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# JGSEE Newsletter

The Joint Graduate School of Energy and Environment

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## From the Director

This issue of JGSEE Newsletter reaches our readers at the beginning of a new academic year. On behalf of JGSEE and its consortium partners, I would like to extend a warm welcome to all our new students to the JGSEE community and I hope that they will all have a productive and enjoyable educational experience throughout their stay with us, whether it be at the JGSEE Centre or at any one of the partner institutions.

Since November 1998 – the beginning of the second semester of the year – JGSEE has been admitting new students to its programs every semester. The present cohort, which is the eighth, comprises 30 students: 9 PhD's, 7 MPhil's and 14 MSc's, including one from Brunei. This represents a 15% increase over the same period last year. All these students have been awarded the Type II scholarship, which covers tuition fee and thesis expenses. In my welcome address to our students at the "orientation", I pointed out that this generous financial support in fact came from our taxpayers' pockets and therefore the students should be grateful and should try their best to live up to the expectations of their sponsors. I highlighted, and I reiterate, that JGSEE students are expected to be accountable and mature individuals who would work shoulder-to-shoulder with their academic advisors like colleagues in their research. I also stressed the need for our students to acquire their English language and technical-paper writing skills as soon as possible instead of waiting until after their theses have been completed. I certainly hope that our students will work resolutely towards these objectives.

In order to strengthen partnership among the consortium members, JGSEE's Board of Trustees has recently endorsed a proposal that will enable each host institution to confer degrees to those JGSEE students who undertake their thesis study at its site. This is so that the host institutions will be accorded due recognition for their share of contribution, and that the students themselves would be better facilitated during the course of their stay. However the degree granting procedure has to be formalized by the Council of KMUTT and by those of the respective universities. The management of JGSEE will see to it that this is realized in due course.

In recent months, JGSEE and its partners have started to sharpen their focus on research. Preliminary efforts in this direction have resulted in the formation of three focused groups. In the last issue of JGSEE Newsletter, a brief description of the ASMG (Atmospheric Science and Modelling Group) was given. In this issue, we present the Carbon Cycle Research Group (CCRG) and the Combustion and Emission Control Group (CECG) and their activities. Possibilities to form other groups will also be explored in the near future. The aim of this exercise is to enable the participants of the consortium to define, within each group, their core research programmes and activities that may serve local and national science and technology needs in a more integrated and objective-oriented fashion. May I encourage all our affiliated staff members to join one or more of these groups and others that are in the pipeline, such as thermal process technology and clean energy research.

Inside this Newsletter, you will find the acronym "CDM" or "Clean Development Mechanism" mentioned in several places. This is an important international framework created by the Kyoto Protocol in dealing with climate change issues, for which Thailand needs to get prepared by investing in technical capacity building and in creating public awareness. JGSEE deems this as a subject that warrants close monitoring and serious study. If you are not already familiar with such terms as carbon credit, carbon fund and carbon sequestration, etc., I would strongly urge you to consider learning more about these issues of national interest as well as regional and global significance.

*Bundit Fungtammasan*

## Congratulations

JGSEE congratulates **Dr. Chumnong Sorapipatarana** on his promotion to the position of Assistant Professor and **Dr. Savitri Garivait** on the formal appointment by the Board of Trustees as Assistant Professor.

Asst. Prof.
Dr. Chumnong S.

Congratulations also to **Dr. Amnat Chidthaisong** on being awarded the Thailand Research Fund's ***"Capacity Building for Research Development of New University Staff"*** grant of THB 480,000 for a 2 year project on ***"Estimation of Methanotrophic Capacity of Tropical Forests of Thailand"***. This project is in collaboration with Prof. Ralf Conrad of the Max Planck Institute for Terrestrial Microbiology, Germany. He has also established a collaboration with Dr. Stanley Tyler of the Department of Earth Science, University of California at Irvine. This is a one-year project entitled ***"Carbon Storage and Assimilation in Tropical Mangrove Forests of South East Asia"*** funded by the University of California's Pacific Rim Research Program .

Finally, JGSEE felicitates Mr. Marupong Tansatcha on receiving The Royal Golden Jubilee Ph.D. Program Grant (RGJ). Mr. Marupong's thesis is entitled "Utilization of GIS platform for uninterrupted traffic noise forecasting" under supervision of Assoc. Prof. Dr. Pichai Pamanikabud, KMUTT.

Mr. Marupong T.

# The Carbon Cycle Research Group (CCRG)

Established by JGSEE members at the beginning of 2002, the CCRG aims to bring together scientists from different disciplines to promote research on carbon emission- absorption-related issues that would optimize the use of carbon in energy production within the framework of sustainable development. The knowledge of the carbon cycle in the ecosphere (its sequestration-storage-emission) combined with the use of carbon, as an alternative energy option will be studied by means of life cycle analysis (LCA).

The CCRG aims for an understanding of the biomass system that could beneficially increase the carbon storage whilst including its advantageous conversion as efficient energy. Our mission is to provide knowledge and knowhow, through scientific research and collaboration, for creating a proper planning strategy as well as providing the necessary support in energy and environmental decisions making and the promotion of sustainable development in the future.

*Specific research areas:*

**1. Carbon storage:**

Studies enabling a better understanding of mechanisms of carbon balance, in terms of sequestration, emission and storage in the ecosphere, using applicable promising crop systems. A comparative study among selected crops where applicable would identify the most relevant crop from the promotion of higher carbon storage in the soil.

**2. Carbon used:**

Specific biomass studied in the first area will be selected to study the most appropriate biomass conversion technology as an alternative option for the substitution of fossil fuel. Identified technologies are combustion, bioconversion (ethanol and methane) and biochemical conversion (biodiesel). The study of pollution emission from those technologies will be taken into account. The fate of the emission, where applicable, will be considered. The relationship between the process and the emission, as well as optimizing abatement measures with regard to climate change, will also be included.

**3. Life cycle assessment:**

The ultimate achievement of biomass study would be the evaluation of the carbon balance and carbon utilization for cleaner energy technology by life cycle analysis as the evaluation tool. The analysis will focus on technological, economic, energy conservation, environmental and sustainability aspects.

**4. Natural resource planning:**

From the knowledge linking carbon storage and carbon used, incorporated with the assessment of its life cycle, potential biomass to be used as an efficient energy source could be identified. Appropriate cropping area, existing land-use pattern and shifting crop area pattern will be studied using GIS based method. Finally, appropriate crop area planning will be identified.

*Members :*

The CCRG comprises scientists with inter- disciplinary expertise. The current members are as follows:

**Assoc. Prof. Dr. Sirintornthep Towprayoon,** Head of CCRG,
Greenhouse gas inventory,
Waste Management

*Carbon used:*

**Asst. Prof. Dr. Savitri Garivait,**
Atmospheric Science and
Analytical Chemistry


*Carbon storage:*

**Dr. Amnat Chidthaisong,**
Soil Biology, Stable Carbon Isotope

**Dr. Narumon W. Harvey,**
Soil Radioecology

*Life cycle assessment:*

**Dr. Shabbir Gheewala,**
Life Cycle Assessment

*Natural resource planning:*

**Dr. Suwannee Adsavakulchai,**
GIS & Remote Sensing

**Additional members are also invited from JGSEE's consortium partners.**

# Workshops/Seminars/ Conferences

The following section presents a selection of the workshops, seminars and conferences organized or attended by the academic staff of JGSEE. Since we are the school of energy and environment, most of these events are related to sustainability and climate change issues.

### Workshop of United Nations Framework Convention on Climate Change (UNFCCC)

A technical workshop on the methodologies for Uncertainty Management in National Greenhouse Gas Inventories was convened by the UNFCCC at Athens, Greece, during 3-5 April 2002. Thailand was represented at the workshop by Assoc. Prof. Dr. Sirintornthep Towprayoon, Head of Environment Division, JGSEE. The workshop focused on methodological and technical issues relating to the identification /development of possible methodologies for adjustments under Article 5, paragraph 2 of the Kyoto Protocol.

### Nineteenth Session of the Intergovernmental Panel on Climate Change (IPCC)

The 19th session of the IPCC was held during 17-20 April 2002 in Geneva, Switzerland. The elections for the IPCC Bureau were held during this session. The nominee from Thailand, Asst. Prof. Dr. Kansri Boonpragob of Ramkhamhaeng University, representing the Asian region, was elected as Vice-chair for the Working Group I. Assoc. Prof. Dr. Sirintornthep Towprayoon, attended the session as delegate from Thailand.

### Harnessing Science and Technology to the Service of Sustainable Development - The Ultimate Challenge

A public lecture on sustainable development was conducted by Dr. David Minns, Special Advisor on Sustainable Development Technology of the National Research Council, at Grand Ballroom, Century Park Hotel, Bangkok, on Monday 22 April 2002.

The lecture addressed the issue of sustainability in the broader context of culture, lifestyle and attitudes in addition to the development of sustainable technologies. The framework of sustainable development is built around the platforms of society, environment and economy contributing to the "quality of life". Indicators of sustainability have been selected in these three areas and also a fourth category, resources. To maintain a constant environmental footprint with growing economy, environmental technologies have to follow to stringent performance targets. The presentation explored these challenges drawing on specific examples of technology application and assessment.

The public lecture was followed by a panel discussion on "Science and Technology for Sustainability: Thailand's Context". The discussion was chaired by Assoc. Prof. Dr. Bundit Fungtammasan, Director, JGSEE. The panelists were Dr. David Minns, Dr. Chaiyod Bunyagidj, Vice President, TEI and Dr.Thumrongrut Mungcharoen, Coordinator, Cleaner Technology Advancement Program of NSTDA.

The event was jointly organized by the National Science and Technology Development Agency (NSTDA), National Metals and Materials Technology Center (MTEC), JGSEE and Thailand Environment Institute (TEI) in association with the Canadian Embassy and National Research Council of Canada.

### International Workshop on Climate Policy Dialogue in Asia

The Institute for Global Environmental Strategies (IGES) conducted an international workshop on "Climate Policy Dialogue in Asia" in Bangkok on 27-28 May 2002, in collaboration with the UNEP Collaboration Center of Energy and Environment (UCCEE) and the Thailand Environment Institute (TEI). This was the fourth in a series of workshops, the first three of which were held in China, Korea and India. The objective of the workshop was to provide a forum for initiating plans for cooperation among countries in the Asian region on climate change within the international framework created by the Kyoto Protocol such as the Clean Development Mechanism (CDM) and Joint Implementation. Presentations on the subject were made by leading experts from Thailand as well as IGES and UCCEE. These were followed by discussions among the presenters and the participants of the workshop. The need for capacity building and public awareness was recognized as the starting step for country participation in the UNFCCC mechanisms. This could be done through national coordination centers responsible for Kyoto Protocol Affairs. JGSEE was represented at this workshop by Dr. Shabbir Gheewala.

### OPET Seminar on Good Practice and Rational Use of Energy in Buildings

The Organisations for the Promotion of Energy Technologies (OPET) Seminar on Good Practice and Rational Use of Energy in Buildings, organised by KMUTT with the collaboration of the Pilot Plant Development and Training Institute (PTDI) and JGSEE, was held at Castrol Theatre, KMUTT, on 31 May 2002. The incorporation of energy conservation measures into the Singapore Building Code as well as a new, system integrated approach to specifying energy performance standards, or extended OTTV (Overall Thermal Transfer Value) were presented by Dr. S.K. Chou of the National University of Singapore. Several case studies on energy efficiency measures from Malaysia, Hong Kong, Japan, UK and the Netherlands were presented by Mr. Karsten M. Holm from the Dansk Energi Management A/S. Prof. Surapong Chirarattananon of the Asian Institute of Technology, Thailand, presented the mathematical modelling aspects of energy efficient building design. The morning session was chaired by Prof. Surapong and the afternoon session by Assoc. Prof. Dr. Bundit Fungtammasan, Director, JGSEE.

### 1st Workshop on Combustion and Emission Control

In order to review the scientific strength of the consortium, to develop networking activities and synergy within the consortium and to define a direction for collaborative research in one of the fields of expertise of the consortium, the JGSEE organized the

1st Workshop on "Combustion and Emission Control" on April 24, 2002 at the JGSEE's Office. Representatives of the 5 partner universities along with observers from Electricity Generation Authority of Thailand (EGAT) participated in this Workshop. In the field of combustion and emission control, JGSEE already has well-established groups: "Combustion Research

Laboratory - CRL" (KMUTT) and "Waste Incineration Research Center - WIRC" (KMITNB). In addition, "Biofuel Combustion" (KMUTT), "Wood Gasification" (PSU), "Air Pollution Control" (CMU), "Atmospheric Science Modeling Group - ASMG" and "Carbon Cycle Research Group - CCRG" (JGSEE) are under development.

The fuels being studied are those of national interest, e.g. lignite, LPG, natural gas, biomass, biofuels and waste. The research on the technologies and combustion processes is focused on fixed bed, rotary kiln incinerator, fluidized bed, porous-media augmented combustion, swirl burner, droplet combustion and internal combustion. Regarding the emission control, studies mainly cover the monitoring and modeling of atmospheric particulate matter. The research achievements cover fundamentals, prototype elaboration as well as pattern developments. The participants agreed that there should be a formation of a group/network to support the research in the field of "Combustion and Emission Control" under the umbrella of JGSEE in order to develop collaborative research projects focused on topics of national interest considering their environmental, economic and social impacts. They also agreed on the necessity to define a process encouraging teamwork and interpersonal relationship, for example rotation in organizing subsequent workshops with a defined agenda including brainstorming on one particular technology. In this regard, the WIRC proposed to host the 2nd Workshop on June 18, 2002 at the WIRC Laboratory in KMITNB and EGAT to host the 3rd one at Mae Moh Power Plant.

### 2nd Workshop on Combustion and Emission Control

As a result of the 1st Workshop, the Combustion and Emission Control Group (CECG) has been informally established by the JGSEE. The core members of the CECG are representatives of the 5 partner universities involved in research on Combustion. The 2nd Workshop of CECG was hosted by the Waste Incineration Research Center (WIRC) at KMITNB, on June 18, 2002. Representatives of governmental agencies (policy makers and funding decision makers) and industries (technology developers and users) were invited to join the workshop, in order to develop together research activities that will meet the needs of Thailand. Presentations and discussion of the 2nd Workshop were focused on "Waste incineration and its development in Thailand". A brainstorming on how to develop waste incineration technologies in order to meet the country's needs was also part of the Workshop.

The Pollution Control Department (PCD) presented its points of view and policy line concerning waste incineration. Specifically, it recommended that CECG dedicates its R&D efforts towards the development of efficient and environmentally acceptable technologies in compliance with PCD's emission standards and the know-how that will support local manufacture of marketable small to medium scale incinerators for industrial and medical wastes. These technologies should encompass, not only combustion, but also others necessary for a complete and workable system. PCD's particular concerns are emission of dioxin and particulate matter of diameters lesser than 2.5 μm (PM 2.5). Therefore, research activities that will enable the mitigation of these two pollutants are of prime interest.

Preliminary results of research studies of the WIRC pointed out that basic (fundamental) research activities are also essential for the development of technologies to be used for waste incineration in Thailand. The Environmental Technology Verification (ETV) program, currently in elaboration by WIRC with the support of PCD and Thailand Research Fund (TRF) will serve as a tool to initiate best practices in waste incineration and to better control the specification and quality of incinerators in the Thai market.

Following the discussion and brainstorming of the Workshop, the participants agreed that waste incineration be the first theme of the CECG's joint research programme development. Participants also agreed that the next CECG Workshop should be an informal meeting on this topic to finalise a programme framework that should identify the kind of waste, the common target, kind of technology, R&D needs and the key players and counterparts.

### Asia-Pacific Workshop on Clean Development Mechanism (CDM) and National Strategy Studies on Climate Change (NSS-CC)

This workshop was organized at UN-ESCAP, Bangkok, on 29-30 April 2002 to address the CDM issues and assess the achievements related to these in the Asia-Pacific Region. It provided an opportunity to share valuable experience on the CDM and the development of national strategy studies, and to learn from various international experts on how a country could be involved in the proc[illegible]. Various issues related to CDM, public and community participation, capacity building and the technicalities involved were discussed. Thailand, Indonesia, Vietnam and China presented the preliminary results issued from the national strategy studies. Indonesia proposed to elaborate the Phase II of the NSS-CC with the support of the World Bank especially focused on Land Use and Forestation (LULUCF). To elaborate the NSS-CC, Vietnam followed the same pattern as Thailand and used the assistance of the same consultant company, ERM. However, Vietnam has the opportunity to start the NSS-CC later than Thailand, and hence gain from the Thai experience. Vietnam has clearly defined its objectives and the potentials of its possible CDM projects. According to the Thai NSS-CC, promising projects in Thailand are biomass and biogas renewables, afforestation, production process improvements, combustion efficiency improvements and boiler, steam trap and chiller retrofits. The possible partners could be Japan, the UK, the Netherlands, Germany and France. For implementing the CDM process, Thailand could follow the strategy to ratify the Kyoto Protocol, develop CDM authorization structure and procedure, national CDM criteria, public participation process and finally, mobilize CDM to support the sustainable development process rather than investment promotion.

### Asia-Pacific Workshop on Prototype Carbon Fund (PCF)

This workshop was organized at UN-ESCAP, Bangkok, on 30 April - 1 May 2002 to present the PCF of the World Bank and how it could support the development of CDM projects. It provided an opportunity to share valuable experience on the deveopment of projects under CDM and PCF, and to learn from various international experts on how to successfully participate in the carbon market. The issues discussed were public and community participation in the development of PCF projects, the complexities involved, transaction costs and involvement of sectors besides energy in the development and implementation of PCF projects. Concerns of the participant countries were focused on the carbon ($CO_2$-eq) price, which is currently low. The current major gap was identified to be the ratification of the Kyoto Protocol by different countries and the calculation of the Marginal Abatement Cost to clearly demonstrate the benefit of the host country in terms of sustainable development. It could be noticed from the workshop that many countries, developed as well as developing ones, are very much hesitant on committing themselves in the process. However, most of them put high efforts in preparing themselves to launch the CDM process and related projects within the framework of PCF.

### Paper Presentation and Research Collaborations in the US

Dr.Amnat Chidthaisong of JGSEE attended the 102nd General Meeting of American Society for Microbiology (ASM), Salt Lake City, Utah during May 19-23, 2002 where he presented a paper on "Stable carbon isotope fraction during methanogenesis in California paddy field". The annual ASM meeting, one of the most important in the microbiology field, covered all aspects of microbiology, encompassing several hundred didactic, interactive, poster and award sessions with topics ranging from prokaryotic life on Mars to giant bacteria living in the intestines of surgeon fish. One of the hot topics at the meeting was bio- terrorism.

After the ASM meeting, Dr. Amnat visited the University of California at Irvine (UCI) where he investigated isotope fractionation of C and H during acetogenesis. The above reaction is of particular importance in anaerobic ecosystems where the acetate generated is utilized by methanogens to produce methane, one of the important greenhouse gases as well as a potential biogas. The project is part of collaboration with Dr. Stanley C. Tyler at UCI and Dr. David Valentine at University of California at San Diego. Assoc. Prof. Dr. Sirintornthep Towprayoon, Head of Environment Division, JGSEE, also visited UCI to discuss the future collaboration between JGSEE and UCI. She had meetings with the Chair of Earth System Science (ESS) Department, Prof. Williams Reeburgh, and other distinguished staff members of UCI-ESS.

### Emission Factors for Greenhouse Gas Emission Assessment

This workshop was organized by the Office of Environmental Policy and Planning (OEPP) on 21 May 2002. Dr. Vute from Kasetsart University made a presentation on "Enabling Activities II". He proposed setting up a "National Communication" about "Emission factors for greenhouse gas emission assessment". As per the UNFCCC, Thailand is a Non-annex 1 country. IPCC would like to fund Non-annex 1 countries to do National Communication with the following:

1. National circumstances
2. Inventory
3. Mitigation and adaptation measures
4. Policies and measures on climate change
5. Systematic observation network
6. Technology and capacity
7. Education and public building needs

The presentation was followed by a discussion, the outcome of which was that as a first priority, Thailand could set up inventory from agriculture such as rice field area and livestock. JGSEE was represented at this workshop by Dr. Suwannee Adsavakulchai.

### Environmental Technology needs of Thailand

A brainstorming meeting was organized by OEPP on May 21, 2002, for enabling the Kingdom of Thailand to prepare its national communication in response to its commitments to the UNFCCC Project of the UNDP funded by the Global Environment Facility (GEF). The discussion was based on the working document on "Evaluation of the Thai environmental technology needs" prepared by the Center for Applied Economic Research. One of the major conclusions of this meeting underlined that research studies related to mitigation technologies should go together with those concerning adaptation.

## JGSEE's Masters graduates in April 2002

**Student's name:**
Mr. Watcharapong Tachjapong
**Advisor:** Prof. Dr. Tanongkiat Kiatsiriroat
**Thesis title:** Analysis of a Heat Pump with Solid Desiccant Tube Bank

**Student's name:**
Ms. Imsub Subkaew
**Advisor:** Prof. Dr. V.N. Bashkin
**Thesis title:** The Geographic Information System Analysis for the Optimal Site of Sanitary Landfill. A Case Study: Samut Songkhram Province, Thailand.

## Education Trip at Rice University

Recently a JGSEE Ph.D. candidate who is also a Royal Golden Jubilee scholarship holder went on a short-term reseach trip overseas. She has this to say about her experience:

"I am Kruamas Smakgahn, Ph. D. candidate in Environment Division of JGSEE, under supervision of Assoc. Prof. Dr. Sirintornthep Towprayoon. At the end of February of this year, I went to do research with my overseas advisor, Prof. Ronald L. Sass at Rice University, Houston, Texas, USA. The objective of this education journey was to develop an empirical model to estimate methane emission from rice fields during drainage period. The model was validated using experimental data from Texas rice fields. I have the chance to learn MATLAB program for my future research.

For the first week, I stayed at my overseas advisor's home. He kindly gave me a ride to the University and provided me every meal during my stay at his home. After that I rented a house 3-4 miles from the campus, which was a 20-minute ride by bicycle. My office at the university was very convenient, and I had the same privileges as other Rice's students.

During my stay at Rice University, I had the opportunity to join their weekly seminars on topics related to global warming and policies to manage the global warming problem. This provided an opportunity to share experiences and also to solve problems together. I also had a chance to participate in an earth day festival at Rice.

I got a lot of ideas for preserving the environment and also many ideas to solve environmental problems and waste management.

My Thai friend (Miss Arada who is a doctoral student at University of Texas) and I had a chance to represent Thailand at the international festival at Anderson Medical Center on April 5, 2002. Our booth presented details of Thailand, her history and culture.

The Thai New Year festival of (Songkran) was held at Buddhawat Temple in Houston. Around 500 Thai people had the opportunity to do merit. There was also a beauty contest, Thai clothes fashion show, singing and traditional Thai dances.

Another important event at Rice University that I had the opportunity to participate in was their graduation ceremony. More than 2000 students graduated this year, with more than 250 majoring in MBA. I made good friends from many countries such as the Netherlands, Italy, England, China, Vietnam and USA at Rice University.

I was very glad to be there and I would like to say thank you very much to my overseas advisor and his wife who were very kind and took good care of me. I would also like to thank the Dean of Ecology and Evolutionary Biology at Rice University who provided me everything and gave me the right as Rice's students. A thank you to all the officers at Rice University and my friends for their help and kind support. Finally, I would like to thank my advisor, Assoc. Prof. Dr. Sirintornthep Towprayoon, to give me a chance to do my research at Rice."

## Student Presentation

Ms. Sansanee Chawanakul, a Ph.D. student at JGSEE, presented a paper entitled "Methane Production and Population Dynamics of Acetoclastic Methanogens in Rice Rhizosphere" at the **Third International Symposium on Non-$CO_2$ Greenhouse Gases (NCGG-3)** held in Maastricht, the Netherlands. The paper was co-authored by:

S. Chawanakul[1],
P. Chaiprasert[2],
O. Kerdchoechuen[2],
S. Towprayoon[1,3], and
M. Tanticharoen [4]

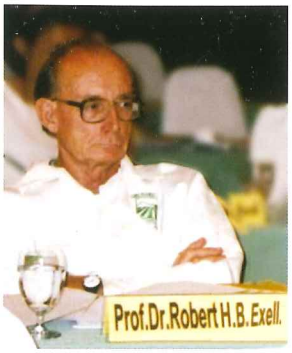
1 JGSEE
2 School of Bioresources and Technology, KMUTT
3 School of Energy and Materials, KMUTT
4 National Center of Genetic Engineering and Biotechnology (BIOTEC)

## Farewell to Mr. Jocelyn Harvey

Before coming to Thailand, Jocelyn Harvey worked at the Radiological Safety Division of the Ministry of Agriculture, Fisheries, and Food in the United Kingdom. He joined the Environmental Technology Division, School of Energy and Materials, KMUTT, in January 1998 . There he lectured on atmospheric pollution modelling and radioactive waste management, and supervised five master degree students undertaking research in air pollution, counter-measures against nuclear accidents, and nuclear waste disposal.

In February 2000 he joined the JGSEE as a Research Associate. His main contributions to the Graduate School have been (1) setting up the Atmospheric Science and Modelling Group in collaboration with Associate Professor Sirintornthep Towprayoon, and serving as the Group's secretary, (2) creating and teaching a new course entitled Atmospheric Boundary Layer Science in collaboration with Professor R. H. B. Exell, and (3) coordinating the student seminar course. He also served as editor of the Asian Journal of Energy & Environment for a short time.

Besides lecturing and supervising student research, Jocelyn Harvey's activities have included analysing upper air data for determining the atmospheric boundary layer characteristics in Thailand, and giving a number of invited lectures and workshops on atmospheric air pollution dispersion.




He will return to the United Kingdom at the end of June and take up a position in the Food Standards Agency in charge of assessment methodologies for the environmental impact of nuclear discharges from power stations. He will also be responsible for modelling the dispersion of pollutants in the environment and the food chain.

The JGSEE gratefully acknowledges the dedication of Jocelyn Harvey to his work here and the valuable contributions he has made to the School. We wish him every success in his future position in the United Kingdom.

*Prof. Dr. R. H. B. Exell*

## New Professorial Board Appointed

The JGSEE's Board of Trustees, in its meeting on 15 March 2002, resolved to appoint a new seven-member Professorial Board replacing the previous one which has expired its three-year term. Like its predecessor, the new Board consists of members who are well known professors with recognized expertise related to energy and environmental technologies. The chief role of the Professorial Board is to advise the Director, to endorse or, where appropriate, to scrutinize prior to the deliberation of the Board of Trustees, on matters related to JGSEE's education and research policies and programs, as well as academic personnel management.

The new Board is chaired by **Prof. Dr. Naksitte Coovattanachai**, President of Walailuck University, with **Prof. Dr. Chongrak Polprasert**, Dean of the School of Environment, Resources and Development, AIT, as Deputy Chair. The other members are: **Prof. Dr. Prida Wibulswas**, Director of SIIT-TU, **Prof. Dr. Wiwut Tanthapanichakoon**, Department of Chemical Engineering, Chulalongkorn University, **Prof. Dr. Morakot Tanticharoen**, Director, National Center for Genetic Engineering and Biotechnology, **Prof. Dr. Somchart Soponronnarit**, School of Energy and Materials, KMUTT, and **Prof. Dr. Tanongkiat Kiatsiriroat**, Department of Mechanical Engineering, CMU. **Assoc. Prof. Dr. Bundit Fungtammasan**, Director, and **Assoc. Prof. Prungchan Wongwises**, Acting Deputy Director, serve as Secretary and Assistant Secretary, respectively.

## JGSEE's list of publications

Chawanakul, S., Chaiprasert, P., Kerdchoechuen, O., Towprayoon, S., and Tanticharoen, M. (2002). **Methane Production and Population Dynamics of Acetoclastic Methanogens in Relation to Methane Emission in Rice Rhizosphere.** Presented at the Third International Symposium on Non-$CO_2$ Greenhouse Gases, Maastricht, the Netherlands, 21-23 January 2002.

Chidthaisong, A., Chin, K.J., Valentine, D.L., and Tyler, S.C. (2002). **A comparision of isotope fractionation of carbon and hydrogen from paddy rice roots and soil bacterial enrichments during $CO_2/H_2$ methanogenesis.** Geochimica et Cosmochimica Acta, 66: 983-995.

Kouprianov, V.I., Bashkin, V.N., Towprayoon, S., Milindalekha, J., and Wongyai, K. (2002). **Emission of Arsenic and Gaseous Pollutants from Power Generation in Northern Thailand: Impact on Ecosystems and Human Health**. World Resource Review, 14(1): 98-115.

Milindalekha, J., Bashkin, V.N., and Towprayoon, S. (2001). **Calculation and Mapping of Sulfur Critical Loads Terrestrial Ecosystems in Thailand**. Water, Air and Soil Pollution, 130: 1265-1270.

Wongwises, S., Wongchang, T., Kaewon, J., and Wang, C. C. (2002). **A Visual Study of Two-Phase Flow Patterns of HFC-134a and Lubricant Oil Mixtures.** Heat Transfer Engineering. 23: 13-22.

**Other presentations by JGSEE's staff**

Adsavakulchai S. and Honda K. (2002) **Environmental Modeling on Disease Distribution using Remotely Sensed Data and GIS** . The 6th Annual National Symposium on Computational Science and Engineering, 3-5 April 2002, Thailand.

Gheewala, S.H. and Annachhatre, A.P. (2002). **Efficiency of Nitrifying Biofilms under Shock Load Conditions**. Presented at the 3rd IWA World Water Congress, 17-21 April 2002, Melbourne, Australia.

**Members of the consortium are strongly encouraged to communicate to us, details of journal articles accepted for publication and presentations at conferences for announcement in the forthcoming issues of the newsletter. Information about workshops and conferences organized or attended are also welcome; as are notes on research activities and curriculum development.**

JGSEE is an educational and research consortium involving King Mongkut's University of Technology Thonburi, King Mongkut's Institute of Technology North Bangkok, Chiang Mai University, Prince of Songkhla University and Sirindhorn International Institute of Technology - Thammasat University. It is funded by the Thai Government under an ADB Loan Program on Higher Education Development with complementary support from the National Energy Policy Office.

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