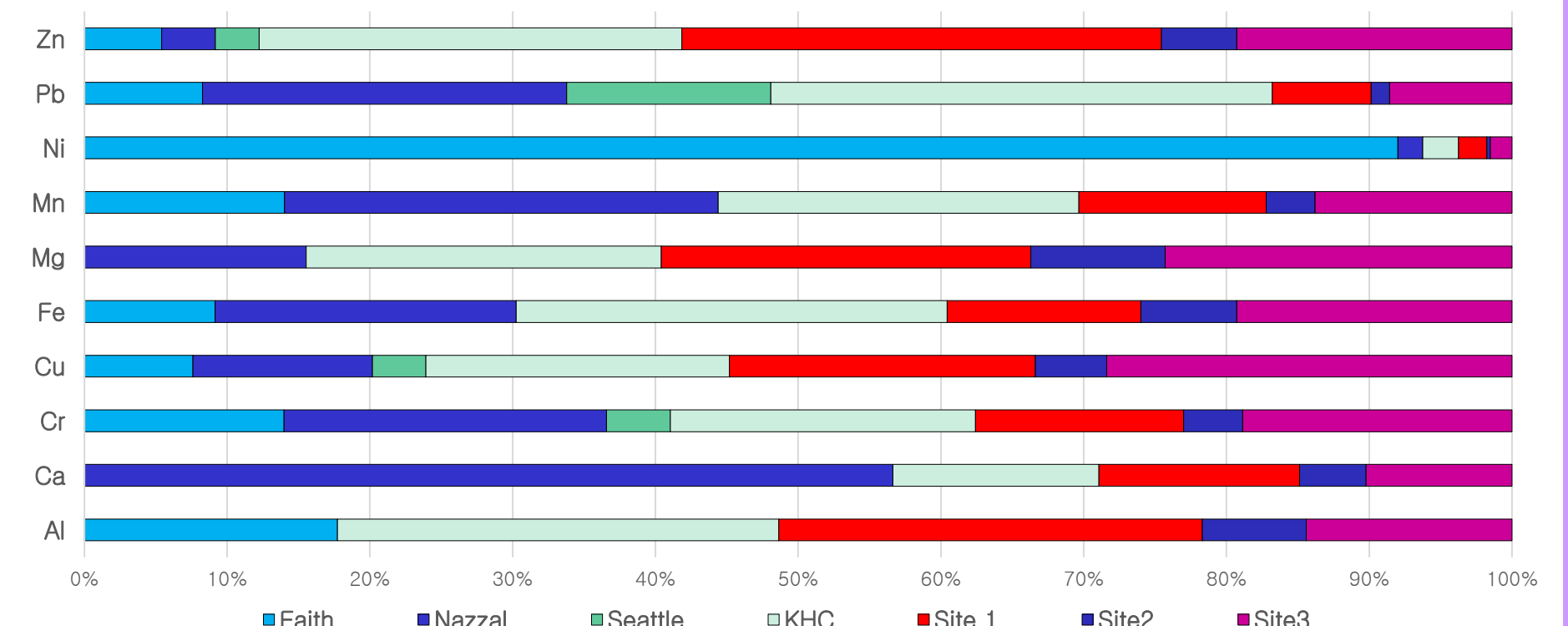
<< Particle Diameter Distribution >>



<< Heavy Metal Concentrations >>



<< Comparing Existing Studies >>



* Taşpınar, Fatih & Atasoy, Merve & Bozkurt, Zehra & Poyraz, Bayram & Uzun, Osman. 2015. Analysis and Assessment of Heavy Metal Pollution of Road Dust in Duzce, Turkey.
 * Nazzal, Y., Rosen, M. A., & Al-Rawabdeh, A. M. 2013. Assessment of metal pollution in urban road dusts from selected highways of the Greater Toronto Area in Canada. Environmental Monitoring And Assessment, 185(2), 1847-1858.
 * Seattle Public Utilities and Herrera Environmental Consultants. 2009. Seattle street sweeping pilot study : Monitoring report.
 * Heeman K., Hyejin K. (2014) Evaluation of Non-Point Source Pollution by Expressway Sweeping, Korea Expressway Corporation Research Institute, pp.85-99.

Conclusions

- This study, the distribution of heavy metal components was analyzed by analyzing the sediments generated on the highway
- As for the heavy metal components of sediments on highways, naturally occurring heavy metals were found to be high, and anthropogenic heavy metals were found to be relatively low.
- It is considered that the effect of substances introduced from the vicinity of the road is higher than that of substances generated on the highway.