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**A comparison of Environmental Management System
(EMS) applied by large manufacturing companies in
Amata Nakorn Industrial Town and other areas of
Chonburi Province, Thailand**

*A thesis presented in partial fulfilment of the
Requirements for the degree of
Doctor of Philosophy in Management
At Massey University
New Zealand*

ARTHORN JITSOONTHORNCHAIKUL

2006

ABSTRACT

Industrial pollution is one of the most critical environmental problems facing Thailand at the present time. Therefore, control of industrial pollution is of the highest priority to the Thai government. Problems associated with industrial pollution place significant limitations on the potential growth of manufacturing industries in Thailand, because international trade today requires not only manufactured products of a high quality but also a commitment to high environmental standards by manufacturing companies (European Commission Environment Directorate-General, 2001; Ken, 2004).

This thesis investigated the major dimensions of the quality of the Environmental Management System (EMS) in large size manufacturers, that are located both inside and outside of industrial towns in Chonburi Province, Thailand. In particular, the research examined whether different stakeholders had the same or different perceptions about these dimensions.

The study used both qualitative and quantitative methods to collect information from four groups of stakeholders: Thailand's government officers in the government agencies concerned about environmental policy; top management within manufacturers; the manufacturers' staff at management level; and the local communities. A survey was carried out involving the government officers and top management staff within manufacturers. The qualitative data were collected from documentaries, interviews and observations.

The triangulation of methods and data permitted the comparison of the perceptions of the manufacturers' staff, from both inside and outside of industrial towns. The data were structured into the four major parts of an EMS: the performance agreement for the environmental programme; the plan for transformation implementation; the standards and processes; and the continuous improvement process.

The survey results show that manufacturers in the Town use ISO 14001. Two of the three manufacturers, outside the Town use TQM / TQEM as their EMS and the other

manufacturer, also from outside the Town, does not have any EMS within their company. The results also show that the factories in the Town, that used ISO 14001 and the factories outside of the Town that used TQM /TQEM, are similar in the four major parts of the EMS. However, they still have some processes which are notably different, such as the manufacturers that use ISO 14001 have better documentary systems, additional budgets for training staff and larger budgets to publicise, to the local communities, the companies' activities relating to their environmental management. However, the TQM / TQEM and Thailand's environmental legislation are more flexible and they allow companies to create environmental management activities.

Finally, the results suggest that there are three main factors that may effect the achievement of environmental management within manufacturers in Thailand. They are: the human factor (knowledge and awareness about the environment); the processes factor (green production and EMS processes); and the legislation factor (environmental standards, monitoring and enforcement systems).

ACKNOWLEDGEMENTS

This thesis is the result of all the work and help from a number of people, who have supported me over the past several years. In particular, there would have been no research without the following participants: Thai government officers: top management; and management level staff within the manufacturers and members of the local communities, who so willingly gave their time. I express my appreciation for their interest and support.

I specifically acknowledge the invaluable support and guidance provided by my supervisors: Professor Tony Vitalis, my chief supervisor and Head of Department, whose encouragement and friendship has sustained me throughout my work; Dr Johanna Rosier, my co-supervisor, for her supervision, assistance, advice and care of my well-being; and Professor John Overton, my former supervisor, who also provided valuable advice and support, often at critical times.

Massey University awarded me a grant, which contributed greatly to the progress of this research. The Vice-Chancellor's Doctoral Scholarship, a financial grant from Massey University, made a substantial contribution to the costs of the fieldwork. I thank Massey University for these opportunities.

A number of people provided me with technical assistance. Dr Ted Drawneek helped with statistics and data analysis. Dr Natilene Bowker and John Wyatt provided English proof reading of the thesis. I also thank the many friends, who provided the professional and personal support that enabled me to persevere with this thesis. Finally, this study and thesis would not have happened without the support of my parents and family. Thank you.

ABBREVIATIONS

| | |
|-------|---|
| ADB | Asian Development Bank |
| ANSI | American-National Standards Institute |
| ASEAN | Association of Southeast Asian Nations |
| BMA | Bangkok Metropolitan Administration |
| BOD | Biochemical Oxygen Demand |
| CEC | Commission for Environmental Cooperation |
| CEO | Chief Executive Officer |
| CO | Carbon Monoxide |
| COD | Chemical Oxygen Demand |
| CSD | Commission on Sustainable Development |
| DEDE | Department of Energy Development and Enhancement |
| DEQP | Department of Environmental Quality Promotion |
| DIW | Department of Industrial Work |
| DO | Dissolved Oxygen |
| EA | Environmental Auditing |
| EAPS | Environmental Aspects in Product Standards |
| EGAT | Electricity Generating Authority of Thailand |
| EIA | Environmental Impact Assessment |
| EM | Environmental Management |
| EMS | Environmental Management System |
| EMAS | Eco-Management Audit Scheme |
| EMR | Environmental Management Representative |
| EMS | Environmental Management System |
| EPA | The United States Environmental Protection Agency |
| EPE | Environmental Performance Evaluation |
| EQPD | Environmental Quality Promotion Department |
| EU | European Union |
| FDA | Food and Drug Administration |
| GEMI | Global Environmental Management Initiative |
| GENCO | General Environmental Conservation Public Company Limited |

| | |
|-----------------|---|
| ICC | International Chamber of Commerce |
| IEAT | Industrial Estate Authority of Thailand |
| INECE | International Network for Environmental Compliance and Enforcement |
| IPCS | International Programme on Chemical Safety |
| ISO | From the Greek “ISOS” meaning “equal” |
| ISIC | International Standard Industrial Classification |
| ITA | International Trade Administration |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| LAC | Latin America and the Caribbean |
| LCA | Life Cycle Assessment |
| MOI | Ministry of Industry |
| MONRE | Ministry of Natural Resources and Environment |
| MOPH | Ministry of Public Health |
| MOST | Ministry of Science and Technology |
| MOSTE | Ministry of Science, Technology and Environment |
| n.d. | No Date |
| NEB | National Environmental Board |
| NGOs | Non-Government Organisations |
| NEI | National Emissions Inventory |
| NESDB | National Economic and Social Development Board |
| NESDP | National Economic and Social Development Plan |
| NO ₂ | Nitrogen Dioxide |
| O ₃ | Ozone |
| OECD | Organisation for Economic Co-operation and Development |
| OEPP | Office of Environmental Policy and Planning |
| ONEB | Office of National Environmental Board |
| ONEP | Office of the Natural Resources and Environmental Policy and Planning |
| Pb | Lead |
| PCD | Pollution Control Department |
| P-D-C-A | Plan-Do-Check-Action |
| PM-2.5 | Particulate Matter with an aerodynamic diameter ≤ 2.5 microns |

| | |
|-----------------|---|
| PM-10 | Particulate Matter with an aerodynamic diameter ≤ 10 microns |
| R&D | Research and Development |
| SO ₂ | Sulfur Dioxide |
| SPAЕ | Strategic Plan of Action on Environment |
| Sq.km. | Square Kilometre |
| TCB | Total Coliform Bacteria |
| TDRI | Thailand Development Research Institute |
| TEI | Thailand Environment Institute |
| TQEM | Total Quality Environmental Management |
| TISI | Thailand Industrial Standards Institute |
| TQM | Total Quality Management |
| TSS | Total Suspended Solids |
| UK | United Kingdom |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNEP | United Nations Environment Programme |
| UNIDO | United Nations Industrial Development Organisation |
| U.S.A. | United State of America |
| WCED | World Commission on Environment and Development |
| WMA | Wastewater Management Authority |
| WSSD | World Summit on Sustainable Development |
| WWF | World Wide Fund for Nature |

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