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Key issues study on the operation management of medical waste incineration disposal facilities

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Abstract

This paper, according to the characteristics of the medical waste incineration technologies and processes and on the basis of systematically analyzing the pollutants generation nodes and release characteristics during the incineration disposal of medical waste, discusses key problems and contents to be highlighted concerning the operation management of medical waste incineration facilities from the perspective of pollution control by combination with our current main problems with regard to this, proposes to improve the capability of operation management of medical waste incineration facilities on the basis of full use of the best available technology and puts forward appropriate countermeasures for the facilities operation around the source classification, process control, performance control, supervision and management and other aspects. This can be used by the medical waste incineration unit and the environmental protection departments at all levels for reference in the operation and supervision and management of medical waste incineration disposal facilities.

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Keywords: Medical Waste; Incineration; Pollution Control; Facilities Operation; Supervision and Management

1. Basic Composition and Pollutant Control Nodes of Medical Waste Incineration Facilities

Medical waste incineration disposal technology remains an important option in our medical waste disposal technologies and plays an important role. Medical waste incineration facilities are generally composed of the waste feeding system, incineration system, flue gas purification system and slag treatment system etc. The waste preparation and supply, incineration and flue gas purification facilities vary from medical waste disposal facilities, so the medical waste incineration technology presents various

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combinations. Figure 1 shows the hardware composition and pollutant control measures of the medical waste incineration facilities.

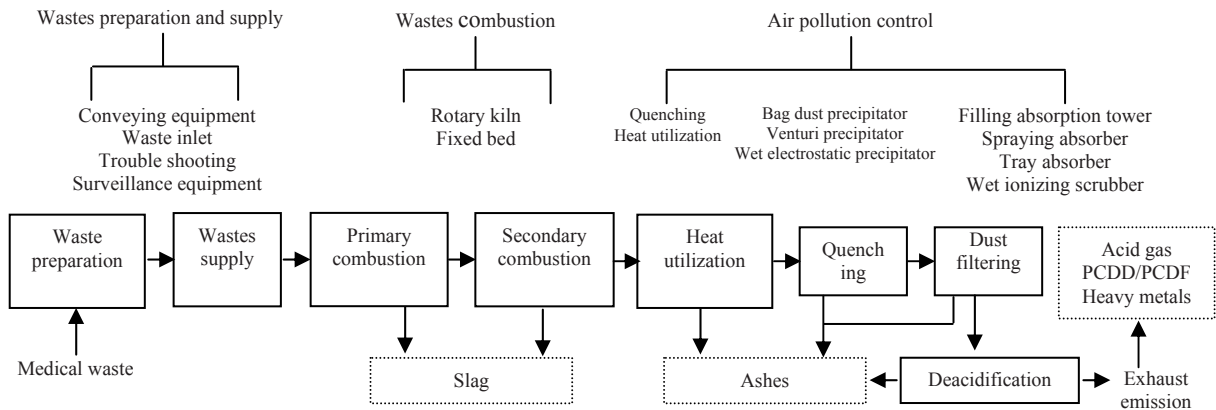


Figure 1 Hardware composition and pollutant control measures of the medical waste incineration facilities

As seen from Figure 1, one set of incineration facility can have various forms of unit design and system configuration; for medical waste incineration facility, the chemical and thermal dynamics characteristics of the waste determine the size and operating condition (temperature, excess air and flow rate) of the incineration facility and the configuration of the subsequent flue gas treatment system and slag disposal system, as well as the stoichiometric combustion air demand and the air flow rate and composition at combustion, and appropriate design parameters and process parameters are determined based on the treatment capacity and requirements; for example, different types of dust precipitation and absorption towers will be used for flue gas purification to ensure the stability and efficiency of the medical waste incineration. However, regardless of the design form, we must take seriously the control of pollutants generated during the incineration of medical waste, such as dioxins/furans, heavy metals and acidic gases. Therefore, on the other hand, to ensure the technology used in one set of disposal facility is the best available technology, we should take practical environmental management measures during the facilities operation management, to achieve organic combination of the construction with the facilities operation management. For the problems of engineering technology and facilities operation management, the Ministry of Environmental Protection of the PRC has issued the Guidelines on Best Available Technologies of Pollution Control for Medical Waste Treatment and Disposal (HJ-BAT-8) and the Technical Specifications for Centralized Incineration Facility (HJ/T177-2005), which, around the pollution control in the process of medical waste treatment and disposal, put forward technical and management requirements respectively from technology selection, engineering construction and facilities operation for compliance and reference by relevant units and practitioners in the industry.

2. Analysis of Problems in the Operation of Medical Waste Incineration Facilities

China follows the general idea of centralized disposal and rational layout in the planning and construction of medical waste disposal facilities [4, 5]. As for the construction, China sets a city as a planning unit and establishes centralized medical waste disposal facilities to receive medical waste from all counties within reasonable transportation radius. Decentralized disposal by hospitals are generally not encouraged and allowed. In addition to constructing centralized medical waste disposal facilities in each city at the regional level, the cities in the area with developed transportation and intensive towns are

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