



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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**USING NEW TECHNOLOGICAL METHODS IN DEFINING
SAFE RANGES FOR ELECTROMAGNETIC RADIATIONS
IN BUILT ENVIRONMENT**

Submitted By

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B. Sc. Of Electronics and Computer Engineering, Higher Technological
Institute,

Tenth of Ramadan, 1997

Master in Environmental Sciences, Institute of Environmental Studies and
Research,

Ain Shams University, 2010

A Thesis Submitted in Partial Fulfillment

Of

The Requirement for the Doctor of Philosophy Degree

In

Environmental Sciences

Department of Environmental Engineering Sciences

Faculty of Graduate Studies & Environmental Research

Ain Shams University

2021

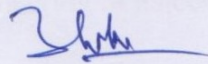
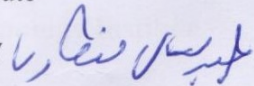
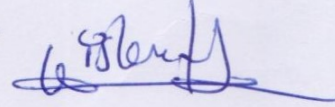
APPROVAL SHEET
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Acknowledgment

To my Guardian, my Angel, my continuous source of power and energy

My Mother *Dr. Eng. Nadia Anas Kenawy*

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The best supporting, helping supervising team ever

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Abstract

This study aims to determine the safe range of exposure to the electromagnetic fields surrounding the human being. This objective requires studying and determining the environmental and health impacts resulting from exposure to the most dangerous sources of electromagnetic fields which are medium voltage transformers present in various residential, service and commercial areas. The results will help decision-makers in proposing solutions that lead to reducing health effects

In this study our goal is to prevent all health and environmental effects of electromagnetic fields created by medium voltage transformers. The following steps are the major steps to achieve our goal:

1. Definition of electromagnetic fields, their properties and sources, especially medium voltage sources, and the use of previous studies in that field. It is worth noting that previous studies in this field were not available in the same quantity of studies of high voltage sources or radio paths (mobile phone).
2. Study the effect of electromagnetic fields of various frequencies on the environment and public health in general. Also, measure the health and environmental effects of fields around medium voltage transformers and also introduce international standards for exposure to these fields. To achieve this, an EMF Magnetometer was used to obtain several measurements varied depending on the loads loaded on these transformers.
3. While performing the measurements, it was noticed that there was a decrease in the values of the measurements around the transformers in the rooms which had doors made with tin. The measurements were repeated in some locations using the galvanized tin sheet thickness of 1 mm at the available distances in the different rooms. A comparison was made between the original measurements and the measurements made using galvanized tin sheet. Therefore, the study came up with several proposals to achieve the study's goals.

Table of Contents

Acknowledgment	IX
Abstract	V
Table of Contents	VI
List of Figures	IX
List of Tables	XIV
<u>Chapter 1 – Introduction</u>	1
1-1 Phenomenon	1
1-2 Objective	3
1-3 Methodology	4
1-4 Thesis Structure	4
<u>Chapter 2 - Electromagnetic Radiations</u>	6
2-1 Electromagnetic radiations	6
2-2 Electromagnetic fields	6
2-2-1 Definition	6
2-2-2 Frequency ranges of electromagnetic fields	7
2-2-3 Sources of electromagnetic fields	11
2-2-4 Units of measurements	13
2-2-5 Properties	13
2-2-6 Electromagnetic Field theory and calculations	14
<u>Chapter 3 : Electromagnetic fields Effects on Health and Environment</u>	28
3-1 Effect of ELF and VLF EM Radiation	28
3-2 Effect of Radio Frequency Radiation	29
3-3 Effect of Microwave Radiation	34
3-4 Effects of Infrared (IR)	35
3-5 Effects of Optical radiation (Ultraviolet, Visible and Infrared Light)	35
3-6 Effect of X-Rays, Gamma Rays and Other Nuclear/Cosmic Rays	36
3-7 Standards Safe limits of exposure to electromagnetic fields	38

<u>Chapter 4 : Literature – Previous Studies</u>	39
4-1 Bangladesh	39
4-2 Bulgaria	41
4-3 Nigeria	46
4-4 Iran - <i>Effects of electromagnetic waves on blood cells of 100 factory workers</i>	47
4-5 Iran - <i>Educational hospitals of Hamadan University of Medical Sciences</i>	50
4-6 Romania	55
<u>Chapter 5 : Practical Measurements of Electromagnetic Radiation In Medium Voltage Transformers Units</u>	61
5-1 Materials	61
5-2 Methods	62
5-3 Site Measurements	63
5-3-1 Extension of Tokh water supply station	63
5-3-2 Orascom Tank water supply station - 6 th October city.....	65
5-3-3 6 th October Irrigation water station	69
5-3-4 Maadi water supply station	71
5-3-5 New Cairo Water Intake	77
5-3-6 North Helwan water supply station	79
5-3-7 Tebien water supply station	81
5-3-8 Famous Sports Club	85
5-3-9 Faculty of Graduate Studies and Environmental Researches	87
<u>Chapter 6 : Practical Method for Mitigation of the Electromagnetic Radiation Effects</u>	90
6-1 Extension of Tokh water supply station	91
6-2 Orascom Tank water supply station - 6 th October city	93
6-3 6 th October Irrigation water station	96
6-4 Maadi water supply station	97
6-5 North Helwan water supply station	100

<u>Chapter 7 : Results and Recommendations</u>	101
7-1 At the general level	101
7-2 At the study level	102
Summary	104
<i>Refrences</i>	105
Appendix	110
Appendix 1 : Concepts and definitions	110
Appendix 2 : Law of Electricity – Law 87 in 2015 – article 55.....	114

الملخص

المستخلص

List of figures

<u>Fig no.</u>		<u>Page</u>
Fig 1.1	Placing transformers and heavy current switch boards in rooms inside buildings	2
Fig 2.1	Frequency ranges of electromagnetic fields.....	7
Fig 2.2	The amount of penetration of UV relative to altitude in Earth's ozone	10
Fig 2.3	Linearly polarized wave oscilating from left to right	14
Fig 2.4	Charges flowing inside a conductor	20
Fig 2.5	The force interaction between a conductor with current (I) and charge (q) moving with speed (v)	22
Fig 2.6	Field lines tend to flow inside iron: the cases of an open and a toroidal shape	24
Fig 2.7	Small battery to a portable lamp	25
Fig 2.8	Simple circuit explains Faraday's Law	26
Fig 2.9	Right Hand Law	26
Fig 3.1	The electromagnetic radiation spectrum	28
Fig 3.2	Exposure of humans to RF energy from radio sites	31
Fig 3.3	Microwave communication tower	34
Fig 3.4	Visible light spectrum	35
Fig 4.1	Effects of electro-magnetic field on a human	42
Fig 4.2	The scheme of the transformer room	44
Fig 4.3-a	Magnitude field strength before application of the additional radiation reduction measures	45
Fig 4.3-b	Magnitude field strength after application of the additional radiation reduction measures	45
Fig 5.1	EMF Magnetometer	62
Fig 5.2	Location of the extension of Tokh water supply station	63
Fig 5.3	Extension of Tokh water supply station - Transformer room	63
Fig 5.4	Extension of Tokh water supply station - Transformer specifications ...	63
Fig 5.5	Extension of Tokh water supply station. Measurements at High Voltage side	64
Fig 5.6	Extension of Tokh water supply station. Measurements at Low Voltage side	64

<u>Fig. No</u>		<u>Page</u>
Fig 5.7	Location of Orascom Tank water supply station - 6 th October city	65
Fig 5.8	Orascom Tank water supply station – 6 th October city - Transformer room - Transformer specifications	65
Fig 5.9	Orascom Tank water supply station – 6 th October city – Transformer room - Measurements at High Voltage side	66
Fig 5.10	Orascom Tank water supply station – 6 th October city – Transformer room - Measurements at Low Voltage side	66
Fig 5.11	Orascom Tank water supply station – 6 th October city – Control boards room. Board specifications	67
Fig 5.12	Orascom Tank water supply station – 6 th October city – Control boards room. Measurements at the Back side	68
Fig 5.13	Orascom Tank water supply station – 6 th October city – Control boards room. Measurements at the Front side	68
Fig 5.14	Location of 6 th October Irrigation water station	69
Fig 5.15	6 th October Irrigation water station. Transformer specifications	69
Fig 5.16	6 th October Irrigation water station. Measurements at High Voltage side	70
Fig 5.17	6 th October Irrigation water station. Measurements at Low Voltage side	70
Fig 5.18	Location of Maadi water supply station	71
Fig 5.19	Maadi water supply station- Intake transformer 1. Transformer room ...	71
Fig 5.20	Maadi water supply station- Intake transformer 1. Transformer specifications	71
Fig 5.21	Maadi water supply station- Intake transformer 1. Measurements at High Voltage side	72
Fig 5.22	Maadi water supply station- Intake transformer 1. Measurements at Low Voltage side	72
Fig 5.23	Maadi water supply station- Intake transformer 2. Measurements at High Voltage side	73
Fig 5.24	Maadi water supply station- Intake transformer 2 Measurements at the Low Voltage side	73
Fig 5.25	Maadi water supply station- Intake control board - Transformer specifications	74
Fig 5.26	Maadi water supply station- station transformer. Transformer room	75
Fig 5.27	Maadi water supply station- station transformer specifications	75
Fig 5.28	Maadi water supply station- station transformer. Measurements at High Voltage side	76

<u>Fig. No</u>		<u>Page</u>
Fig 5.29	Maadi water supply station- station transformer. Measurements at Low Voltage side	76
Fig 5.30	Location of New Cairo Water Intake	77
Fig 5.31	New Cairo Water Intake - Transformer room	77
Fig 5.32	New Cairo Water Intake transformer specifications	78
Fig 5.33	New Cairo water intake measurements at High Voltage side	78
Fig 5.34	New Cairo water intake measurements at Low Voltage side	78
Fig 5.35	Location of North Helwan water supply station	79
Fig 5.36	North Helwan water supply station transformer specifications	79
Fig 5.37	North Helwan water supply station. Measurements at High Voltage side	80
Fig 5.38	North Helwan water supply station. Measurements at Low Voltage side	80
Fig 5.39	Location of Tebien water supply station	81
Fig 5.40	Tebien water supply station. Intake transformer specifications	81
Fig 5.41	Tebien water supply station - Intake transformer Measurements at High Voltage side	82
Fig 5.42	Tebien water supply station - Intake transformer Measurements at Low Voltage side	82
Fig 5.43	Tebien water supply station - Station transformer room	83
Fig 5.44	Tebien water supply station - Station transformer specifications	83
Fig 5.45	Tebien water supply station - Station transformer Measurements at High Voltage side	84
Fig 5.46	Tebien water supply station - Station transformer Measurements at Low Voltage side	84
Fig 5.47	Location of A Famous Sports Club	85
Fig 5.48	Famous Sports Club - Transformer room	85
Fig 5.49	Famous Sports Club - Transformer specifications	85
Fig 5.50	Famous Sports Club - Measurements at the High Voltage side	86
Fig 5.51	Famous Sports Club - Measurements at Low Voltage side	86

Fig.No.		Page
Fig 5.52	Location of Environmental studies and researches institute	87
Fig 5.53	Faculty of graduate studies and environmental researches – Transformer room and Transformer specifications	87
Fig 5.54	Faculty of graduate studies and environmental researches – Transformer room - Measurements at High Voltage side	88
Fig 5.55	Faculty of graduate studies and environmental researches – Transformer room - Measurements at Low Voltage side	88
Fig 5.56	Faculty of graduate studies and environmental researches – Control board room and Board specifications	89
Fig 5.57	Faculty of graduate studies and environmental researches – Control boards room - Measurements at Low Voltage side	89
Fig 6.1	Extension of Tokh water supply station – Layout	91
Fig 6.2	Extension of Tokh water supply station - Measurements at 2m distance in Low Voltage side	92
Fig 6.3	Extension of Tokh water supply station - Measurements at 2m distance in the transformer's left side	92
Fig 6.4	Orascom Tank water supply station – 6 th October city – Transformer room – Layout	93
Fig 6.5	Orascom Tank water supply station – 6 th October city – Transformer room - Measurements at 1.5 distance at Low Voltage side	93
Fig 6.6	Orascom Tank water supply station – 6 th October city – Control boards room – Layout	94
Fig 6.7	Orascom Tank water supply station – 6 th October city – Control boards room - Measurements at 1.5 distance at Back side	95
Fig 6.8	Orascom Tank water supply station – 6 th October city - Control boards room - Measurements at 1.5 m distance at Front side	95
Fig 6.9	6 th October Irrigation water station – Layout	96
Fig 6.10	6 th October Irrigation water station - Measurements at 1.5 m distance at low voltage side	96
Fig 6.11	Maadi water supply station - Intake transformer 1 – Layout	97
Fig 6.12	Maadi water supply station - Intake transformer 1 - Measurements at 2 m distance at low voltage side	97
Fig 6.13	Maadi water supply station - Intake transformer 2 – Layout	98
Fig 6.14	Maadi water supply station - Intake transformer 2 - Measurements at 2 m distance at the low voltage side	98