

INTEGRATED MANAGEMENT OF MEDICAL WASTE HANDLING

(STATE OF KUWAIT)

Submitted By

Esraa Saad Hussein Buhamad

B.Sc. of Health Sciences, Public Authority for Applied Education & Training,

State of Kuwait, 2011

A thesis submitted in Partial Fulfillment

Of

The Requirement for the Master Degree

In

Environmental Sciences

Department of Environmental Basic Sciences

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APPROVAL SHEET

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ABSTRACT

Key Words: health care waste, hazardous/non-hazardous health-care waste, incineration emissions.

Back ground: Improper health care waste management led to critical hazard to environment component, integrated healthcare waste management responsibility starts from waste production to its final disposal.

Integrated healthcare waste management is part of environmental protection; set regulations, monitoring, and maintaining a high standard of environment and health safety have become concerned by Kuwait Environmental Public Authority co-operation with Kuwait Ministry of Health .

Objective: The objective of the study is to find available alternative methods to reach integrated healthcare waste management in state of Kuwait. Such methods would minimize the risks result from healthcare waste that affects healthcare staff, public health, and the environment and help bring the Kuwait ministry of health legislation closer to Kuwait Environment Public Authority standards and legislation. The study topics four main objectives were to:

1. Review the existing health care waste management system.
2. Evaluate hospital staff (safety, knowledge, and practice).
3. Indicate healthcare waste generation.
4. Monitor healthcare waste incineration emissions.

Results: A survey among a sample of 386 staff of 6 governmental hospitals in the state of Kuwait indicates that there is lack in cleaner's knowledge. A field visit to the governmental hospital indicates that there is a lack of provision of materials for the safe disposal of medical waste. Analyze 9

samples using High resolution gas Chromatographic Column coupled to a high resolution mass spectrometer instrument indicate that emission of dioxin and furan is within Kuwait Environmental Public Authority limits, but the level of emissions is increase depending on different factors, also analyses 7 samples of bottom ash in Inductivity Couple Plasma classified it as a hazard waste.

Recommendation: This study concludes that reducing dioxin and furan emissions depend on human practices, technical legal factors, and using environmentally friendly alternatives methods instead of or assistant to the process of medical waste incineration.

List of abbreviation

ALS: Average Length of Stay

AU: African Union

CSSD: Central Sterile Supply Department

ER: Equibency Rate

EPA: United State Environmental Protection Agency

HRGC/HRMS: High resolution gas Chromatographic Column coupled to a high resolution mass spectrometer.

H.C.W: Health Care Waste

HCV: Hepatitis C Virus

ICPOES: Inductivity Couple Plasma

KEPA: Kuwait Environmental Public Authority

KMOH: Kuwait Ministry of Health

PCDD's and PCDF's: Polychlorinated dibenzo - p - dioxines and dibenzofurans.

PTMI : Provisional tolerable monthly intake

RM: Reference Methods

STAATT: State and Territorial Association on Alternate Treatment Technologies

TOR Turnover Rate

TOI: Turn Over the Interval

V.H.F: Very Highly Fragile Ecosystem

WHO: World Health Organization

Operational definitions

- m **Community:** populations of all species living and interacting in an area at a particular time. (Arbogast, 2004)
- m **Sustainable development:** satisfies the basic needs for the current generation of human and other species without preventing future generations of human and other species from meeting their basic needs. (Arbogast, 2004)
- m **Waste:** is any substance or material or product that's used has been banned by law or products for which the holder no further used. (Pierce, 2008)
- m **Risk:** generally understood to be the likelihood that unwelcome event will occur. (Herman Koren, 2000)
- m **Sterilization:** process used to render a surface or product free from viable organisms, including bacterial spores. (McDonnell, 2007)
- m **Segregation:** separating different types of waste at the point of generation and keeping them isolated from each other. (Emmanuel, 2001)
- m **Health care waste management:** This term refers collectively to all administrative and operational activities aimed at ensuring safe disposal of HCW. The administrative activities involve policy formulation, planning, and resource allocation, among other functions. Operational activities include waste minimization, handling, storage, treatment, recycling, and disposal. This term also encompasses training and behavior change, health worker safety, procurement of equipment and commodities, and monitoring and evaluation. (Muraguri N, Ombacho K, 2015)

List of content

CHAPTER (1)	INTRODUCTION	1
1.1	General:	1
1.2	Population Growth in state of Kuwait:	2
1.3	Overview of health-care waste:	3
1.3.1	Health-care waste generation rate:	3
1.3.2	Classification of health-care waste:	4
1.3.3	Health-care waste treatment:	5
1.3.4	Incineration	11
1.3.5	Disposal of health-care waste in sanitary landfill	12
1.4	Improper health care waste management risks	13
1.4.1	Occupational health exposure risk:	14
1.4.2	Public health exposure risk	16
1.4.3	Environmental risk	17
1.5	Risk associated incinerators	19
1.6	Hospital healthcare waste management:	20
1.7	Policy and Legislation:	23
CHAPTER (2)	MATERIALS AND METHODS	25
2.1	Part 1: Define the type and quantities of health-care waste in Kuwait Government hospitals.	25
2.2	Part 2: Questionnaire for healthcare staff in Kuwait hospitals.	25
2.3	Part 3: Examine the efficiency of sterilization through biology test	27
2.4	Part 4: Examination of Gaseous emissions from incinerators (dioxins/furans) by using the OPSIS instrument. High resolution Gas Chromatographic Column coupled to a high resolution mass spectrometer (HRGC/HRMS) using the instrumental Parameters	28

2.5	Part 5: examine bottom ash samples from incinerators to measure heavy metal using inductivity couple Plasma (IC-Poes).	28
CHAPTER (3)	RESULTS	31
3.1	description of health-Care Waste flow, Generation data analysis	31
3.1.1	Hazard healthcare waste control	31
3.1.2	Generation solid health-care waste:	35
3.2	health-Care waste handler data analysis	42
3.2.1	Health-care staff knowledge:	42
3.2.2	Training of health care personnel:	55
3.3	Safety and Precaution of hospital staff:	65
3.3.1	Vaccine	65
3.3.2	SAFTY PRACTICE	67
3.3.3	Injury reporting system:	70
3.4	analyses Examination the efficiency of sterilization:	75
3.4.1	Decontamination area:	75
3.4.2	Clean area: packaging area	78
3.4.3	Sterile area:	78
3.4.4	Store area:	79
3.5	incinerator .	82
3.6	Emission monitoring Program:	86
3.7	Comparative survey of total dioxin and furan compound (Pcdd's and Pcdf's) from stack of central incinerators in State of Kuwait	87
3.7.1	Total dioxin and furan compound (PCDD's and PCDF's) from stack of central incinerators	88
3.7.2	Comparative study of Total Dioxin and Furan Compound Mean (PCDD's And PCDF's) By Years	90

3.7.3	Comparative study of the relation between Generation healthcare waste with Total dioxin and furan compound (PCDD's and PCDF's)	91
3.7.4	Result of heavy metal parameter	93
3.8	bottom ash	95
3.9	landfill	99
CHAPTER (4)	DISCUSSION	103
4.1	Review the existinG health-care waste manaGement system	103
4.1.1	Set legalisms and standards	103
4.1.2	Gathering and moving waste inside a health care installation: (Segregation and collecting system)	106
4.1.3	Storing health care waste within a health facility:	110
4.1.4	On-site transport of healthcare waste	111
4.1.5	Short-term Storage and Off-site transport of healthcare waste	112
4.1.6	Staff training programs:	113
4.1.7	Staff safety and precaution:	114
4.2	health-care waste treatment	115
4.2.1	Sterilization efficiency	116
4.2.2	Monitors hazard healthcare wastes incineration emissions.....	119
CHAPTER (5)	SUMMARYAND CONCLUSION AND RECOMMEDNATIONS	123
RECOMMENDATIONS		129
REFERENCES		131
APPENDICES		139
APPENDIX 1		141
SAMPLE QUESTIONNAIRE		143
APPENDIX 2		155
MANUAL REPORTING SHEETS		155
APPENDIX 3		165

LIST OF TABLES

Table 1.1 A verge waste generation rate at hospitals in different countries. (Alhumoud & M & Alhumoud 2007)	4
Table 1.2 Treatment of health care waste depends on 5 technologies (Emmanuel, 2001)	9
Table 1.3 Chain of Infection table (Carter, Pamela J, 2007)	16
Table 1.4 Bags and containers color coding for segregation of health-care waste	21
Table 1.5 labeling system fallow by Kuwait inistry of Health.	22
Table 2.1 Selected sample size	26
Table 3.1 Generated hazardous health care waste in each hospital in one month	36
Table 3.2 Expansion plan to increase the number of beds in Kuwait governmental hospitals	37
Table 3.3 Total amount of hazard health-care waste produced at government hospitals in (2014).	38
Table 3.4 Total amount of hazard health-care waste produced at government hospitals in (2015).	39
Table 3.5 Total amount of hazard health-care waste produced at government hospitals in (2016).	40
Table 3.6 Percent of health-care waste legalisms awareness	43
Table 3.7 Hospital staff knowledge of labeling system.	45
Table 3.8 Hospital staff knowledge disposal of non-hazard health care waste.	48
Table 3.9 Hospital stuff knowledge disposal of objects that may be capable of causing punctures or cuts that may have been exposed to blood or body fluids.	51
Table 3.10 Hospital healthcare knowledge disposal of very contagious health-care waste.	54
Table 3.11 Hospital staff enter pre-woking training programs.	57

Table 3.12 Hospital staff enters on job training programs.	60
Table 3.13 Hospital staff joins refreshment courses and continuous updating programs.	63
Table 3.14 Hospital staff has been fully inoculated against hepatitis B...	66
Table 3.15 Hospital staff knowledge of the most important method to prevent spread of infection.	69
Table 3.16 Hospital staff sustained an injury during one year.	72
Table 3.17 Type of injury	73
Table 3.18 Type of contaminated instrument	76
Table 3.19 Manual wash	77
Table 3.20 Type of sterile machine	79
Table 3.21 Biological test result	81
Table 3.22 Limits of gas emission from incinerations set by (KEPA)	87
Table 3.23 Total dioxin and furan compound (PCDD's and PCDF's) Concentrations, Shuaiba1 incinerator.	89
Table 3.24 Total dioxin and furan compound (PCDD's and PCDF's) Concentrations, Shuaiba2 incinerator.	89
Table 3.25 Total dioxin and furan compound (PCDD's and PCDF's) Concentrations, Kbd incinerator.	89
Table 3.26 Average emissions total Dioxin and Furan Compound.	90
Table 3.27 (PCDD's and PCDF's) averages and amount of each incineration	92
Table 3.28 Averages of 3 central incinerators with emissions of (PCDD's and PCDF's)	92
Table 3.29 Mean concentrations of heavy metal from flay ash in Shuaiba1 incinerator	94
Table 3.30 Mean concentrations of heavy metal from flay ash in Shuaiba2 incinerator	95