

# Repercussions of clinical waste co-incineration in municipal solid waste incinerator during COVID-19 pandemic

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## INTRODUCTION

During coronavirus disease 2019 (COVID-19) pandemic, the exponential growth of clinical waste generation caused great burden to the treatment facilities (You, S. M., Sonne, C. et al., 2020). Co-incineration of clinical waste in municipal solid waste (MSW) incinerator was an emergency method to timely deal with the sharply increased clinical waste, thereby decreasing the risk of infection caused by overtime storage and incomplete disinfection (Sharma, H. B., Vanapalli, K. R. et al., 2020). The main aim of this work is to evaluate the potential impacts of clinical waste co-incineration in MSW incinerator quantitatively.

## MATERIALS AND METHODS

A material flow model was developed to estimate the change of feedstock characteristics and resulting concentrations of HCl and SO<sub>2</sub> in flue gas under different co-incineration ratios.

Moreover, 40 air pollution control (APC) residues samples and 32 bottom ash samples were collected between March 17, 2020 and May 18, 2020 from a MSW incineration plant performing co-incineration in Wuhan, the ash samples without co-incineration afterwards were also collected for elemental analysis.

## RESULTS AND DISCUSSION

The results showed that, with the elevated ratios, the ash contents and lowering heating values of the feedstocks, as well as the concentrations of HCl in flue gas showed upward trends, indicating co-incineration ratio should be limited.

During co-incineration, the contents of major elements and non-volatile heavy metals in the APC residues increased slightly, but were within the reported values, and those in the bottom ashes showed no significant change. When the co-incineration ratio is below 10 wt %, its impact to the operation parameters of semi-dry scrubber for acid gas removal, and the distribution of elements in solid residues were not significant. However, the enhancement of alkali metals and HCl in flue gas may raise the risk of boiler corrosion.

## CONCLUSION

This study suggested that as co-incineration ratio of clinical waste is limited < 10 wt %, co-incineration is

a feasible choice for clinical waste emergency treatment. The evaluation of co-incineration practice provides insights into pollution control in MSW incinerator during pandemic.

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