



HMIWI Operation Drawbacks & Corrective Measures

Hospital / Medical / Infectious
Waste Incinerators have been
'Voiced-out' as polluters, and,
have been *'Voiced-in'* for its
basic necessity for Disposal
of Specified waste.

Why?



HMIWI Operation Drawbacks- OBJECTIVE

To Understand Incinerator:

- *Operation Drawbacks*
- *Why HMIWI are Needed*
- *Suggested Corrective Measures*

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Waste Management- *TREND*

Driven by in the ... :

- 1950s by *“Improved Infection Control”* and ultimate *“Quality Control”*
- 1990s by *“Environmental and Economic Concerns”*.

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HMIW Incinerator- APPLICATIONS

Used for Waste DISPOSAL of:

- ***Human anatomical & Animal waste; Blood bags, Body fluid soiled waste; intimately mixed traces of solvents & chemicals***
- ***Cytotoxic drugs and discarded Medicine***



WHY INCINERATION?

There are Hazards related with
“Specific wastes”, when
TREATED or **DISPOSED** with
alternate technologies

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WHY INCINERATION? (Chemicals & Solvents)

‘Specific waste’: Residual amounts of *Antineoplastic* - Trace *Formaldehyde* in Pathology samples - *Hazardous solvents* intimately mixed with medical waste

Microwave and Autoclave technologies vaporise these compounds, creating air toxics that require ‘Thermal Oxidation’.

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WHY INCINERATION? (Pathogenic & Cytotoxic)

- **LANDFILL:** - *Some Pathogenic Fungi will multiply, through nutritive effect of some waste.*
- *Cytotoxic drugs are Toxic, and also act as mutagenic and / or teratogenic to all biological beings.*
- **SEA WATER:** *Pathogenic viruses may live upto 17-months in sea.*



WHY INCINERATION? (Body parts & Carcasses)

- STEAM AUTOCLAVING: It takes over 'eight-hours' for the test load at the centre of guinea pig carcass to reach 121°C, and upto 'sixteen-hours' to complete the treatment.
 - (Galick et al. 1961 - 'Evaluation of Medical Waste Treatment Technologies, Final Report - 1993', USEPA)

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Drawbacks with HMIW Incinerator- PERCEPTION

- For Disposal of ALL Wastes 
- Automatic, Trouble-free, Continuous 
- Responsibility- Manufacturer 
- Distinguish the use for waste: 'Treatment' or 'Disposal' !!! 

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Drawbacks with HMIW Incinerator- PLANNING

- 'Heat Release' capacity not determined
- 85% moist waste capacity planned
- Poor 'Siting': Basement, Main building, Remote locations
- 'Drain & Sewer' not planned for liquid discharge



Drawbacks with HMIW Incinerator- PURPOSE

- Batch / Intermittent / Continuous:
Not distinguishable
- 'Biological waste' or 'Toxic waste'
purpose not known
- Suited for 'High Calorific' value
(DRY) or 'Low Calorific' value
(WET) waste capacity is not known



OPERATION DRAWBACKS

- COLD START: emission of pathogenic micro-organism
- OVER CHARGING: emission of pathogenic micro-organism; incomplete combustion; high heat release structural damage; damage to burners

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OPERATION DRAWBACKS

- LOW TEMP.: 540°C to 760°C in primary chamber (PC) required for pathogen kill
- HIGH TEMP.: above 980°C in PC forms Slag; air blockage; damages refractory; oxidised metal vapour discharged through stack



OPERATION DRAWBACKS

- GLASS: structural damage
- METAL: toxic emission; sharps injury
- PACKAGING: non-sturdy, low tear resistant and / or open waste results in operational problems
- EXPLOSIVE: damage & injury



CORRECTIVE MEASURES

1. Education & Training for ALL
2. 'Source Reduction', 'Segregation, 'Packaging' of waste
3. Evaluate existing installation for 'heat release capacity', 'waste suitability', 'type of incinerator and its operating procedures'.

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CORRECTIVE MEASURES

4. Evaluate existing gas cleaning system capability
5. Have 'Responsibility and 'Accountability in place
6. Document and Plan 'Incremental' Corrective Measures

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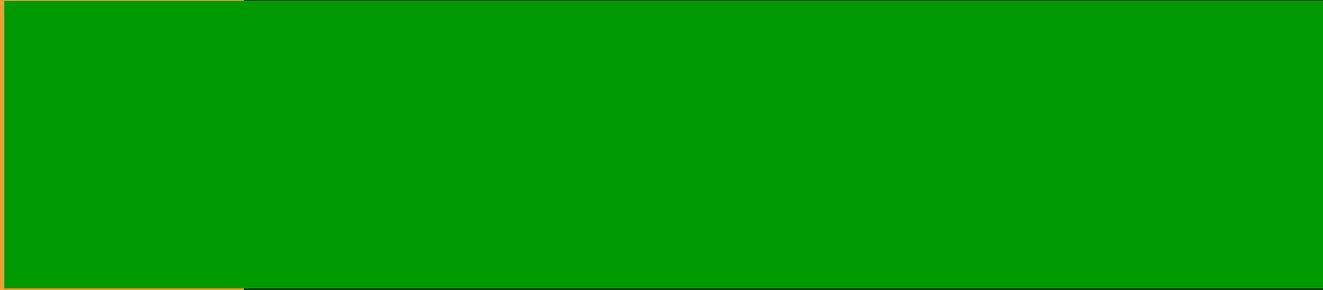
CONCLUSION

Have Thorough understanding of:

1. Total Waste Management
2. Planning of INCREMENTAL steps.
3. 'Treatment' & 'Disposal' alternative
4. Batch / Intermittent / Continuous operation
5. 'Source Reduction', 'Segregation', 'Packaging' training programmes

HMIW Incinerator

By: Homi R. Mullan



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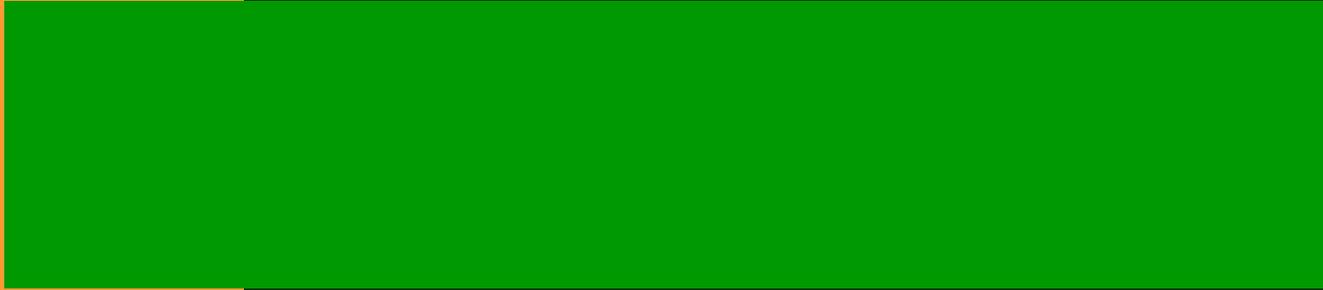
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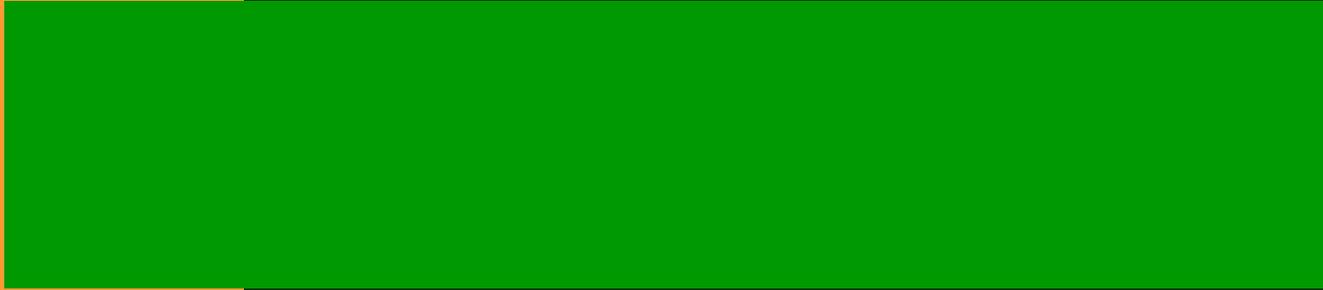
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