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EVALUATION OF DIFFERENT ORIGIN AND QUANTITY METHODS FOR PENTA AND PERCHLOROBENZENE FROM FLY ASH SRF

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ABSTRACT:

High-chlorinated benzene, produced in the presence of organic matter and chlorine, are PCDD / Fs strains and are used as alternative cost and time-appropriate indicators for indirect measurement of the substance. Air deposition is an important route for air pollutants entering the environment. In order to better understand both dry and wet deposits of PCDD / Fs in ambient air, two cities were investigated - Guangzhou and Nanjing in southern China. Monthly dry sediment flows for total PCDD / Fs-WHO2005-TEQ were in the range of 60.6-560 and 104-1160 pg. WHO2005-TEQ m - 2 month-1 during 2014 in Guangzhou and Nanjing, respectively. In addition, the monthly dry deposition velocities of the PCDD / Fs-TEQ particle phase were found to be between 0.49 and 0.98 cm -1 (at a rate of –0.69 cm -1) and between 0.44 and 0.8 cm -1 (average 0.52 cm s-1). In Guangzhou and Nanjing, respectively. The average scavenging ratios for total PCDD / Fs-WHO2005-TEQ were 20480 and 30947 in Guangzhou and Nanjing, respectively. Total (dry + wet) sediment flows in Nanjing ranged from 135 to 1250, averaging 643 picograms of WHO2005-TEQ m -2 month -1, approximately 1.38-2.23 times by volume in Guangzhou, which ranged from 97.7 And 559 pp. WHO2005-TEQ m - 2 month-1 and Average 254 pg WHO2005-TEQ m - 2 month - 1. The results of this study provide useful information for both additional studies and environmental control strategies aimed at persistent organic compounds (POPs)

Keywords: Dry deposition; Wet deposition; PCDD/Fs; PM10; PM2.5; Southern China.

1. INTRODUCTION:

Surrounding particles can be removed from the atmosphere by dry, wet precipitation. Polychlorinated dibenzo-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are known as POPs, which are formed during any incomplete combustion process. Human activities, including industrial processes and heat treatment, such as municipal waste incinerators, medical waste incinerators and hazardous waste incinerators, are the main source of atmospheric emissions of PCDD / F and occur naturally. in combustion processes such as volcanic eruptions and forest fires. There are 210 possible PCDD / F substances (75 PCDD and 135 PCDF), 17 of which are chlorine atoms that have been shown

to be more toxic and have extremely harmful effects on human health. The main distribution channel for PCDD / F is airborne. It can remain in the environment for a long time and transport long distances, resulting in a wide distribution of PCDD / F in the environment. Polychlorinated dibenzo-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are known as POPs, which are formed during any incomplete combustion process. Human activities, including industrial processes and heat treatment, such as municipal waste incinerators, medical waste incinerators and hazardous waste incinerators, are the main source of PCDD / F Emissions to the atmosphere also occur during natural combustion processes such as volcanic eruptions and forest fires. There are 210 possible PCDD / F substances (75 PCDD and 135 PCDF), 17 of which are chlorine atoms that have been shown to be more toxic and have extremely harmful effects on human health. The main PCDD / F distribution route is airborne and can remain in the environment for long periods of time, resulting in a wide distribution of PCDD / F in the environment, thereby eliminating accumulation of surrounding particles by wet or wet deposition. Surrounding particles can be removed from the atmosphere by dry, wet precipitation. Polychlorinated dibenzo-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are known as POPs, which are formed during any incomplete combustion process. Human activities, including industrial processes and heat treatment, such as municipal waste incinerators, medical waste incinerators and hazardous waste incinerators, are the main source of atmospheric emissions of PCDD / F and occur naturally. in combustion processes such as volcanic eruptions and forest fires. There are 210 possible PCDD / F substances (75 PCDD and 135 PCDF), 17 of which are chlorine atoms that have been shown to be more toxic and have extremely harmful effects on human health. The main route of PCDD / F distribution is by air. It can remain in the environment for a long time and transport over long distances, resulting in a large distribution of PCDD / F in the environment and an accumulation in the environment. Polychlorinated dibenzo-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are known as POPs, which are formed during any incomplete combustion process. Human activities, including industrial processes and heat treatment, such as municipal waste incinerators, medical waste incinerators and hazardous waste incinerators, are the main source of atmospheric emissions of PCDD / F and occur naturally. in combustion processes such as volcanic eruptions and forest fires. There are 210 possible PCDD / F substances (75 PCDD and 135 PCDF), 17 of which are chlorine atoms that have been shown to be more toxic and have extremely harmful effects on human health. The main route of distribution of PCDD / Fs in the air can remain in the environment for a long time and transport long distances, resulting in a large distribution of PCDD / F in the environment and an accumulation in PCDDs and

PCDFs (called PCDF). Well known as POPs, which are formed during any incomplete combustion process. Human activities, including industrial processes and heat treatment, such as municipal waste incinerators, medical waste incinerators and hazardous waste incinerators, are the main source of atmospheric emissions of PCDD / F and occur naturally. in combustion processes such as volcanic eruptions and forest fires. There are 210 con

2. FORMATION OF PCDDS/FS

The mechanisms of PCDD / F formation have resulted in theories of chemical pathways leading to the production of PCDDs / Fs as an unwanted by-product of combustion devices. It is generally accepted that one pathway includes organic products from incomplete combustion (PICs), leaving high temperature zones in combustion in the form of volatile or semi-absorbent organic compounds (VOCs or VOCs). These compounds, known as precursors, can be subject to heterogeneous reactions with flyash-related metal catalysts (such as copper) in cooler areas of combustion, including transition channels and an air pollution control system (APCS), such as an electrostatic precipitator (ESP).), This leads to the formation of PCDDs / Fs. Heterogeneous reactions rely heavily on temperature and residence time within the distribution patterns of isomers evaluated by APCS from many waste incineration facilities, and found that there is considerable consistency among them and suggested a mechanism that takes into account differences in isomer patterns and hence TEQs. A simplified diagram of the formation pathways of PCDDs / Fs, PCBs, PCBs (PCNs).

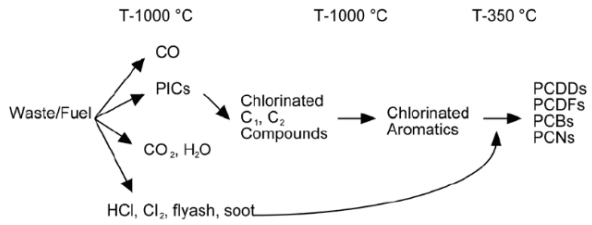

Fig 1 Formation Pathways of PCDDs/Fs and Other High MW Pollutants

3. SAMPLING AND ANALYTICAL METHODS

Due to the low concentration of flue gases in targeted analyzes, sampling and analysis of PCDDs / Fs is a complex, labor-intensive and costly process. Using the EPA method, an equilibrium sample is drawn from the stack, usually for several hours, using an extractive sampling probe, a hot filter, an XAD-2 resin trap, and a series of mixtures. This sample stream is then split and recovered, resulting in XAD-2 resin, filters and various rinses. The extracted samples are then brought to an analytical laboratory where a series of extraction and cleaning procedures are performed and the samples are ultimately analyzed by gas staining (GC) and mass spectrometry (MS). If a high-resolution GC / MS system is used, the analysis is described in the EPA method if a low-resolution GC / MS system is used, and the analysis is described in

the EPA. Analytical costs are usually within range. It would be ideal that all toxic PCDD / F isomers are measured continuously in real time. However, the latest current devices are not able to achieve this goal. Alternatively, other easily measurable parameters can be used to signal PCDDs / Fs concentrations in flue gases. These more easily measurable compounds are called alternatives. Figure 2 illustrates in detail the previous PCDD / F modulation path number by describing the concentrations of intermediate species that can be found in the flue gases that are important in the PCDD / F modulation mechanism. More easily, they participate less in the mechanism that makes up PCDDs / Fs

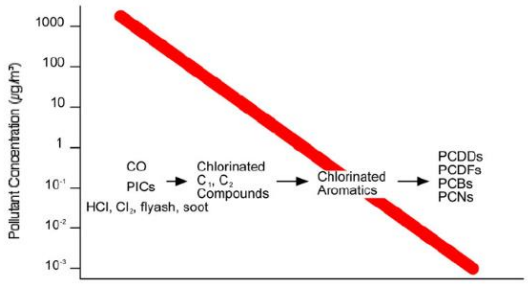

Fig 2 :Relative Concentrations of PCDDs/Fs and Their Surrogates

4. CONCLUSION:

The development of correlations between indicator compounds and PCDDs / Fs is likely to be specific to the facility, although the information obtained during the development of detailed regression correlations in one facility can be successfully used in other similar facilities to reduce the cost and workload of developing correlations in those facilities. . Sampling of pointer compounds and PCDDs / Fs is not necessarily required in the same location to develop links. Targeting sampling sites such that indicators are often required in the gas phase can improve detection limits for trace species.

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