IMPLEMENTATION OF HAZARD ANALYSIS AND CRITICAL CONTROL POINT IN THE CATERING UNIT OF SRI JAYEWARDENEPURA GENERAL HOSPITAL.

THILOKA JAYAMINI SIRI ALAGIYAWANNA

M. Sc.

2006

IMPLEMENTATION OF HAZARD ANALYSIS AND CRITICAL CONTROL POINT IN THE CATERING UNIT OF SRI JAYEWARDENEPURA GENERAL HOSPITAL

by

THILOKA JAYAMINI SIRI ALAGIYAWANNA

Thesis submitted to the University of Sri Jayewardenepura for the award of the **Degree of Master of Science in Food Science and Technology** on 2006

Declaration

"The work described in this thesis was carried out by me under the supervision of Professor Arther Bamunuarachchi, Consultant to the Food Science and Technology program and Doctor K.K.D.S.Ranaweera, Head/Department of Food Science and Technology, University of Sri Jayewardenepura, Gangodawila Nugegoda and a report on this has not been submitted in whole or in part to any University or any other institution for another Degree / Diploma.

27.11.2006

Que

Date

Thiloka J.S.Alagiyawanna

We certify that the about statement made by the candidate is true and this thesis is suitable for submission to the university for the purpose of evaluation.

Professor A.Bamunuarachchi

Course coordinator

Former Head of the Department of Food Science & Technology

Faculty of Applied Science, University of Sri Jayewardenepura

Sri Lanka

Dr. K.K.D.S.Ranaweera

Head of the Department of Food Science & Technology

Faculty of Applied Science, University of Sri Jayewardenepura

Sri Lanka

Dedication

То

My parents, sister, brother, and friends.

Table of contents

Table of contents		Page No
List of contents		i
List of diagrams and tables		vi
Ackn	owledgements	vii
Abbreviations		viii
Abstract		ix
List o	of contents	
CHAPTER 1 – INTRODUCTION		1
1.1	objectives of the project	3
CHAPTER 2 – LITERATURE REVIEVE		4
2.1	Definition of the HACCP	4
2.2	Hazard analysis	5
2.3	Savage summarized the seven HACCP principles	5
2.4	HACCP principles	6
2.5	HACCP prerequisites	8
2.6	Food safety	9
2.7	Food hygiene and HACCP	10
2.8	Application of HACCP	11
2.9	Assemble HACCP team	13
2.10	Establish critical limits for each CCP	13

i

CHAPTER 3 – HISTORY OF THE HOSPITAL		16
3.1	The HACCP team of the Hospital	17
CHAPTER 4 – PRESENT SITUATION OF THE		
	CATERING UNIT	18
4.1	Specification of items to be supplied	18
4.1.1	Vegetables	18
4.1.2	Fruits	22
4.1.3	Coconuts and eggs	23
4.1.4	Fresh fish	23
4.1.5	Meat	23
4.1.6	Chicken	24
4.1.7	Dry rations	24
4.2	Existing of assessments	53
4.2.1	Flow diagram	53
4.2.2	Received items	53
4.2.2.	1 Bakery products	54
4.2.2.2	2 Dry rations	54
4.2.2.	3 Vegetables	55
4.2.2.	4 Fruits	55
4.2.2.	5 Fish, meat and eggs	56
4.2.2.	6 Grocery items	56
4.2.3	Transporting	57

4.2.4	Receiving	58	
4.2.5	Weighing	59	
4.2.6	Storing	60	
	4.2.6.1 Storage facilities for cleaned pots and pans	61	
	4.2.6.2 Storage facilities for janitorial equipments	61	
4.2.7	Preparation	61	
4.2.8	Cooking	62	
4.2.9	Distribution	63	
4.2.10	Equipment	64	
4.2.11	Garbage disposal	65	
CHAPTER 5 – IDENTIFY THE HAZARDS		66	
5.1	Identify hazards	66	
5.2	Introducing controls	68	
5.3	Examples of possible controls	68	
CHAPTER 6 – PRESENT LAYOUT OF			
	THE CATERING UNIT	69	
CHA	PTER 7 – PLANNED LAYOUT OF		
	THE CATERING UNIT	70	
7.1	Refurbishment of catering unit layout plan	71	
7.2	Details of worktop types	72	
7.3	Steam supply and condensate return – schematic	73	

7.4	Water supply, sewage and waste disposal – schematic	74
7.5	Reinforcement details for garbage bin	75
7.6	Staff changing rooms plan	76
7.7	Sections A-A and B-B of the main kitchen	77
CHAF	TER 8 – STUDY ON PREVIOUS INCIDENTS	78
8.1	Factors contributing to food borne disease outbreak	78
CHAPTER 9 – PROPOSALS FOR THE CORRECTION		79
9.1	Environmental hygiene	79
9.2	Equipment	79
9.2.1	General equipment	79
9.2.2	Food control and monitoring equipment	80
9.2.3	Containers for waste and inedible substances	80
9.3	Premises and rooms	81
9.3.1	Design and layout	81
9.3.2	Internal structure and fittings	81
9.4	Facilities	82
9.4.1	Water supply	82
9.4.2	Drainage and waste disposal	82
9.4.3	Cleaning	82
9.4.4	Personnel hygiene facilities and toilets	83
9.5	Temperature	83
9.6	Air quality and ventilation	83
9.7	Lighting	84

9.8	Storage	84
9.9	Control of operation	85
9.9.1	Control of food hazards	85
9.9.2	Time and temperature control	85
9.9.3	Incoming material requirement	85
9.10	Water	86
9.10.1	In contact with food	86
9.10.2	Steam	86
9.11	Training program	86
CHAPTER 10 – CONCLUSION		87
REFERANCES		88

LIST OF DIAGRAMS AND TABLES

Diagrams	page
1. Logic sequence for application of HACCP system	12
2. Decision tree	14

Tables

1. Nutritional value of malted milk powder	29
2. Requirements for coconut oil (Grade 1)	35
3. Requirements for dried whole chilies (Grade 1)	38
4. Requirements for red lentils (Grade 1)	41
5. Requirements for green gram	44
6. Requirements for yoghurt	
7. Requirements for refined white sugar	49
8. Limits for trace metals in white sugar	49
9. Identified hazards in the catering unit	67

ACKNOWLEDGEMENT

I am most grateful firstly to my project supervisors:

Prof. Arther Bamunuarachchi, Dr. K.K.D.S.Ranaweera, for their valuable advises and guidance throughout the study.

I offer my sincere thanks to **Dr. D. L. de Lanerolle**, Director of Sri Jayewardenepura General Hospital for allowing me to carryout this study and the generous support extended throughout the project.

Special word of thanks must go to Mrs. R.M.S.J. Bandara, Nursing officer Special Grade of Sri Jayewardenepura General Hospital for her invaluable help and encouragement given throughout the study.

My sincere thanks are also due to Dr. shalini Perera, Microbiologist and all the staff of Sri Jayewardenepura General Hospital, all the laboratory staff and staff of faculty of Food Science and Technology, University of Sri Jayewardenepura.

I wish to extend very sincere thanks to my friends specially Miss Erani Krisantha de Silva who helped me in numerous ways from the beginning of my higher studies.

Finally, I would like to offer my heartfelt gratitude to my parents, my sister, my brother and all others who helped me in various ways in completing the project to fruition.

ABRREVIATIONS

НАССР	- Hazard Analysis and Critical Point	
ССР	- Critical Control Point	
NACMCF	- National Advisory Committee on Microbiological Criteria for	r
Foods		
SLSB	- Sri Lanka Standard Bureau	
SLSI	- Sri Lanka Standard institution	

ABSTRACT

The study was carried out in the catering unit of Sri Jayewardenepura General Hospital. This hospital serves nearly 975 meals at breakfast, 1150 meals at lunch and 750 at dinner daily. The catering unit supplies meals for hospitalized patients as well as minor staff. There are different seven menus for a week and two types of normal diet for paying wards and normal wards.

The catering unit has an area for reception of goods, storage and distinct areas for manipulation of vegetables and cooking.

Data collected during 01.08.2005 - 31.07.06. The hospital spends around Rs. 04 million per month only for the receiving items without any other expenditure.

The management decided to reconstruct the catering unit go for the HACCP certificate. There is no any hospital with HACCP certificate in our country. But this hospital hopes to take HACCP certificate as soon as possible.

Therefore I assessed the present situation of the catering unit and identified the CCps.

Cleaning is very important factor. It is a critical control point. But the catering unit has no way of assessing cleaning standards.

I thoroughly mentioned this catering unit has more space, more facilities and good conditions more than the other general hospitals in our country.

The hospital obtained expertise services from Sri Lanka Standards Institution and Hotel Mount Lavinia who already has HACCP certificate.

Refurbishment handed over to State Engineering Corporation of Sri Lanka.

CHAPTER 1. INTRODUCTION OF THE PROJECT

Catering unit is one of the most essential places in a hospital. Meal should be provided for all hospitalized patients. Patients have several expectations of the food supply, including that to be nutritious, wholesome, pure and safe as well as suitable diet for their illnesses.

As example patients who are having heart diseases expect a low salt, low fat diet. When patients provide the diet from the hospital, relations or visitors shouldn't bring the diet. It is good for the patient conditions as well as the hospital environment. As a third world country some of civilians have no enough money and knowledge for the suitable diet which patient need. Therefore they expect a proper diet for their patient from the hospital. There are several kinds of patients in the hospital. We should consider about the patients conditions, age, gender, religion, culture, food habit, and their choices. As an example

age: - pediatric diet S 1 12 - 13 yrs

S $1\frac{1}{2}$ 10 - 11 yrs S 2 08 - 09 yrs S 2 $\frac{1}{2}$ 06 - 07 yrs S 3 04 - 05 yrs S 3 $\frac{1}{2}$ 02 - 03 yrs

Sri Jayewardenepura General Hospital is a one of the most popular hospitals in the country. It is a well organized hospital. The hospital belongs to a more space, more facilities, high quality equipment established with well planned catering unit donated by the government of Japan.