



Room 2006, 20th floor, Murray Building, Garden Road, Central, Hong Kong

Tel: 848 2551 Fax: 845 3489

香港中環花園道美利大廈20樓2006室 • 電話: 848 2551 傳真機: 845 3489

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for information

SECOND

PROGRESS REPORT

OF THE

WORKING GROUP ON

ELECTRIC & MAGNETIC FIELDS

August 1995

Table of Contents

	<u>Page</u>
Executive Summary	1
Introduction	2
Progress of Work	2
Conclusions	4
Recommendations	5
Appendix A - Composition of the Working Group	
Appendix B - General Statement of February 1995	
Appendix C - List of Study/Research Reports Reviewed by the Working Group	
Appendix D - Positions/Developments on EMF of the Different Countries/International Organizations	
Appendix E - EMF Field Measurement Results	
Appendix F - Basic Criteria for Establishing Causal Relationship between an Exposure and a Disease	

Executive Summary

This report aims to summarise the work progress of the Working Group on Electric and Magnetic Fields since the submission of its first progress report in September 1994. The Working Group continues to discharge its duties in monitoring and reviewing the worldwide developments of the power frequency electric and magnetic fields (EMF) issue with a view to serving as an independent body to provide advice on the topic and making recommendations to the Advisory Council on the Environment and the Government.

A series of meeting were conducted and attended by the Working Group and its representatives to explain the positions and exchange information on EMF as a result of the objection by some residents on the Black Point 400kV transmission system routing. The Working Group has also taken the opportunities to meet some overseas EMF experts during their trips to Hong Kong for exchanging up-to-date information. Besides maintaining and reviewing comprehensive EMF database and literatures, the Working Group has established communication links with various international organizations and national authorities in order to share their latest positions and developments on the issue which are summarised in an appendix to this report. Constant review of EMF field measurement results as a continuous exercise to assess the EMF levels in Hong Kong was also performed.

After reviewing the vast body of researches and reports as well as considering the latest positions and developments in different countries, the Working Group maintains its position in consensus with the balanced views of mainstream scientific community that there is no convincing scientific evidence to support the hypothetical connection between power frequency EMF exposure and adverse human health effects. The Working Group considers that the adoption of the International Radiation Protection Association guidelines, which have been adopted or recommended for use in similar form by many countries, is appropriate. Despite the lack of convincing evidence on the possible health effects of EMF exposure, the Working Group would like to bring up for the attention of the Council and the Government about the adoption of prudent avoidance or similar concept in some countries during the planning of new developments in view of the fact that the situation of uncertainty may last for some time and there is no scientific base for more stringent EMF guidelines/standards at present. It is recommended that a proper public education programme should be developed and participation in the World Health Organization project on EMF should be pursued.

Second Progress Report of the Working Group on Electric and Magnetic Fields

Introduction

1. The main objective of this progress report is to summarise the work progress of the Working Group on Electric and Magnetic Fields since its last progress report submitted in September 1994. The Working Group was formed in 1993 at the advice of the Environmental Pollution Advisory Committee, now called Advisory Council on the Environment (ACE), to monitor and review the worldwide developments of the power frequency electric and magnetic fields (EMF) issue with a view to serving as an independent body to provide advice on this topic and making recommendations to ACE and the Government. The composition of the Working Group is given in Appendix A.

Progress of Work

2. The Working Group's first progress report was submitted to the Secretary for Planning, Environment and Lands (SPEL) on 8.9.94 and subsequently distributed to ACE members on 3.11.94. The main conclusions of the said report were that there was no conclusive scientific evidence of any adverse health effects on the normal individuals arising from exposure to EMF and the International Radiation Protection Association (IRPA) guidelines on EMF exposure limits adopted in Hong Kong were considered appropriate. A general statement (see Appendix B) was issued by the Working Group in February 1995 to provide an update of its work progress for public information.
3. In response to the objection by some Tuen Mun and Sai Kung residents to the routing of CLP's Black Point 400kV transmission system, representatives of the Working Group were invited to attend a meeting at Sai Kung District Office on 1.3.95 and three LegCo panel meetings on 19.4.95, 25.4.95 and 24.7.95 respectively to explain its position on the EMF issue. In the ACE meeting held on 15.5.95, SPEL suggested and ACE agreed that the Working Group should get in touch with the residents to exchange EMF information with a view to developing better understanding of each other's viewpoints. A working group meeting was held on 18.5.95 when it was agreed that the residents should be invited to meet the working group members. Subsequently, two meetings for such a purpose were conducted on 28.6.95 and 17.7.95 respectively to meet the Black Point Routing Objection Association (BPROA), representing Sai Kung residents, and the residents of Yick Yuen Tsuen in Tuen Mun.

4. Taking the opportunities of some overseas EMF experts visiting Hong Kong, the Working Group would arrange for its members to meet these experts where possible in order to exchange up-to-date information on the worldwide developments of the issue. Three such meetings were conducted so far:-
- (a) Meeting on 28.2.95 with Dr. Tom McManus, Chief Technical Advisor of the Department of Transport, Energy and Communications, Irish Government during his trip to Hong Kong,
 - (b) Meeting on 13.6.95 with Mr Michael Dolan, Manager of the EMF Advisory Group, Electricity Supply Association of Australia (ESAA) on his way back to Australia via Hong Kong, and
 - (c) Meeting on 4.7.95 with Prof. Anders Ahlbom of Karolinska Institute of Environmental Medicine in Sweden, Dr. David Carpenter of University at Albany in New York, USA and Mr Roger Coghill of Coghill Research Laboratories in UK who were invited by the Fei Ngo Shan residents to give a seminar on EMF in Hong Kong.
5. One of the main functions of the Working Group is to keep up with the latest worldwide developments on the EMF issue. The Working Group has constantly been reviewing publications, literatures and reference materials obtained from various sources of information and is maintaining a library and a database to keep track of the most up-to-date international EMF developments. Besides individual researches and studies, the Working Group has reviewed over 50 comprehensive studies and reviews completed by authoritative international organizations, national and independent bodies so far and a complete listing of these study/review reports and publications is given in Appendix C. Constant update was received from ESAA on the computerised EMF database on information exchange and epidemiological studies which comprises a comprehensive listing of about 2000 papers on the subject. Also, subscription was made since January 1995 to the monthly bulletin "EMF Health & Safety Digest" published in USA which provides the latest EMF information available throughout the world.
6. The Working Group has also sent enquiries to over 40 organizations in 20 different countries with a view to sharing their latest positions on the EMF issue. Communication links have been set up and maintained with well-recognized international organizations, such as the World Health Organization (WHO) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), as well as relevant national bodies and authorities such as the National Radiological Protection Board of UK, the

Department of Energy of USA, etc. Through the exchange of information with these organizations, the Working Group has been able to keep abreast of the international and national EMF research and development programmes in progress, including WHO's international project on health and environmental effects of exposure to static and time varying EMF, US's EMF Research and Public Information Dissemination (RAPID) programme, and national cancer studies of UK and USA, etc. A paper which summarised the latest positions and developments on the EMF issue of different countries and international organizations is given in Appendix D.

7. As a continuous exercise to monitor and assess the EMF levels in Hong Kong for comparison with the IRPA guidelines currently adopted, the Working Group has reviewed the EMF field measurement data submitted by the Electrical & Mechanical Services Department (EMSD) as a result of the latter's field measurements on routine basis as well as in response to complaints and enquiries. All measurement results obtained by EMSD so far were below the EMF exposure limits promulgated in the said IRPA guidelines and in line with similar field readings measured by the two power companies. The EMSD field measurement results reviewed by the Working Group are summarised in Appendix E.

Conclusions

8. The researches and studies on the health implications of EMF have been conducted in various countries since the 70's. After over 20 years' of research, the results of numerous studies conducted so far are still providing conflicting views and findings, and the scientific community in general is still unable to reach any consensus on the possible health risk of EMF. Most of these researches are epidemiological studies which are still providing contradictory and inconclusive results. Convincing laboratory evidence to support the weak epidemiological results is still lacking despite extensive research efforts. There is no known biological mechanism to explain the possible health effects due to EMF exposure. To establish a causal relationship between an exposure and a disease, certain criteria (Appendix F) that are well accepted by scientific community must be fulfilled. When the results of studies on the adverse health effects of EMF are examined under the criteria, which should be viewed as a whole, there is no convincing evidence to support the hypothesis of adverse health effects arising from exposure to power frequency EMF. While this situation of uncertainty may persist for some time, further researches and studies on the subject will continue. International and national research programmes as stated above have been initiated hoping to provide more definite answers in the next few years. In the mean time, the Working Group will continue to monitor the latest developments on this topic and advise ACE and the Government accordingly.

9. After reviewing the vast body of research and study reports as well as considering the latest positions and developments of different countries/international organizations as stated above, the Working Group maintains its position in consensus with the balanced views held by mainstream scientific community, including those of the various international and national authorities, that there is no convincing scientific evidence to support the hypothesis of adverse health effects arising from exposure to power frequency EMF. The Working Group considers that the adoption of the IRPA guidelines, which are the best available internationally accepted guidelines at present and have been adopted or recommended for use in similar form by many countries such as Australia, New Zealand, UK, Italy, Germany, Austria, Taiwan, South Africa and the European Union, is appropriate. Both WHO and ICNIRP have confirmed recently in April 1995 that the said guidelines are still valid and reflect the current position of WHO in this matter. ICNIRP noted in its recent meeting in Washington during June 1995 that there appears to be no substantial new evidence to suggest that the EMF exposure limits need to be changed significantly from the current guidelines published by IRPA.
10. Despite the lack of convincing evidence on the possible health effects of EMF exposure, the Working Group notes that some countries such as Sweden and Norway and certain individual states in USA, in view of the fact that the situation of uncertainty may last for some time and there is no scientific base for more stringent EMF guidelines/standards at present, have adopted a "prudent avoidance" or similar concept in the planning of new transmission lines and urban developments. Generally speaking, prudent avoidance means taking the steps to managing and minimizing exposure to EMF within reasonable cost and convenience, taking into account all social, political, economical and environmental considerations. The Working Group is of the view that this is a planning issue beyond its jurisdiction but would like to bring it up for the attention and consideration of SPEL and ACE.

Recommendations

11. The Working Group has the following recommendations:-
- (a) While acknowledging the inconclusive status of this topic, the Working Group understands the fear expressed by the public due to the uncertain health risk of EMF exposure. It is recommended that the Government should allocate additional resources to develop a proper public education programme on the subject. It is essential for the Government to demonstrate its willingness to address the public concern by deploying more resources to address the EMF issue.

- (b) The Working Group strongly supports the participation of Hong Kong Government in the WHO international project stated above through financial and other assistance. Through participation in this project, it would be possible to receive regular update on the progress and development of WHO's activities on EMF and to obtain first hand knowledge of the project and its deliberations. WHO may invite the Government to select a representative for the International Management Committee which will oversee this project if a continuous financial contribution is made over the 5 year period of the project.