Incinerator Operations at CBMWTDF

In last article we have discussed about the categorization of biomedical waste. In this month in continuation to the same we will discussed the process and operational details of yellow category waste through incineration. We will try to provide how incineration operation is taking place in a CBWTF and associated control measures to ensure emissions norms as prescribed in Biomedical waste Management Rules 2016.

Incineration is heat treatment used for destruction of infectious biomedical waste generated from health care establishments and converted it into ash which will be around 20% of the total incinerated quantity. During this process of heat destruction maintaining prescribed temperature in Primary (800+-50) and secondary combustion chamber (1050+-50).

Further this generated heat fumes will be passed through alkaline scrubbing mechanism and temperature loss as well as particulate matter & acidic fumes will be scrubbed by this mechanism. Packed bed scrubber and demisters are also placed. Dioxin and furans emissions are also controlled and it shall be analysed once in a year as per Biomedical Waste Rules 2016. A Combustion air fan is provided in Primary Combustion Chamber (PCC) and Secondary Combustion Chamber (SCC) to provide oxygen supply from required for complete combustion of waste. Negative draft is maintained in PCC and SCC to avoid backfire.

The effluent generated from scrubbing mechanism shall be properly treated in Effluent Treatment Plant and can be used in the alkaline scrubbing mechanism.

Segregated Waste storage areas:

To avoid mixing of different categories of waste proper storage areas are provided to keep unloaded Incinerable waste. "Incineration of chlorinated polyvinyl chloride has negative environmental consequences" and because of this use of non-chlorinated plastic bags shall be used for storage and transportation of biomedical waste.

Emission Standards for Incinerator:

Emission from the stack of the incinerator is measured and it is a responsibility of the common biomedical waste Treatment and disposal facility to achieve prescribed norms as per biomedical waste management rules.

Sl. No.	**Parameter**	**Standards**	
(1)	**(2)**	**(3)**	**(4)**
		Limiting concentration in mg Nm^3 unless stated	**Sampling Duration in minutes, unless stated**
1.	Particulate matter	50	30 or $1NM^3$ of sample volume, whichever is more
2.	Nitrogen Oxides NO and NO_2 expressed asNO_2	400	30 for online sampling or grab sample
3.	HCl	50	30 or $1NM^3$ of sample volume, whichever is more
4.	Total Dioxins and Furans	0.1ngTEQ/Nm^3 (at 11% O2)	8 hours or $5NM^3$ of sample volume, whichever is more
5.	Hg and its compounds	0.05	2 hours or $1NM^3$ of sample volume, whichever is more

Combustion Efficiency:

All incinerators shall meet the following operating and emission standards A.

Operating Standards

1). Combustion efficiency (CE) shall be at least 99.00%.

2). The Combustion efficiency is computed as follows:

$$C.E. = \frac{\%C02}{\%C02 + \% CO} \times 100$$

Source:

http://mpcb.gov.in/biomedical/pdf/BMW_Rules_2016.pdf

http://smslucknowbmw.co.in/process/