

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



Taiwan



Thailand



Vietnam

Message from the Chairman

2010 is the 10th anniversary of the Soil and Groundwater Pollution Remediation Act enforced in Taiwan. To celebrate the 10 years achievement and to continuously improve our technologies on investigation, remediation and management on soil and groundwater contaminated sites in Taiwan, Environmental Protection Administration of Taiwan (Taiwan EPA) organized an international Conference on the investigation, remediation and management of soil and groundwater contaminated sites at Taipei on October 27, 2010. More than 50 distinguished experts were invited from more than 20 countries to share their knowledge and experience in this conference.



The goals of Taiwan EPA future work are to clean up the contaminated land with green remediation strategies, protecting our resources by rigorously carrying out the regulations, provide training courses of advance technologies for our professionals, and share our experiences with other countries, especially for Asian countries. Therefore, a special meeting program was also organized for East and South-Eastern Asian countries in the afternoon of October 27, 2010. This specially meeting was very successful in bringing together for scientists and government officers, including Japan, Korea, Philippines, Indonesia, Malaysia, Thailand and Taiwan, to realize and concur on the urgent need to establish a technical working group on Remediation for Soil and Groundwater Pollution of Asian Countries (ReSGPAC WG) in the closing remarks on October 27, 2010 at Taipei.

The primary objectives of this working group would be to provide a technical-based network for Asian countries that is capable of exchange and cooperate of remediation techniques in Asia and to serve the remediation techniques for the changing and challenging social demands and to function as a rational platform for decision and policy makers to make informed decisions for risk-based assessment of the contamination sites in the future. In the closing remarks of this special meeting program, all the participants of scientists and government officers from Asian countries agreed that Taiwan was approved as the Chairman, Japan is the Vice Chairman, and Korea is the Secretary General of this working group to serve in the first term (January 2011 to December 2012). I was appointed as the Chairman of the working group of the first term.

On behalf of ReSAGPAC WG, I began to discuss with Taiwan EPA officers in early 2011 and to organize some programs for the first term, including (1) business meeting to be held on June, 2011 and June, 2012; (2) workshop on health risk assessment to be held on June 14, 2011; (3) workshop on the remediation and risk-based assessment of sediments contaminated sites to be held on June 15-16, 2011; (4) workshop on the management strategies and developing the regulation of pollutants to be held on November, 2011; (5) workshop and training courses to be organized by the Committees of Working Group to be held in June in 2012; (6) 2012 International Conference on the investigation, remediation and management of soil and groundwater contaminated sites to be held in October, 2012 at Taipei; and (7) two field study tours on the oil and heavy metals contaminated sites in Taiwan to be held on June 17 and November in 2011 in Taiwan.

Chairman of the Working Group

Zueng-Sang Chen, Ph.D., signed on June 7, 2011

Distinguished Professor and Associate Dean

Department of Agricultural Chemistry, National Taiwan University, Taipei 10617, Taiwan

A handwritten signature in black ink that reads "Zueng-Sang Chen". The signature is written in a cursive, flowing style.

Program

1st Business Meeting of

Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries (ReSAGPAC WG)

Date: June 13, 2011

Venue: R401 & R405, 4F, EPA Building, Taipei, Taiwan

Time	Topic	Speaker
08:30-08:55	Registration	
08:55-09:05	Opening Address	Dr. Zueng-Sang Chen (Taiwan)
09:05-09:15	Welcome Speech	Mr. Chun-Ming Chen (Taiwan)
09:15-09:35	Achievement, Development and Experience of Remediation Technologies Applied to Soil and Groundwater Contaminated Sites of Taiwan	Dr. Zueng-Sang Chen (Taiwan)
09:35-09:55	Japan's Policies and Legislative Measures for Soil Contamination Countermeasures	Mr. Masanori Kobayashi (Japan)
09:55-10:15	Policy and Legal Framework on Soil Contamination Management	Ms. Jin Won Yi (Korea)
10:15-10:45	Break	
10:45-12:00	Taiwan EPA and USEPA Meetings on the Soil and Groundwater Remediation and Meeting of USEPA Assistant Administrator and All the Representative Government Officers of the Working Group from the Asian Countries	Dr. Shu-Hung Shen Minister, EPA (Taiwan)
12:00-13:30	Lunch	
13:30-13:40	Rationale to Develop the Working Group of the Soil and Groundwater Remediation in East and Southeastern Asian Countries	Mr. Hung-Teh Tsai (Taiwan)
13:40-15:30	Discussion on the General Rules of the Working Group –(1)	Dr. Zueng-Sang Chen (Taiwan)
15:30-16:00	Break	
16:00-17:00	Discussion on the General Rules of the Working Group –(2)	Dr. Zueng-Sang Chen (Taiwan)
17:00-17:30	Summary and Closing Remarks	Dr. Zueng-Sang Chen (Taiwan)

Program Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

Date: June 14, 2011

Venue: R401, 4F, National Taiwan University Hospital International Convention Center, Taipei, Taiwan

Time	Topic	Speaker
08:30-09:10	Registration	
09:10-09:20	Opening Ceremony	Dr. Zueng-Sang Chen (Taiwan)
09:20-10:00	Keynote Speech: Sustainable Land Management in Taiwan - The Past and The Future	Mr. Hung-Teh Tsai (Taiwan)
10:00-10:30	Break	
10:30-11:10	Assessing Children's Multimedia/Multipathway Exposures and Risks to Environmental Chemicals & Residential and Contaminated Soils	Dr. Halûk Özkaynak Dr. Karen Bradham (U.S. EPA)
11:10-11:40	Collection and Uses of Activity Patterns for Risk Assessment Modeling	Dr. Paloma Beamer (U.S. EPA)
11:40-13:00	Lunch	
13:00-13:30	Human Health Risk Assessment for Contaminated Site Management in Taiwan	Dr. Chih Huang (Taiwan)
13:30-14:00	Risk Alleviation Methods to Heavy Metal Contamination in Soils and Crops: Research Development in Japan	Dr. Tomoyuki Makino (Japan)
14:00-14:30	Policy and Legal Framework on Soil Contamination Management	Ms. Jin Won Yi (Korea)
14:30-14:50	Break	
14:50-15:20	Contamination Forensics and Post-treatment Planning of the Dapingding Site	Dr. Pey-Horng Liu (Taiwan)
15:20-15:50	Risk Assessment for Heavy Metals in the Abandoned Mine Areas	Dr. Jae Eui Yang (Korea)
15:50-16:20	Japan's Policies and Legislative Measures for Soil Contamination Countermeasures	Mr. Masanori Kobayashi (Japan)
16:20-16:40	Discussion	
16:40-16:50	Closing Remark	Dr. Zueng-Sang Chen (Taiwan)

Program Continued

International Workshop on Characterization and Remediation for Contaminated Sediment Sites (1st Day)

Date: June 15, 2011

Venue: R301, 3F, National Taiwan University Hospital International Convention Center, Taipei, Taiwan

Time	Topic	Speaker
08:30–09:00	Registration	
09:00–09:20	Opening Remark	Taiwan EPA U.S. EPA
Session 1. Introduction to Remedy Selection at Contaminated Sediment Sites under US EPA's Superfund Program		
09:20-10:15	Remedial Options for Sediment Sites – Overview of Advantages, Disadvantages and Applicability	Mr. Stephen J. Ells (U.S. EPA)
10:15-10:30	Break	
Session 2. Case Studies and Site Characterization		
10:30-11:30	Environmental Dredging in the Hudson River	Dr. Marc S. Greenberg (U.S. EPA)
11:30-12:00	Discussion	
12:00-13:00	Lunch	
13:00-13:45	Capping and In-Situ Amendments	Dr. Marc A. Mills (U.S. EPA)
13:45-14:30	Performing a Sediment Erosion and Deposition Assessment (SEDA) at Sediment Sites	Mr. Stephen J. Ells (U.S. EPA)
14:30-15:15	Using Passive Samplers to Evaluate Contaminant Release, Pore Water, and Bioavailability	Dr. Marc A. Mills (U.S. EPA)
15:15-15:30	Break	
15:30-16:30	Sediment eco-toxicity testing: what works, where and why?	Dr. Marc S. Greenberg (U.S. EPA)
16:30-17:00	Discussion	

Program Continued

**International Workshop on
Characterization and Remediation for Contaminated Sediment Sites (2nd Day)**

Date: June 16, 2011

Venue: R301, 3F, National Taiwan University Hospital International Convention Center, Taipei, Taiwan

Time	Topic	Speaker
08:30–09:00	Registration	
Session 3. Remedial Technologies and Effectiveness Monitoring		
09:00-09:30	Monitoring Objectives and Baseline Data Acquisition	Mr. Stephen J. Ells (U.S. EPA)
09:30-10:30	Surface Weighed Average Concentration (SWAC)	Dr. Marc S. Greenberg (U.S. EPA)
10:30-10:45	Break	
10:45-11:30	Evaluating Dredge Residuals	Dr. Marc A. Mills (U.S. EPA)
11:30-12:00	Discussion	
12:00-13:00	Lunch	
13:00-14:05	Treatment of Contaminated Sediments	Mr. Stephen J. Ells (U.S. EPA)
14:05-15:00	Disposal Options for Dredged Sediment	Dr. Marc A. Mills (U.S. EPA)
15:00-15:15	Break	
15:15-16:00	Risk-Based Decision-Making	Dr. Marc S. Greenberg (U.S. EPA)
16:00-17:00	Discussion	

Seminar Report - Welcome Speech

International Workshop on Characterization and Remediation for Contaminated Sediment Sites

09:00~09:10am, June 15, 2011

R301, 3F, National Taiwan University Hospital International Convention Center, Taipei, Taiwan



Dr. Shu-Hung Shen (沈世宏)

Minister of Taiwan Environmental Protection Administration

- Ph.D. in Chemical Engineering, 1982, National Taiwan University
- M.S. in Chemical Engineering, 1975, National Taiwan University
- Outstanding Contribution Award of Chinese Environmental Analytical Society, Taiwan, 2005
- Engineering Award, Engineering Business Category, Chinese Institute of Environmental Engineering, Taiwan, 2003
- Best Civil Servant Award of Executive Yuan, Taiwan, 1987

Good morning, ladies and gentlemen,

As the minister of the Taiwan Environmental Protection Administration, I would like to welcome all of the honored guests to the “Workshop on Characterization and Remediation for Contaminated Sediment Sites” jointly held by the Taiwan EPA and the US EPA. Especially, I would like to express my appreciation to US EPA. In the past years, you have been supporting us and walked with us to share your experiences in regulations, technologies, management, and future goals. You have also shared your experiences through our annual exchanged conferences. We learned a great deal from your expertise during the conferences and all the discussions. This year, after the Taiwan EPA officially implemented contaminated sediment management under the amended Soil and Groundwater Remediation Act, the US EPA provided its expertise on Characterization and Remediation for Contaminated Sediment Sites. Those experiences will be helpful in developing a full spectrum of Taiwan EPA's contaminated sediments activities, from the evaluation of the sediment qualities to the remediation of the contaminated sediment sites.

Compared with contaminated soil and groundwater, management of contaminated sediments presents multiphase challenges to the Taiwan EPA because the program with authority to address sediment contamination operates under different regulations. The current status on the management of the sediments in Taiwan includes the contaminated sediments (such as the dioxin contaminated sediments in the seawater reservoir of the CDPC An-Shuen Factory Site, the heavy-metal contaminated sediments in the irrigation ditches, etc.) and the sediments from the periodical maintenance dredges (such as the sediments in rivers and reservoirs.) Because this work involves many different governmental departments and branches, the execution of such management needs cross-departmental cooperation. A good example of the cross-department cooperation conducted in the past is the contaminated sediments in the irrigation ditches between 2002 and 2003. The Taiwan EPA and the Council of Agriculture worked together to announced procedure guidelines regarding the removal and cleanup of the sediments of the irrigation ditches in 2003. Moreover, the management responsibilities have been regulated in the regulations practiced by different water resources and agricultural departments. However, we still need an integrated regulation for the overall sediment management.

In order to consolidate all regulation issues regarding the sediment management, the Taiwan EPA has incorporated sediment articles into the existing Soil and Groundwater Remediation Act amended and announced on February 3rd, 2010. The Articles regulate the sediment quality evaluation, data reporting,

Seminar Report - Welcome Speech Continued

risk assessment, remediation, and the responsibilities of different governmental departments. The key point of the sediment management is to prevent direct or indirect health threats to humans via surface water ecology or food chains. The sediment management is primarily conducted on the rationale of responsibility sharing and cooperation and professional monitoring. The sediment quality analyses, assessment, and remediation are carried out by the organizations that have the authority to take action, and the Taiwan EPA provides technical support and administrative advice. Because the contaminants can be transferred to humans through the food chain from aquatic organisms, the analyses of fish and setting consumption advisory needs to be carried out by the agricultural and health departments. In the future, the ultimate goal on the sediment contamination is to control the source of the contaminants, treat the contaminated sediments appropriately, and combine the various organizations, authorities to improve water environments for recreational and sustainable management purposes.

I am glad that we have invited three experts from the US to share their experiences with us. Their rich knowledge and professional experiences could greatly help us on the sediment issues. Their expertise includes sediment related site investigation and regulations. They will provide us with ecological risk assessment and risk-based management opinions. The first expert is Mr. Stephen J. Ell. He is a Senior Environmental Scientist in the Office of Superfund Remediation and Technology Innovation. He is also the Team Leader for the Superfund Sediment Team, responsible for coordinating and leading all activities in the Office relating to sediment issues including: preparing national guidance on site characterization and remedy selection, preparing responses to requests from Congress and other outside groups, and preparing reports that summarize the effectiveness of all remedies selected at Superfund sites. Provide expert advice on questions and issues concerning Superfund site characterization, contaminated sediment sites, ecological risk assessment, risk-based decision making, and Record of Decision quality. Stephen is well-known in eco-toxicology, ecological risk assessment and risk management.

The second expert is Dr. Marc S. Greenberg. Dr. Greenberg is an Environmental Scientist and Toxicologist on the U.S. EPA's Environmental Response Team where he supports various clean-up, emergency, and other response actions within the Superfund program. His primary area of focus is the assessment, remediation, and management of contaminated sediment sites, including the development of innovative remediation technologies. His technical experience includes



research in both human health and aquatic ecological toxicology with a focus on pharmacokinetics, contaminated sediments, bioavailability, and the role of dynamic environmental conditions on in situ effects. Dr. Greenberg has supported the development of baseline and post-remedial monitoring programs, sediment sampling programs, emergency response plans, performance standards, habitat assessments, and remedial investigations. He continues to conduct field investigations on contaminated sediments

Seminar Report - Welcome Speech Continued

at several Superfund sites. Dr. Greenberg also participated in the standardizing of sediment toxicity testing methods for the U.S. EPA, has co-authored many EPA technical and guidance documents.



The third expert is Dr. Marc Mills. Dr. Mills is an Environmental Engineer at the National Risk Management Research Laboratory within the Office of Research and Development at the U.S. EPA. He is responsible for a research program focused on evaluating the effectiveness of remediation of contaminated sediments in support of U.S. EPA's Superfund program and the Great Lake National Program Office. Dr. Mills has served on numerous federal and non-federal technical committees focused on characterizing and cleanup contaminated sediment sites. He also has co-authored many technical documents on the subject.

Let's welcome these three experts from the US.

Lastly, thanks again to everyone for joining us here. You are here because you care about our soil and groundwater protection. I wish you all the best and may all the efforts toward protecting our environment come to fruition. Thank you.

International Workshop on Characterization and Remediation for Contaminated Sediment Sites

09:10~09:20am, June 15, 2011

R301, 3F, National Taiwan University Hospital International Convention Center, Taipei, Taiwan



Dr. Michelle J. DePass

Assistant Administrator for the Office of International and Tribal Affairs, U.S. EPA

- M.S. in Public Administration, Baruch College School of Public Affairs, USA
- B.A. in Political Science, Tufts University, USA
- Law degree from Fordham University School of Law, USA
- A lawyer, public administrator and policy analyst who has worked with environmental and human and civil rights organizations, academic institutions, and labor.

Thank you Minister Shen. Allow me to also extend my thanks to Director General Tsai and Dr. Hung for doing so much to host this meeting, and thank you to our international partners from Thailand, Malay-

Seminar Report - Welcome Speech Continued

sia, Indonesia, Vietnam, India, Korea, Japan, Argentina, and Jordan who have traveled so far to join our meetings.

Everyone here has so much to be proud of, the regional approach to environmental protection that all of you have come here to advance, has helped set a new standard for how environmental partners can come together to address challenges. I'm so pleased and honored to participate in meetings this week—the convening of a network of regional partners to address critical environmental challenges such as site remediation and children's health.

Women and children's health has been a key priority for us at the US EPA. These are issues that we like to call "meat and potato" issues because they have a direct effect on people's lives, and they are the issues EPA has been working on for forty years now. Nearly half of that time, 18 years, our Agency has been working with EPA Taiwan on enhancing capacity to reduce air pollution, keep our water sources clean, and clean up contaminated sites. At the end of the day all of work we do together impacts how we are addressing the challenges to our communities and the health of our children. Protecting their health and environment is what we are all working towards.



This is why it is especially meaningful for me to be speaking with you today. We're coming together here to address an environmental challenge that affects every corner of the world; the cleanup of contaminated sites. Your being here is the first step in establishing a network of regional experts that can build up capacity here and globally to spread best practices, technologies, and innovate approaches. As environmental officials we have important obligations to be proactive and manage chemical risks that are particularly harmful for children, because we know that early life exposure can have tragic, life-long effects. We must continue to be diligent in preventing possible dangers.

Linking together activities that address the human health impacts of our environmental work with the technical training you are beginning today is such an important way of enhancing the results of our work together. The work you start here today will have lasting impacts by enhancing access to clean water, improving children's health, and addressing a regional and global concern. Which is why when I arrived in Taiwan a few days ago, one of my first meetings was with

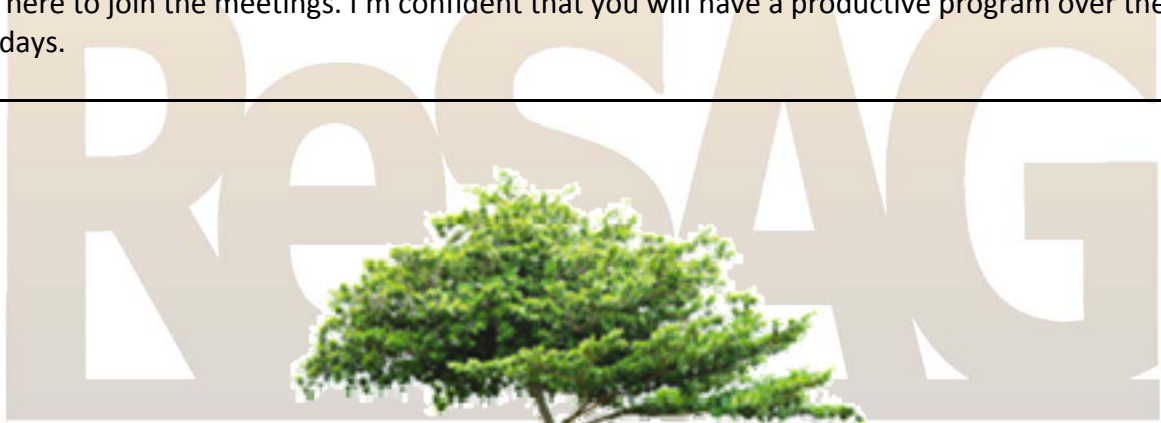
Seminar Report - Welcome Speech Continued

Director General Tsai of the Ground Water and Soil Remediation Board, I wanted to hear from him how he and the Minister so effectively implemented a regional strategy to spread best practices on site remediation. I asked him to help “show us how it’s done.” I know after today’s workshop my staff will continue the conversation with the project manager for our program today, Dr. Hung, and other EPAT project managers. We continue to work together to strategize how to strengthen our network of regional and global experts.

However, this is not only a conversation between US EPA and EPA Taiwan. It’s a global conversation. We at EPA continue to support and encourage the engagement of our other regional partners in this and other conversations on global environmental challenges. We will continue to be enthusiastic participants in that conversation where we share what we learn and learn from you.



Allow me again to express my appreciation to Minister Shen, Director General Tsai, Dr. Hung and our hosts. Let me thank our international participants that made the journey here to join the meetings. I’m confident that you will have a productive program over the next several days.



The Working Group on Remediation for Soil and Groundwater Pollution in Developing Countries



**Special Project in the Seminar -
Meeting of USEPA Assistant Administrator and all Representatives of ReSAGPAC WG Member Countries**

June 13, 2011
R405, 4F, EPA Building, Taipei, Taiwan



Special Project in the Seminar - Continued

Meeting of USEPA Assistant Administrator and all Representatives of ReSAGPAC WG Member Countries

June 15, 2011

VIP Room, NTUH International Convention Center, Taipei, Taiwan



June 15, 2011

Outdoor of NTUH International Convention Center, Taipei, Taiwan



Minutes

1st Business Meeting of

Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries (ReSAGPAC WG)

08:55am~05:30pm, June 13, 2011

R401, 4F, EPA Building, Taipei, Taiwan

Present:

Dr. Zueng-Sang CHEN (Chairman, Taiwan), Dr. Rashid HASAN (India),
Dr. Dedi NURSYAMSI (Indonesia), Dr. Masanori KOBAYASHI (Japan),
Dr. Tomoyuki MAKINO (Japan), Ms. Jin Won YI (on behalf of Mr. Wan JUN, Korea),
Dr. Dong Jin KIM (Korea), Dr. Jae E. YANG (Korea), Dr. Azimuddin BAHARI (Malaysia),
Dr. Nur Sharliza binti Mohd Rapi'Ain (Malaysia), Mr. Engr. Edwin C. Concepcion (Philippines),
Mr. Aroonkit Sitthichai (on behalf of Mr. SUTHAPAN, Thailand), Mr. Jeng-Ren HO (Taiwan),
Dr. Chayawee WANGCHAROENRUNG (Thailand), Ms. Pham Thi Thuy HANH (Vietname),
Dr. Le Thi Hai LE (Vietname), Mr. Hung-Teh TSAI (Taiwan, 1:30~5:30pm only)

In Attendance:

Mr. Chun-Ming Chen (Taiwan EPA, 8:55~10:15am only), Dr. Hao-Chun Hung (Taiwan EPA),
Mr. Zih-Sin Wang (Taiwan EPA), Dr. Chia-Shyun Chen (Taiwan, 8:55~10:15am only)

Absent:

Mr. Aep Purnama (Indonesia, arrived in Taiwan on June 14),
Dr. Atty. Ernesto D. Adobo, Jr. (Philippines)



Opening Address at 08:55~09:05am

The Chairman, Dr. Zueng-Sang Chen, welcomed Mr. Chun-Ming Chen, who is the Deputy Executive Secretary of Soil and Groundwater Remediation Fund Management Board of Taiwan EPA, and Mr. Jeng-

Minutes Continued

Ren Ho, who is the the Division Chief of Soil and Groundwater Remediation Fund Management Board of Taiwan EPA. He also welcomed Dr. Chia-Shyun Chen, who is the president of Taiwan Association of Soil and Groundwater Environmental Protection.

2. The Chairman welcomed all Members to the business meeting:

Distinguished invited government officers and experts from Asian countries, Ladies and Gentlemen:

It is a great pleasure for me at the opening ceremony of the business meeting of the Working Group on Remediation for Soil and Groundwater Pollution of East and Southeastern Asian Countries. On behalf of the working group and Taiwan EPA, I should like to extend my welcome all of you, including government officers and scientists from 9 countries in Asian region and also include 3 experts from USEPA. Your participation is very welcome, and will contribute a great deal to the success future of our working group to maintain our good environmental quality and human health in this region.

As we know, good management strategies and remediation techniques not only can maintain our good environmental quality, but also provide good crop quality for our health life. We found many contaminate sites in the rural soils, commercial and industrial areas during the industrialization in last decades in Asian countries, especially in Japan, Korea and Taiwan. We have learned many experiences on the management strategies for contaminated sites and also learned some innovative and cost-effective remediation techniques for the contaminated sites collected from developed countries, such as USEPA and European Union countries in last decade.

In Asia countries, only Japan, Korea, China and Taiwan have established the regulation of pollutants in the soils, crops and groundwater to protect their natural resources and human health. I hope this work group can help us to create the platform to exchange the database, experience and knowledge or technologies to clean up the natural resources if we find some contamination sites in the soil and groundwater.



The function of Working Group shall aim on promoting the research activities and management technologies to developing the innovative remediation techniques on soil and groundwater-contaminated sites and also on disseminating the knowledge and technologies for

Minutes Continued

the benefit of the member of the working group in the Asian region. The Working Group shall also contribute the sustainable development of the region through harmonization of healthy and safety agricultural production and environmental protection. I hope we can approve our general rules of the working group today and promote more activities and functions in the future.



Finally, I would like to express my grateful thanks to Mr. Hung-Teh Tsai, who is the technical superintendent and executive secretary of the Soil and Groundwater Remediation Fund Management Board of Taiwan EPA and the government officers of the Fund management Board for their strong support for this working group in next 2 years term. I also thank all

of you to here to initiate the beginning stage of this working group and also to approve our general rules of the working group for the good environmental quality and health life in the future. I also hope you have a very good time in Taipei city and in Hualien during field study tour in eastern Taiwan.

Thank you.

Welcome Speech at 09:05~09:15am

3. Mr. Chun-Ming Chen extended welcome to all Members:



Good morning ladies and gentlemen,

On the behalf of Taiwan EPA, it's my great pleasure to welcome you to attend the Business Meeting of Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries.

Also, I would like to express my gratitude to Professor Zueng-Sang Chen. He is very

Minutes Continued

enthusiastic to help us to organize and host this meeting.

In this week during the conference and workshop, all of us can share our experience of investigation, remediation and management of soil and groundwater pollution.

Later time in this morning, Minister Shu-hung Shen and Director General Hung-Teh Tsai of Taiwan EPA and Assistant Minister Depass of USEPA will meet all of you to share their perspectives of environmental protection.

Finally, I hope all of you will have a good time during the stay in Taiwan.

Thank you.

Case Studies and Experience Interchanges at 09:15~10:15am



4. Dr. Zueng-Sang Chen made a presentation on the Achievement, the Development and the Experience of Remediation Technologies Applied to Soil and Groundwater Contaminated Sites in Taiwan.



5. Mr. Masanori Kobayashi shared the experience in Japan on the topic of Japan's Policies and Legislative Measures for Soil Contamination Countermeasures.

Remediation for Soil and
in Countries

Minutes Continued



6. Ms. Jin Won Yi shared the experience in Korea on the topic of the Policy and Legal Framework on Soil Contamination Management.

Business Meeting Introduction at 01:30~01:40pm



7. The Chairman invited Mr. Hung-Teh Tsai to report the Rationale to establish a technical Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries.

Discussion on the General Rules of the Working Group at 01:40~05:20pm

The Name of the Working Group

8. The name of the working group shall be the Working Group on Remediation for Soil and Groundwater Pollution of Asian Countries (ReSGPAC WG), herein referred to as the "Working Group". The ReSGPAC WG is the official acronym of the working group.

The Objectives of the Working Group

9. The Working Group shall aim on promoting the research activities, policy development, and management strategies to develop the innovative remediation techniques on soil and groundwater-contaminated sites and also on disseminating the knowledge and technologies for the benefit of the members of the working group in the region of Asian countries.

Minutes Continued

10. The Working Group shall contribute for the sustainable development of the region through enhancing and integrating human health, environmental and natural resources management, and safe agricultural production.
11. The Working Group shall also aim at promoting the effective participation of members and of individual scientists from this region.

The Memberships of the Working Group

12. Regular members shall consist of any scientists and governmental officers concerned with soil science and groundwater management and remediation technologies in any countries of The Working Group.

Left: Dr. Rashid Hasan (India) / Right: Dr. Dedi Nursyamsi (Indonesia)



13. The country members are 9 including India, Indonesia, Japan, Korea, Malaysia, Philippines, Taiwan, Thailand, and Vietnam.

14. The country members within the region shall be regarded as the core members, and those which are located in Asian countries but interested on the activities of the Working Group shall apply as the associate members and can be approved by the steering committee.

The Officers of the Working Group

15. The Officers of the Working Group shall be: (1) one Chairman, (2) one Vice Chairman, (3) One coordinator of each committee, (4) Past chairman and (5) one representative steering committee members from each country member.
16. The service time of each term is two years starting from January 2011.
17. Each of the country members shall designate a representative person as a member of steering committee to attend the official business meeting during the service term.

Left: Dr. Masanori Kobayashi (Japan) / Right: Dr. Tomoyuki Makino (Japan)



Minutes Continued

18. The Office of the Working Group shall be rotated from one member country to another every two years and the chairman of the Working Group which holds the Office shall be automatically appointed as the Past chairman of the WG.

19. The Chairman of the Working Group which will hold the Office for the next term shall be appointed as the Vice-chairman of the WG.

Left: Dr. Azimuddin Bahari (Malaysia) /

Rihgt: Dr. Nur Sharliza binti Mohd Rapi'Ain (Malaysia)



The Structure of the Working Group

20. The Working Group shall include three committees including: (1) steering committee, (2) scientific committee, and (3) service and communication committee.

21. The members of the steering committee shall consist of only one government official nominated by the government of each country. The governmental official can appoint his or her alternative person to attend the business meeting to approve all the activities and programs of the working group.

Left: Ms. Pham Thi Thuy Hanh (Vietname) / Rihgt: Dr. Le Thi Hai Le (Vietname)



22. The members of the scientific committee shall consist of no more than 5 scientists or governmental officers in each member country to organize some scientific workshops, training courses or conferences to promote the technology transfer and experience exchange on management and remediation technologies for member countries.

23. The members of the service and communication committee shall consist of no more than 5 scientists or governmental officers in each member country

to organize some workshops, forum and seminars to promote the new concepts, education, service, outreach, and communication on risk-based assessment for the soil and groundwater contaminated sites in the member countries.

24. The Function of Steering Committee:

- To approve the annual project plans of the working group.
- To review the performance and the conformity of annual project plans of the working group.
- To promote country members to join the activities of working group in order to achieve the proposed goals.

Minutes Continued

- To distribute the annual report and activities information to all the country members.
- To help the working group to raise the funding and reimbursement plans for the activities.
- To review the annual budget of the working group.
- To approve the activities proposed by the Science Committee and the Service & Communication Committee of the working group.

25. The Function of Scientific Committee:

- To promote the establishment of the database and to share the experience on site investigation, risk assessment, and remediation techniques of the soil and groundwater contamination sites of the country members.
- To share the innovative, scientific and cost-effective techniques for site investigation and remediation of the contaminated sites by organizing the international workshops, symposium, training courses, or field study in this region.
- To help the country members to apply and validate the innovative techniques for site investigation and remediation techniques which were transferred from other countries.
- To promote the country members to communicate with international research centers, universities, or environmental consultant companies for sharing good practices, technologies, and policies on investigation and remediation.

Mr. Jeng-Ren Ho (Taiwan)



26. The Function of Service and Communication Committee:

- To organize the education and training projects to promote the professional skills and knowledge of the government officers or general people.
- To share the experience from the reports, books and proceedings published by the country members.
- To develop some integrated training courses with universities or environmental consultant companies for country members.
- To promote the ideas, concepts and regulation for protecting the resources of soil and groundwater and for promoting the effective countermea-

Left: Dr. Dong Jin Kim (Korea) / Right: Ms. Jin Won Yi (Korea)



Minutes Continued

- To coordinate the forum on communication education for governmental officers, financial sponsors, and the public communities for the country members.
- To promote the communication with the media reporters for communities to understand the risk-based assessment and final decision of remediation techniques.

Dr. Jae E. Yang (Korea)



The Activities of the Working Group

27. A website shall be established by the Office of the Working Group as a medium to exchange the information on the news and activities among the country members.
28. Workshop, training courses, forum, seminar or conference shall be sponsored or co-sponsored by the WG as frequently as possible.
29. Country member shall be encouraged to organize related activities under the umbrella of the Working Group.

30. The Contents of the Website:

- Rational
- Working Group (Structure, function and Rules)
- Steering Committee Member
- Scientific Committee Member
- Service and Communication Member
- Contact person
- Newsletter (one issue per half year)
- Term Program (2011-2012)
- Pollution status of the Asian countries
- Act on Soil and Groundwater Pollution of the Asian countries
- Government Structure for Soil and Groundwater Pollution Management
- Remediation Case Studies of the Asian countries
- Service Consultant Companies of the Asian countries
- Service Consultant persons of the Asian countries
- Proceedings of Workshop, Seminar and training courses
- Information of coming conference, workshop, training courses to be held in Asia or world

Dr. Chayawee Wangcharoenrung (Thailand)



The Official Business Meeting of the Working Group

31. One representative member of the steering committee from each country member shall meet at the

Minutes Continued

time of conferences, training courses or workshops, which shall be held occasionally depend on the budget, to approve the next term chairman or next two terms chairman nominated from country members, and to discuss the official business meeting related to the structure, function, activities and finance of the Working Group.

The Finance of the Working Group

32. The chairman of the Working Group shall mobilize possible resources to support the budget for all the activities of the Working Group.
33. The Officers shall make their best effort to raise funds for such activities as symposia and workshops in this region.

Any Other Business *at 05:20~05:30pm*

34. The Officers of first term (2011-2012):
- Chairman of Working Group, Taiwan
Prof. Dr. Zueng-Sang Chen
Distinguished Professor and Associate Dean
Department of Agricultural Chemistry, National Taiwan University
 - Vice-chairman of Working Group, Japan
Mr. Masanori Kobayashi recommended by the Working Group
Senior Coordinator/ Principal Researcher
Programme Management Office
Institute for Global Environmental Strategies (IGES)

35. Chairman of the next term (2013-2014): Taiwan EPA

36. Chairman of the next term (2015-2016): Japan to be confirmed

37. Every member country must submit the name lists to the chairman before July 31, 2011 including:
- (1) Steering committee member (1 person for each country),
 - (2) Scientific committee members (up to five persons for each country),
 - (3) Service and communication committee members (up to five persons for each country), and
 - (4) contact persons (2 fixed persons for each country) for communication of WG and website information.

*Left: Mr. Aroonkit Sitthichai (Thailand) /
Right: Mr. Engr. Edwin C. Concepcion (Philippines)*



Interesting sidelights at 1st Business Meeting of ReSAGPAC WG



Seminar Report - Opening Address

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

09:10~09:20am, June 14, 2011

R401, 4F, National Taiwan University Hospital International Convention Center, Taipei, Taiwan



Dr. Zueng-Sang Chen (陳尊賢)

Distinguished Professor of Department of Agriculture Chemistry and Associate Dean of College of Bioresources and Agriculture, 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 invited governments officers and experts from Asian countries, Ladies and Gentlemen:

It is a great pleasure for me at the opening ceremony of the workshop on human health assessment of the soil and groundwater contaminated sites for the East and Southeastern Asian Countries. On behalf of the working group and Taiwan EPA, I should like to extend my sincerely welcome all of you, including government officers and scientists from 9 countries in Asian region and also include 3 experts on human health risk assessment from USEPA. Your participation is very welcome, and will contribute a great deal to the success future to keep our good environmental quality and human health in the future.

As we know, good management strategies and remediation techniques not only can maintain our good environmental quality, but also provide good crop quality for our health life. We can find so many contaminate sites in the rural soils, commercial and industrial areas during the industrialization in last few decades in Asian countries, especially in Japan, Korea and Taiwan. We also have learned many experiences on the management strategies for contaminated sites and also learned innovative and cost-effective remediation techniques for the soil and groundwater remediation techniques from developed countries, such as USEPA and European Union countries in last decade.

In Asia countries, only Japan, Korea, China and Taiwan have established the regulation of pollutants in the soils, crops and groundwater to protect their natural resources and human health. But, what is the remediation goal of the pollutants of the contaminated sites is a hot issue to be discussed in many sites of the world? We can find there are different regulations to be followed in contaminated sites for different countries, in terms of one target value



Seminar Report - Opening Address Continued

in soil, the soluble or bioavailable concentration in soil solution, or risk-based approach concentration of the pollutants in soil and groundwater system of the sites.

Ladies and Gentlemen, We must use the remediation techniques by health risk-based approach method to create the remediation goal because we do not have enough budgets, time or techniques for different status of the pollutants in our contaminated site.

The primary objectives of this workshop on human health risk assessment are to provide different case studies on the methods and modeling of human health risk assessment of different pollutants in the different sites. We thank 3 invited speakers, Dr. Haluk Ozkaynak, Dr. Karen Bradham, and Dr. Paloma Beamer, from USEPA to share their experience and we hope it can be applied in the contaminated sites of the Asian countries.

We thank Dr. Chih Huang to present the case study on the human health risk assessment for contaminated sites management in Taiwan. We also thank Dr. Tomoyuki Makino from Japan and Prof. Yang Jae E. from Korea to share their experience on the risk assessment methods for heavy metals contamination in soil and crops. We also thank Dr. Pey-Horng Liu to share one case study on the contamination forensics and post treatment planning of a site located at the southern Taiwan.



We understand that the important of the education and communication of the human health risk assessment for the people community exposure in a contamination site. 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 in the world, especially in the Asian countries.

Finally, I would like to express my grateful thanks to Mr. Hung-Teh Tsai, who is the technical superintendent and executive secretary of the Soil and Groundwater Remediation Fund Management Board of Taiwan EPA and the government officers of the Fund management Board for their strong support for this working group in 2 years term.

Thank you.

Seminar Report - Invited Speakers

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

09:20~10:00am, June 14, 2011

Keynote Speech: Sustainable Land Management in Taiwan - The Past and The Future

Website for downloading the paper and ppt files:

http://140.115.123.119/1000614-16/2011%200614_Proceedings.pdf (page 13/116~27/116 of the pdf file) or ReSAGPAC WG website (after September 30, 2011)



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.



Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

10:30~11:10am, June 14, 2011

Topic: Assessing Children’s Multimedia/Multipathway Exposures and Risks to Environmental Chemicals & Residential and Contaminated Soils

Dr. Karen Bradham
Scientist of USEPA Office of Research and Development,
National Exposure Research Laboratory, RTP, NC

- Ph.D. in Environmental Toxicology, 2002, Oklahoma State University
- M.S. in Chemistry, 1999, Western Carolina University
- B.S. in Chemistry, 1997, St. Andrews College



Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

11:10~11:40am, June 14, 2011

Topic: Collection and Uses of Activity Patterns for Risk Assessment Modeling



Dr. Paloma Beamer
Assistant Professor of Environmental Health Sciences,
the University of Arizona, US

- Ph.D., 2007, Civil and Environmental Engineering, Stanford University
- M.S., 2002, Civil and Environmental Engineering, Stanford University
- B.S., 2000, Civil and Environmental Engineering, University of California, Berkeley



Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites
 1:00~1:30pm, June 14, 2011

Topic: Human Health Risk Assessment for Contaminated Site Management in Taiwan

Website for downloading the paper and ppt files:

http://140.115.123.119/1000614-16/2011%200614_Proceedings.pdf (page 29/116~39/116 of the pdf file) or
 ReSAGPAC WG website (after September 30, 2011)

Dr. Chih Huang (黃智)
Senior Research and Deputy Manager of Environmental Engineering Research Center,
Sinotech Engineering Consultants, Inc., Taiwan

- Experienced in in Ground Water Science, Environmental Site Assessment, and Remediation Planning, Design, Construction, and Operation of Remediation Work.



Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

1:30~2:00pm, June 14, 2011

Topic: Risk Alleviation Methods to Heavy Metal Contamination in Soils and Crops: Research Development in Japan

Website for downloading the paper and ppt files:

http://140.115.123.119/1000614-16/2011%200614_Proceedings.pdf (page 41/116~61/116 of the pdf file) or

ReSAGPAC WG website (after September 30, 2011)



Dr. Tomoyuki Makino

Leader of Research Project for Risk Management of Hazardous Chemicals, National Institute for Agro-Environmental Sciences, Japan

- Ph.D. in Agriculture, 2000, Tohoku University, Japan
- M.S. in Agriculture, 1990, Tohoku University, Japan
- B.S. in Agriculture, 1988, Tohoku University, Japan
- Major research interests: Environmental contamination and remediation; Soil Chemistry



Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

2:00~2:30pm, June 14, 2011

Topic: Policy and Legal Framework on Soil Contamination Management

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http://140.115.123.119/1000614-16/2011%200614_Proceedings.pdf (page 63/116~74/116 of the pdf file) or [ReSAGPAC WG website](#) (after September 30, 2011)



Ms. Jin Won Yi
Deputy Director of Soil & Groundwater Management Division,
Water Environment Management Bureau,
Ministry of Environment,
Republic of Korea



Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

2:50~3:20pm, June 14, 2011

Topic: Contamination Forensics and Post-treatment Planning of the Dapingding Site

Dr. Pey-Horng Liu (劉沛宏)
Manager of Introduction of
Green Energy and Environment Research Laboratory,
Industrial Technology Research Institute, Taiwan

- Ph.D. in Chemistry, 1994,
National Tsing Hua University, Taiwan
- M.S. in Chemistry, 1985,
National Tsing Hua University, Taiwan
- Experienced in Remediation Planning, Design,
Construction, and Operation of Remediation
Work.



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Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

3:20~3:50pm, June 14, 2011

Topic: Risk Assessment for Heavy Metals in the Abandoned Mine Areas

Website for downloading the ppt file:

http://140.115.123.119/1000614-16/2011%200614_Proceedings.pdf (page 75/116~85/116 of the pdf file) or ReSAGPAC WG website (after September 30, 2011)



Dr. Jae Eui Yang

President of International Union of Soil Science (IUSS)

Professor of Soil Environmental Chemistry,

Department of Biological Environment,

Kangwon National University, Korea

- Ph.D. in Montana State University, US
- Experienced in environmental site assessment, remediation planning construction, and operation of soil remediation work.



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Seminar Report - Invited Speakers Continued

International Conference on Human Health Risk Assessment of Soil and Groundwater Contaminated Sites

3:50~4:20pm, June 14, 2011

Topic: Japan's Policies and Legislative Measures for Soil Contamination Countermeasures

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Mr. Masanori Kobayashi

Senior Coordinator/ Principal Researcher of Programme Management Office, Institute for Global Environmental Strategies, Japan

- Magister in Public Administration/International Law, ICU, Japan
- LL.M in International Economic Law, UGA, USA
- Specialties: policy analysis on environmental management and sustainable development, interdisciplinary analysis on policy implementation and development for environmental management and sustainable development.



Seminar Report - Invited Speakers Continued

International Workshop on Characterization and Remediation for Contaminated Sediment Sites

June 15-16, 2011

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[ReSAGPAC WG website](#) (after September 30, 2011)



Mr. Stephen J. Ells

**Senior Environmental Scientist, Science Policy Branch,
Assessment and Remediation Division,
Office of Superfund Remediation and Technology Innovation
Team Leader for the Superfund Sediment Team**

- M.S. – Fisheries Biology (Jan. 1974). University of Connecticut, Storrs, CT.
- B.S. – Biology (May 1972). Villanova University, Villanova, PA.
- Section Chief, Toxics Integration Branch, Hazardous Site Evaluation Division, Office of Emergency and Remedial Response, EPA. June 1994 to October 1995.



Seminar Report - Invited Speakers Continued

International Workshop on Characterization and Remediation for Contaminated Sediment Sites

June 15-16, 2011

Website for downloading the ppt file:

http://140.115.123.119/1000614-16/2011%200615-0516_Proceedings.pdf or

ReSAGPAC WG website (after September 30, 2011)



Dr. Marc S. Greenberg

**Environmental Scientist and Toxicologist, U.S. EPA
Office of Solid Waste and Emergency Response
Office of Superfund Remediation and Technology Innovation
Technology Innovation and Field Services Division
Environmental Response Team**

- Ph.D. in Biomedical Sciences, 2002, Wright State University, Dayton, Ohio, USA
- M.S. in Aquatic Toxicology, 1993, Miami University, Oxford, Ohio, USA
- B.A. in Zoology, 1990, Miami University, Oxford, Ohio, USA



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Seminar Report - Invited Speakers Continued

International Workshop on Characterization and Remediation for Contaminated Sediment Sites

June 15-16, 2011

Website for downloading the ppt file:

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ReSAGPAC WG website (after September 30, 2011)



Dr. Marc A. Mills
Environmental Engineer, U.S. EPA
Office of Research and Development
National Risk Management Research Laboratory

- Responsible for a research program focused on evaluating the effectiveness of remediation of contaminated sediments in support of U.S. EPA's Superfund program and the Great Lake National Program Office



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Seminar Report - Question and Discussion

Dr. Azimuddin Baharil (Malaysia)



Mr. Dennis Tu (涂震江) - URS Taiwan Branch



Dr. Dar-Yuan Lee – Professor, National Taiwan University



Dr. Jae E. Yang (Korea)

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Countries

Seminar Report - Question and Discussion Continued

Dr. Le Thi Hai Le (Vietname)



Dr. Dedi Nursyansi (Indonesia)



Mr. James Wang - CETCO, Taiwan

The Working Group of
Groundwater Pollution



Mr. Engr. Edwin C. Concepcion (Philippines)

Seminar Report - Question and Discussion Continued

Dr. Rashid Hasan (India)



Dr. Chayawee Wangcharoenrung (Thailand)



Dr. Masanori Kobayashi (Japan)



Dr. Hao-Chun Hung - Taiwan EPA



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Countries

Seminar Report - Question and Discussion Continued



Dr. Zueng-Sang Chen – Professor, National Taiwan University



*Mr. Bing-Nan Wang (王炳南) –
Sinotech Engineering Consultants, Inc.,
Taiwan*

Seminar Report - Interesting sidelights

Registration, June 14, 2011



June 14, 2011

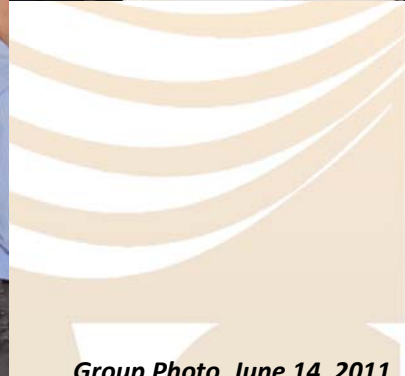
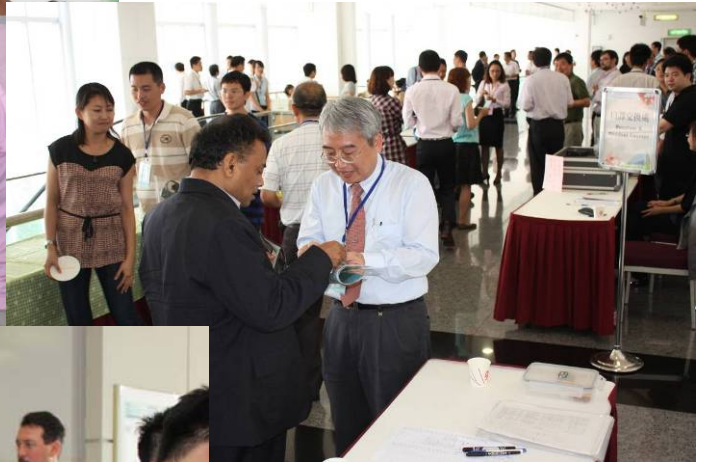


VIP Room,
June 14, 2011

Seminar Report - Interesting sidelights Continued



Break Time, June 14, 2011



Group Photo, June 14, 2011



Seminar Report - Interesting sidelights Continued

Went to the VIP Room, June 15, 2011



Dinner Party, June 15, 2011



Seminar Report - Interesting sidelights Continued

Break Time, June 16, 2011



Group Photo, June 16, 2011



VIP Room, June 16, 2011



Study Tour to Contaminated Site and Taroko National Park in East Taiwan

Date: June 17, 2011

Time	Description
06:30-07:00	Go to the Taipei Station from the Taipei Fullerton Hotel - Fu-Xing South
07:00-07:20	Taipei Station
07:20-09:25	Train 1091 to the Hualien Station
09:25-09:35	Gathering at the Hualien Station
09:35-09:50	Go to the East Taiwan Branch Office of CPC Corporation, Taiwan from the Hualien Station
09:50-10:50	Seminar on the Remediation of Soil and Groundwater Pollution Sites — A Case Study at Bei-Pu Tank Farm, the East Taiwan Branch of CPC Corporation, Taiwan
10:50-11:05	Go to Bei-Pu Tank Farm from the East Branch Office of CPC Corporation, Taiwan
11:05-11:45	Field Trip at Bei-Pu Tank Farm Remediation Site
11:45-12:45	Lunch at Bei-Pu Tank Farm Office Building
12:45-13:30	Go to the Taroko National Park from Bei-Pu Tank Farm
13:30-16:45	The Taroko National Park
16:45-17:45	Go to the Hualien Station from Taroko National Park
17:45-18:00	The Hualien Station
18:00-20:10	Train 1085 to the Taipei Station
20:10-20:20	The Taipei Station
20:20-	Back to the Taipei Fullerton Hotel – Fu-Xing South

Study Tour to Contaminated Site and Taroko National Park in East Taiwan Continued

Seminar in the East Taiwan Branch Office of CPC Corporation



Study Tour to Contaminated Site and Taroko National Park in East Taiwan Continued

Field Trip at Bei-Pu Tank Farm Remediation Site



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Countries

Study Tour to Contaminated Site and Taroko National Park in East Taiwan Continued

Field Trip at Bei-Pu Tank Farm Remediation Site



Study Tour to Contaminated Site and Taroko National Park in East Taiwan Continued

Taroko National Park



The Working Group
Groundwater

Study Tour to Contaminated Site and Taroko National Park in East Taiwan Continued

Taroko National Park

