**INTRODUCTION**

The emission of Polychlorinated PCDD/PCDF and PCBs shall be limited as much as possible, to avoid the increase of these components in the nutrition chain. In addition NH Cl emissions from stacks shall be limited to reduce the resulting PM10-emissions, which are formed during cooling of the stack emissions.

To measure PCDD/F in the emission samples the two following standards are applied: EN 1948 1 and EPA method 23. In the new revision 1 of the EN 1948: Since 2005 this standard has been able to be applied for long term sampling. To measure NH Cl, EN 1911-1 can be used for short term measurement. Up to now there is no long term sampling method available.

As a new sampling technology we present the addition of lime to the mixing chamber, which allows the precipitation of HCl and NH Cl together with PCDD/PCDF - including the calculation of the emitted NH Cl.

**METHODS AND MATERIALS**

The DioxinMonitoringSystem \(^2\) is permanently installed on the stack. 2 probes enable a representative sampling of the flue gas at two positions in the stack. The system uses the dilution method of the EN 1948 standard \(^2\).

The flue gas is sucked to a mixing chamber, where it is mixed with cleaned dry air to a temperature of 40°C. Due to the addition of NH in the catalyst box, remaining HCl is reacting to NH Cl, which is volatile at temperatures of 200°C. The DioxinMonitoringSystem cools down the flue gas to 40°C, precipitating the solid particles on a dry filter. This enables the complete sampling of NH Cl together with the PCDD/PCDF.

The addition of lime enables the precipitation of HCl, by reaction to CaCl + crystalline water. With this method the total emission of Cl can be measured in combination with the PCDD/F.

The DioxinMonitoringSystem allows the long-term monitoring of PCDD/F emissions, while EN 1911-1 enables short term monitoring. For the determination of PCDD/F the DioxinMonitoringSystem fits well in the EN 1948 standard.

**RESULTS AND DISCUSSION**

In modern flue gas cleaning systems, catalysts are used to reduce dioxins and NOx concentrations of the flue gas. Due to the addition of NH in the catalyst box, remaining HCl is reacting to NH Cl, which is volatile at temperatures of 200°C. The DioxinMonitoringSystem cools down the flue gas to 40°C, precipitating the solid particles on a dry filter. This enables the complete sampling of NH Cl together with the PCDD/PCDF.

The addition of lime enables the precipitation of HCl, by reaction to CaCl + crystalline water. With this method the total emission of Cl can be measured in combination with the PCDD/F.

**CONCLUSIONS**

Some measurements in municipal waste incinerators have shown, that particles are passing the dust filter, afterwards they are precipitated in the mixing chamber before passing the dust filter (as picture 7 shows). In these cases, volatile Al Cl and Fe Cl was found in the flue gas, which cause a brown precipitate in the filter. The volatile salt emissions are measured by the installed optical dust measurement systems.

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**REFERENCES**