

ReSAGPAC WG Newsletter

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The Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries

Member Countries:



India



Indonesia



Japan



Korea



Malaysia



Philippines



R.O.C.(Taiwan)



Thailand



Vietnam

Seminar Report – Opening Address

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
09:30~09:40am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan



Dr. Zueng-Sang Chen (陳尊賢)

**Distinguished Professor of Department of Agriculture Chemistry,
National Taiwan University**

- Ph.D. in Agriculture Chemistry, 1984, National Taiwan University
- M.S. in Agriculture Chemistry, 1978, National Taiwan University
- Specialties: pedology, soil classification and taxonomy, forest ecology, soil pollution remediation.
- Experienced on planning, design, construction, and operation of soil remediation work.

Distinguished USEPA speakers, Dr. Steve Rock and Dr. James Landmeyer, Government officers and experts of the Scientific Committee Members of the Working Group on Remediation of Soil and Groundwater Pollution of Asian Countries (WG ReSAGPAC), Ladies and Gentlemen: It's my great honor to say some words at the opening ceremony of the "2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites" for the Asian Countries. On behalf of the Taiwan EPA and Working Group of ReSAGPAC, I would like to express my sincerely welcome all of you to come here, especially including 2 experts on phytoremediation technologies from USEPA, Dr. Steve Rock and Dr. James Landmeyer, some government officers and scientific committee members of 9 countries of Working Group of ReSAGPAC in Asian countries. Your participation is very welcome and will contribute a great to the successful forum in this morning.

This forum was organized by Taiwan EPA and WG of ReSAGPAC. As we know, the

phytotechnologies can use different special or super accumulative plants to contain, stabilize, sequester, assimilate, reduce, detoxify, degrade, metabolize or mineralize contaminants in the soil, groundwater, surface water or sediments of the contaminated sites. Phytotechnologies can be applied in-situ or ex-situ and can address organic compounds such as petroleum hydrocarbons, chlorinated compounds, pesticides and explosive compounds, chlorinated solvents, and some heavy metals, metalloids and radioactive materials.

Green remediation technique always a hot issue to cleanup the contaminated sites for maintain our sustainable environmental quality. We have developed and learned some experiences on the management strategies and remediation techniques for the contaminated sites, but how to use the phytoremediation technologies, in terms of innovative, risk-based approach, environmental friendly, and cost-effective techniques, for the contamination sites in Asian countries.

In the first session of this forum, the organizing committee invites representative speakers from country members of the working group of ReSAGPAC to share their experience in this forum. We will have some successful stories and case studies to be shared. In the second session, we will invite 2 experts on phytoremediation technologies from USEPA, Dr. Steve Rock and Dr. James Landmeyer to join us to share their experience on the phytotechnologies for contaminated sites.

Finally, I would like to express my sincerely thanks to Mr. Hung-Teh Tsai,

executive secretary of the Soil and Groundwater Remediation Fund Management Board of Taiwan EPA and some government officers of the Fund management Board for their strong support for this forum. I also thank the two experts from USEPA and all country members of the Scientific Committee of Working Group of ReSAGPAC. I hope all of you can enjoy this forum and workshop to be held at Kaohsiung city in next two days.

Thank you.



The
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Program

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites

Date: June 25, 2012

Venue: Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

| Time | Topic | Speaker |
|-----------|---|--|
| 0920-0930 | Registration | |
| 0930-0940 | Opening Ceremony | Prof. Zueng-Sang Chen Chairman of ReSAGPAC WG |
| 0940-0950 | Taiwan Experience of Phytoremediation on the Soil and Groundwater Contaminated Sites | Prof. Dr. Chun-Han Ko (Taiwan) |
| 0950-1000 | Phytoremediation – A Reliable Approach to Clean-up Metal Contaminated Soils (Korea experience) | Prof. Dr. Yong Sik Ok (Korea) |
| 1000-1010 | Heavy Metal Pollution of Soils and its risk alleviation by Phytotechnologies : Research Experiences in NIAES | Dr. Tomoyuki Makino (Japan) |
| 1010-1015 | Thailand Experience of Phytoremediation on the Soil and Groundwater Contaminated Sites | Dr. Chayawee Wangcharoenrung (Thailand) |
| 1015-1020 | Bioremediation of Heavy Metals in Contaminated Soils (Indonesian Agricultural Environment Research Institute Experiences) | Mrs. Triyani Dewi (Indonesian) |
| 1020-1025 | Soil Contamination : Its Prevention & Control (India Experience) | Dr. Rashid Hasan (India) |
| 1025-1030 | Implementation of Phytoremediation for Treatment of Heavy Metals in Mining Areas of Vietnam | MSc. Nguyen Trung Thuan (Vietnam) |
| 1030-1050 | Break | |
| 1050-1200 | (1) Dr. Steve Rock Comments (2) Dr. James Landmeyer Comments (3) Open Discussion | Dr. Steve Rock Dr. James Landmeyer (USA) |
| 1200-1400 | Lunch Party (Invited ONLY) | |

Program

International Workshop on Phytotechnologies as Remediation for Contaminated Sites (1st Day)

Date: June 26, 2012

Venue: International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan

| Time | Topic | Speaker |
|-------------|--|---|
| 09:00–09:30 | Registration | |
| 09:30–09:45 | Opening Remarks | (1) Mr. Hung-Teh Tsai Taiwan EPA (2) Mr. Mark Kasman USEPA |
| 09:45–10:45 | Introduction to Phytotechnologies | Dr. Steve Rock |
| 10:45–11:00 | BREAK | |
| 11:00–12:00 | Groundwater and Tree Basics | Dr. James Landmeyer |
| 12:00–13:00 | LUNCH | |
| 13:00–13:45 | Regulatory Concerns | Dr. Steve Rock and Dr. James Landmeyer |
| 13:45–15:00 | Organic Compounds: Degradation in Soil and Sediment | Dr. James Landmeyer |
| 15:00–15:15 | BREAK | |
| 15:15–16:30 | PhytoExtraction of Inorganic Compounds | Dr. Steve Rock |
| 16:30–17:30 | Hands-on small group exercise | Dr. Steve Rock and Dr. James Landmeyer |
| 17:30 | Day One Concludes | |

The Working Group on Remediation for Soil and
Groundwater Pollution of Asian Countries

Program (continued)**International Workshop on Phytotechnologies as Remediation for Contaminated Sites (2nd Day)**

Date: June 27, 2012

Venue: International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan

| Time | Topic | Speaker |
|-------------|--|---------------------------------|
| 08:30–09:00 | Registration | |
| 09:00–10:00 | PhytoForensics | Dr. James Landmeyer |
| 10:00–10:30 | Vegetative Covers I | Dr. Steve Rock |
| 10:30–10:45 | BREAK | |
| 10:45–11:15 | Vegetative Covers II | Dr. Steve Rock |
| 11:15–12:00 | Urban and Brownfields Applications | Dr. James Landmeyer |
| 12:00–13:00 | LUNCH | |
| 13:00–14:00 | Group discussion – will it work on my site? | Dr. Steve Rock & Dr. James |
| 14:00–15:00 | Field Case Studies | Dr. James Landmeyer |
| 15:00–15:15 | BREAK | |
| 15:15–16:15 | Constructed Wetlands / Riparian Case Studies | Dr. Steve Rock |
| 16:15–17:00 | Questions and Evaluation | Dr. Hao-Chun Hung Taiwan EPA |
| 17:00 | Workshop Ends | |

The Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries

Seminar Report - Invited Speakers

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
09:40~09:50am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Taiwan experience of phytoremediation on the soil and groundwater contaminated sites

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 16/123~39/123 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



Taiwan

Dr. Chun-Han Ko(柯淳涵)

Professor of School of Forestry and Resource Conservation, National Taiwan University, Taipei, Taiwan.

- Ph.D. in Department of Civil and Environmental Engineering, UCLA.
- Specialties: tree phytoremediation, constructed wetlands and plant renewable energy.
- Committee member of Water Protection Department of Taiwan EPA



The
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ation for Soil and
Countries

Seminar Report - Invited Speakers (continued)

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
09:50~10:00am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Phytoremediation – A Reliable Approach to Clean-up Metal Contaminated Soils (Korea experience)

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 40/123~61/123 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



Korea

Prof. Dr. Yong Sik Ok

**Professor of Department of Biological Environment
Kangwon National University, Korea.**

- Vice Chair of Division two (soil properties and Processes) of International Union of Soil Science (IUSS)
- Director of Korea Biochar Research Center (KBRC)
- Director of Environmental Remediation and Restoration Laboratory
- Specialties: environmental soil chemistry, macroscopic and microscopic chemical processes in soils through plant -soil continuum.



The Working Group on Groundwater Pollution in Asian Countries

Seminar Report - Invited Speakers (continued)

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
10:00~10:10am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Heavy Metal Pollution of Soils and its risk alleviation by Phytotechnologies : Research Experiences in NIAES

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 62/123~73/123 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



Japan

Dr. Tomoyuki Makino

Senior Researcher of Soil Environmental Division, National Institute for Agro-Environmental Sciences (NIAES), Japan.

- Ph.D in University of Tohoku, Japan.
- Specialties: soil science and remediation technologies for heavy metal contamination sites.
- Experienced on brown field management and soil science.



The Working Group on
Groundwater Pollution

Seminar Report - Invited Speakers (continued)

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
10:10~10:15am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Thailand Experience of Phytoremediation on the Soil and Groundwater Contaminated Sites

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 74/123~83/123 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



Thailand

Dr. Chayawee Wangcharoenrung

**Environmentalist (Professional Level), Pollution Control Department,
Bangkok, Thailand (Industrial Wastewater Division)**

- Ph.D in Mechanical Engineering - Biomechanics, 2005, The University of Texas at Austin, USA.
- M.S. in Science, Mechanical Engineering - Dynamic Systems and Control, 1999, The University of Texas at Austin, USA.
- Specialties: monitoring, inspection and remediation of groundwater and soil contamination from petrochemical industries and contaminated sediment remediation.
- Experienced on brown field management and soil science.



The Working Group on
Groundwater Pollution of Asian Countries

Seminar Report - Invited Speakers (continued)

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
10:15~10:20am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Bioremediation of Heavy Metals in Contaminated Soils (Indonesian Agricultural Environment Research Institute Experiences)

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 84/123~91/123 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



Indonesia

Mrs. Triyani Dewi

Researcher of Indonesian Agricultural Environment Research Institute (IAERI).

- 2009 - 2012 Postgraduate, Management of Natural Resources and Environment (PSL), Bogor Agricultural University (IPB).
- 1998 - 2003 Bachelor degree, Department of Soil Science, Agricultural Faculty, Gadjah Mada University, Yogyakarta (UGM).



Remediation for Soil and
Groundwater Pollution of Asian Countries

Seminar Report - Invited Speakers (continued)

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
10:20~10:25am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Prevention & Control of soil contamination in India

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 92/123~107/123 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



India

Dr. Rashid Hasan

Director of CP Division, Government of India Ministry of Environment and Forests, Republic of India.

- Ph.D in Aligarh Muslim University (AMU).
- Experienced on pollution control, environmental policy, planning, law, eco-development.



The Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries

Seminar Report - Invited Speakers (continued)

2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
10:25~10:30am, June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan

Topic: Implementation Of Phytoremediation For Treatment Of Heavy Metals In Mining Areas Of Vietnam

Website for downloading the paper and pdf files:

http://140.115.123.119/101062627/1010625_download.html

(page 108~113 of the pdf file) or ReSAGPAC WG website (<http://www.resagpac.org/>)



Vietnam

MSc. Nguyen Trung Thuan

Official of Vietnam Environment Administration (VEA) – Ministry of Natural Resources and Environment (MONRE)

- 2009 – 2011 Master of Science: Environmental Policy, University of Tsukuba, Japan.
- 1996 – 2001 Bachelor of Science: Environmental Technology, Hanoi University of Technology, Vietnam.



The Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries

Interesting sidelights

At 2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites

June 25, 2012

Alexandria Chamber, GIS Convention Center, National Taiwan University, Taipei, Taiwan



Interesting sidelights (continued)

At 2012 International Forum on Green Technology and Phytoremediation for Contaminated Sites
June 25, 2012



Seminar Report - Opening Remarks

International Workshop on Phytotechnologies as Remediation for Contaminated Sites

09:30~09:45am, June 26, 2012

International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan



Mr. Hung-Teh Tsai (蔡鴻德)

**Technical Superintendant and Executive Secretary of
Soil and Groundwater Remediation Fund Management Board,
Taiwan Environmental Protection Administration**

- M.S. in Environmental Engineering, National Taiwan University
- B.S. in Public Health, National Taiwan University
- Experienced in Administration, Site Supervision and Management.

Distinguished USEPA speakers, Dr. Steve Rock and Dr. James Landmeyer, Government officers and experts of the Scientific Committee Members of the Working Group on Remediation of Soil and Groundwater Pollution of Asian Countries (WG ReSAGPAC), Ladies and Gentlemen: It's a great pleasure for me at the opening ceremony of the "International Workshop on Phytotechnologies as Remediation for Contaminated Sites" for the Asian Countries. On behalf of the Taiwan EPA and Working Group of ReSAGPAC, I want to sincerely welcome all of you to come here, especially including 2 experts on phytoremediation technologies from USEPA, Dr. Steve Rock and Dr. James Landmeyer, 12 government officers and scientific committee members of 9 countries of Working Group of Asian countries. Your participation is very welcome and will contribute a great to the successful future to maintain our good environmental quality and human health.

This workshop was organized by Taiwan EPA, USGS, and USEPA. As we know, the phytotechnologies can use different special or super accumulative plants to contain, stabilize, sequester, assimilate, reduce, detoxify, degrade, metabolize or mineralize contaminants in the soil, groundwater, surface water or sediments of the contaminated sites. Phytotechnologies can be applied in-situ or ex-situ and can address organic compounds such as petroleum hydrocarbons,

chlorinated compounds, pesticides and explosive compounds, chlorinated solvents, and some heavy metals, metalloids and radioactive materials.

As we know, green remediation technique always a hot issue to cleanup the contaminated sites for maintain our sustainable environmental quality. We have so many contaminate sites in the rural soils and commercial and industrial parks during the industrialization in last few decades in Asian countries. We also have developed and learned some experiences on the management strategies and remediation techniques for the contaminated sites, but how to use the phytoremediation technologies, in terms of innovative, risk-based approach, environmental friendly, and cost-effective remediation techniques, for the contamination sites in Asian countries. We thank the invited two experts from USEPA, Dr. Steve Rock and Dr. James Landmeyer, can share their experience in next two days.

Ladies and Gentlemen, some countries have their experience on this technique in Asia region. This workshop will provide us the scientific, engineering and regulatory information designed to help government regulators and scientists to uniformly conduct site remediation using phytotechnologies in a variety of applications. The workshop will also explain the advantages and limitations of the techniques and will highlight the

phytotechnologies for different applications. The proposed contents of this workshop includes an introduction to the science, some case studies, hands-on group exercises, and an open discussion regarding the application of phytotechnologies for some special sites.

Green technology is one of the technologies for Taiwan EPA to promote it as risk-based approach techniques for sustainable environment, because we do not have enough budgets, time or techniques for different status of the pollutants in our contaminated sites. We know that the risk-based approach remediation techniques should be a very important direction to be

followed to develop different remediation techniques for soil and groundwater contaminated sites, especially in the Asian countries.

Finally, I would like to express my sincerely thanks to two experts from USEPA, Dr. Steve Rock and Dr. James Landmeyer, and organizing committee members for their efforts for this workshop. I hope all the foreign participants can enjoy this workshop and beautiful landscape, culture and foods of Kaohsiung city in next two days.

Thank you.



Seminar Report – Opening Remarks (continued)

International Workshop on Phytotechnologies as Remediation for Contaminated Sites

09:30~09:45am, June 26, 2012

International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan



Mr. Mark Kasman

Senior Advisor of

US Environmental Protection Agency

- Senior Information Officer and Thailand Project Manager
- Senior International Information Officer
- Asia-Pacific Program in the Office of International Affairs



Good morning.

I would begin by acknowledging Minister Shen in Taipei, who we had lunch with yesterday, at the Environmental Protection Administration in Taiwan, and also with D.G. Tsai, and also with D.D. Chen, who at the Kaohsiung Environmental Protection Bureau for their support of this wonderful workshop. We are very appreciative of all the work and effort they put in, to bring us together and all of you together today. USEPA, US Environment Protection Agency, partners with EPA Taiwan, to implement regional activities that advance past each addressed environmental challenges at the Asia-Pacific region and elsewhere.

Next year will be the 20th anniversary of USEPA--EPA Taiwan collaboration and is really a thrill for me personally to be here in Kaohsiung today, to hear from so many of our global partners as well as our Taiwan colleagues and experts from all over the Island. I'm so pleased to be here with our international partners from India, from Indonesia, from Malaysia, from Philippines, from Thailand, and Vietnam, and Japan and Korea, to join us here today. Many of you may not know of the leadership role that EPA Taiwan, and the officials from all these partner countries have assumed which regard and environmental protection and sustainability. Yesterday I had the opportunity to listen their accomplishments in the area, the works that we're about to talk today, and phytoremediation has all very impressive, and I'm really appreciative about being here and sharing expertise with you today.

Three years ago, under the leadership of Minister Shen and my own assistant administrator

Michelle J. DePass, USEPA bilateral collaboration program with EPA Taiwan transitioned into this regional capacity building program and global partnership to address our shared priorities. EPA Taiwan, Soil and Groundwater Remediation Fund Management Board, under Director General Tsai's strong leaderships, have done so much work to bring together international counterparts to work together to enhance this regional capacity.

It is in that context I am very pleased to welcome our own US experts, from my own agency in Cincinnati, Ohio, Dr. Steven Rock, and from our partner agency, the US Geological Survey in Columbia, South Carolina, Dr. James Landmeyer, here to share their experiences, the US experience with you all today. We all just came from Washington and we'd gather expertise wherever it is to bring it here appropriately to you. I'd like to again acknowledge our international partners, you are here because you recognize the importance of working together in a regional global capacity, and that's how we can enhance sustainability for a global need.

As you all know these environmental challenges know no borders, or political boundaries. Air, water and soil quality, affect our children, our grandparents, and everyone in our communities. Site remediation is just one of the activities under the USEPA--EPA Taiwan regional program, other activities that might be of interest to you, include electronic waste recycling, environmental information, mercury monitoring, air quality, enforcement appliance and sustainable communities. We've made great progress in our bilateral cooperation, here in Taiwan, with these activities and now we're hoping to bring these accomplishments, to share these

accomplishments through the Asia-Pacific region. Being here in Kaohsiung today, portrays a very special significance. Many of you may not be aware that Kaohsiung is one of the most important ports in the Asia-Pacific region, and is now partnering with USEPA, and EPA Taiwan, where regionally to address sustainable ports operation. I spoke earlier this morning with Deputy Director Chen, from Kaohsiung EPB, about this issue, and we are so impressed with the way Kaohsiung has embraced the challenge of working to address sustainability across the Asia Pacific region.

I also like to do a short lot of recognition, if you will, to the Americans here in Taiwan, that is working with Kaohsiung City government to hold new green municipality for them, later this year, and this will highlight environmental achievements in Taiwan and Kaohsiung in particular. We also expect the form to address to keep questions each of us face as citizens, how do we make our home, our school, our communities

more sustainable. I hope that many of our colleagues and partners from around Taiwan and elsewhere in the region participate in this event as well. We EPA look forward to continue to enhance partnership with Kaohsiung, with EPA Taiwan, and also with other regional partners.

Everyone in this room have much to be proud of with regards of environmental protection, your participation alone has demonstrated how reasonable partnerships can advance expertise and capacities and of course meaningful, strategic partnerships. I want to thank you all for participating, and I want to urge you take advantage of our international experts that are here today. Get to know them, ask them the questions that you have, we want to take advantage of their expertise and build these partnerships so that they go beyond the workshop that we're having the next two days.

I wish you a very meaningful and successful time here. Thank you.



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Countries

Seminar Report - Invited Speakers

International Workshop on Phytotechnologies as Remediation for Contaminated Sites

June 26 - 27, 2012

International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan

Website for downloading the paper and pdf files

http://140.115.123.119/101062627/101062627_download.html

or ReSAGPAC WG website (<http://www.resagpac.org/>)

Dr. Steve Rock



Steve Rock is an Environmental Engineer in the Remediation and Contaminant Branch at EPA's National Risk Management Research Laboratory in Cincinnati, Ohio. He is the author of several phytotechnology publications, including the EPA's Introduction to Phytoremediation, and a chapter in the Standard Handbook of Environmental Engineering. He is an associate editor on the International Journal of Phytoremediation and founder of the International Phytotechnology Society. He participates in EPA in-house research, and provides technical assistance on phytoremediation, urban agriculture, and vegetative covers for waste containment.

Dr. James Landmeyer

James Landmeyer has been a research hydrologist with the U.S. Geological Survey, South Carolina Water Science Center, in Columbia, SC, since 1990. Landmeyer received his B.S. from Allegheny College in 1989, and his M.S. and PhD. from the University of South Carolina in 1991 and 1995, respectively. He has been the author or co-author of more than 70 peer-reviewed publications, and in 2011 authored the textbook "Introduction to Phytoremediation of Contaminated Groundwater". His research interests include the interaction between plants, microbes, and pristine and contaminated groundwater and surface-water systems.



Interesting sidelights

At International Workshop on Phytotechnologies as Remediation for Contaminated Sites

June 26 - 27, 2012

International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan



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Interesting sidelights (continued)

At International Workshop on Phytotechnologies as Remediation for Contaminated Sites
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The Groundwater Pollution of Asian Countries

Interesting sidelights (continued)

At International Workshop on Phytotechnologies as Remediation for Contaminated Sites

June 26 - 27, 2012

International Conference Hall (II), Garden Villa, Kaohsiung City, Taiwan



Seminar Report - Question and Discussion



The World of Soil and Groundwater Pollution of Asian Countries

Seminar Report - Question and Discussion



Prof. Dr. Kang-Kun Lee
Seoul National University
Korea



Prof. Dr. Zueng-Sang Chen (陳尊賢)
National Taiwan University
Taiwan



Dr. Rashid Hasan
India

Seminar Report - Question and Discussion



Ms. Maria Amber V. Hagada
Philippines



Prof. Dr. Yong Sik Ok
Kangwon National University
Korea



Dr. Warapong Tungittiaplakorn
Thailand

The Working Group
Groundwater Polluti

Seminar Report - Question and Discussion



Dr. Chayawee Wangcharoenrung
Thailand



Dr. Hao-Chun Hung (洪豪駿)
Taiwan EPA



Prof. Dr. Dar-Yuan Lee (李達源)
National Taiwan University
Taiwan

The Working Group
Groundwater Pollution

and

Seminar Report - Question and Discussion



Prof. Dr. Colin S. CHEN (陳士賢)
National Kaohsiung Normal University
Taiwan

Dr. Satnam Singh (辛士南)
Postdoctoral Researcher
National Chung Hsing University
Taiwan



Prof. Dr. Shih-Cheng PAN (潘時正)
General Manager
Sinotech Environmental Technology, LTD
Taiwan

Seminar Report - Question and Discussion



Prof. Dr. Chi-Tsan LIN (林啟燦)
*National Kaohsiung Marine University
Taiwan*



Mr. En-Hwa LAY (賴恩華)
*Senior Specialist
Environmental Protection Center of Industrial Park
Taiwan*



Mr. Chia-Ming TASI (蔡嘉銘)
*Contract Technician, Fifth River Management Office
Water Resources Agency
Taiwan*

The Remediation for Soil and Groundwater Pollution of Asian Countries

Seminar Report - Question and Discussion



Prof. Dr. Pao-Wen LIU (劉保文)
Chung Hwa University of Medical Technology
Taiwan



Prof. Dr. Ming-Gin CHANG(張明琴)
Hungkuang University
Taiwan



Mr. Jin-Don Jii (紀金棟)
Chemical Engineer
Third Nuclear Power Station
Taiwan Power Company
Taiwan

The Work
Groundwa



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ries

Study Tour to Lin Yuan Site of Formosa Plastics Corporation and Buddha Memorial Hall of Fo Guang Shan in Southern Taiwan

Date: June 28, 2012

| Time | Schedule |
|-------------|---|
| 08:30~9:00 | Get on the bus at <i>Garden Villa Hotel</i> |
| 09:00~9:50 | Going to <i>Lin Yuan Site of Formosa Plastics Corporation</i> |
| 10:00~11:30 | <i>Field study</i> at Lin Yuan Site of Formosa Plastics Corporation |
| 11:30~12:00 | Going to <i>Guozhen Seafood Restaurant</i> |
| 12:00~13:30 | <i>Lunch</i> at Guozhen Seafood Restaurant located at Dong-Gang township |
| 13:30~14:30 | Going to <i>Buddha Memorial Hall of Fo Guang Shan</i> |
| 14:30~16:00 | Visit <i>Buddha Memorial Hall</i> of Fo Guang Shan |
| 16:00~16:50 | Going to <i>Zuoying Station of Taiwan High Speed Rail</i> |
| 16:50~17:30 | Waiting for the train at <i>Zuoying Station</i> of Taiwan High Speed Rail |
| 17:30~19:06 | Back to Taipei by <i>Taiwan High Speed Rail</i> <i>(Dinner box at High Speed Rail)</i> |
| 19:15~19:40 | Going to <i>Leader Hotel at Kong-Kuang</i> |
| 19:40~20:00 | Check in at <i>Leader Hotel at Kong-Kuang</i> |

Study Tour to Lin Yuan Site of Formosa Plastics Corporation in Southern Taiwan

Visit the Lin Yuan Site of Formosa Plastics Corporation



The Working Group
Groundwater Pollution

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Study Tour to Lin Yuan Site of Formosa Plastics Corporation in Southern Taiwan

Visit the Lin Yuan Site of Formosa Plastics Corporation



Study Tour at Buddha Memorial Hall of Fo Guang Shan in Southern Taiwan

Visit the Buddha Memorial Hall of Fo Guang Shan



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