

IGS NEWS



NEWSLETTER OF THE INTERNATIONAL GEOSYNTHETICS SOCIETY

Dedicated to the scientific and engineering development of geotextiles, geomembranes, related products, and associated technologies

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Editorial

by Daniele Cazzuffi, IGS President, and Karina McInnis, Editor

Geohazards and Geosynthetics

For this issue of *IGS News*, as for the March 2005 issue, there is a focus on the very important role geosynthetics may have in rehabilitation of areas devastated by acts of nature and, more importantly, how useful geosynthetics could be in preventing the complete failure of structures that these acts of nature can cause.

The United Nations Office for Humanitarian Affairs (OCHA) reports that approximately 650,000 individuals have been displaced as a result of the December 2004 tsunami and the ensuing earthquake in March 2005 in the Nias/Simeulue area. Most of the 180 non-government organizations (NGOs) in Banda Aceh have mainly been involved in the basics of food, water, waste water, land clearing, housing, and health. There has been some progress on reconstruction; however,

the people in the region still need help in reconstructing their infrastructure and their lives.

On page 9, IGS Council Member, Mike Sadlier, provides an update on the reconstruction activities in the area and what geosynthetics professionals can do to help. IGS members are encouraged to get the word out on the benefits of geosynthetics for rebuilding devastated areas.

Conferences have been held and conferences will be held in the next few months on general and specific aspects related to the tsunami, including the value of geosynthetics engineering for providing rapid, economic, and reliable rehabilitation solutions to areas that have experienced severe acts of nature *and* its versatility to withstand these acts of nature. The following are some of these conferences; if there are upcoming conferences that you know

of, which are not listed below, please contact the Editor.

On 6 to 7 June 2005, the Asian Institute of Technology (AIT) in Thailand organized and hosted the *AIT Tsunami Forum*. Please see page 10 for, IGS Thailand President, Dennes Bergado's summary of the Forum, which was organized in partnership with the United Nations Environment Program (UNEP), Asian Disaster Preparedness Center (ADPC), Thai Ministry of Natural Resources and Environment, and others.

On 27 to 29 June 2005, the *22nd International Tsunami Symposium* is being held in Chania, Greece. The Symposium is being sponsored by the Institute of Geodynamics (National Observatory of Athens), the Tsunami Commission of the International Union of Geodesy and Geophysics (IUGG),

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IGS MEMBERSHIP REQUIRES ELECTRONIC COMMUNICATION – PLEASE ENSURE WE HAVE YOUR E-MAIL ADDRESS

Visit the IGS WWW site: www.geosyntheticssociety.org

and the International Natural Hazards Society (NHS).

On 3 to 4 August 2005, in Semarang, Indonesia, the *Geotechnical Engineering for Disaster Prevention and Rehabilitation Conference* will be held (see the Calendar of Events, p. 21).

Finally, the most relevant geosynthetics-Tsunami conference to our membership is the, *Tsunami Reconstruction with Geosynthetics: Protection, Mitigation and Rehabilitation of Coastal and Waterway Erosion Control Conference* on 6 to 7 December 2005. This conference will be held under the auspices of the IGS (see p. 11).

IGS Members are encouraged to take an active role in disseminating information about the IGS and geosynthetics, whether it is through participation in these conferences, or lobbying organizations and governments about the benefits of geosynthetics to withstand powerful acts of nature, such as tsunamis, and for rapid reconstruction/rehabilitation.

8th and 9th International Conferences on Geosynthetics

As reported on page 5 by Chris Lawson and Junichi Koseki, members of the International Paper Selection Committee (IPSC), the *8ICG* Yokohama 2006 is full speed ahead! Approximately 400 abstracts have been approved for submission of full papers and the planned Conference Program has been drafted. For the latest news on the *8ICG*, which we are sure will be the premiere geosynthetics conference of its time, we encourage you to read this article and to follow the updates on the Conference web site (www.8icg-yokohama.org).

A Special Plenary Session will be held during the *8ICG* to help bridge the gap between geosynthetics practitioners and academics by identifying areas of research by academics that have potential applications to practitioners and potential geosynthetics research opportunities identified by practitioners (as reported by IGS Past President Richard Bathurst on page 6).

The IPSC is considering additional Special Sessions on specific technical issues involving geosynthetics, if you have an idea, the *8ICG* Secretariat would like to hear from you.

In 2010, the *Ninth International Conference on Geosynthetics (9ICG)* will be held. The announcement of the conference location will be made during the *8ICG* in Yokohama 2006. ***Is your Chapter, or organization, interested in continuing the success of the ICGs and hosting such a prestigious event?*** If so, please read the article below for more information on whom to contact, etc.

IGS Council Elections and Award Nominations

The first electronic ballot will be in 2006 for the election of the new IGS President, Vice-President, and eight Council Member positions. If you are interested in serving the IGS in any of these capacities, the IGS would like to hear from you. ***Nominations are due 31 January 2006***; please see page 3 for more information.

Also due on 31 January 2006 are nominations of individuals, or groups of

Are you an "IGS Pioneer"?

If you attended all seven international conferences dedicated to geosynthetics and plan to attend the *8ICG* in Yokohama, Japan, please contact the IGS Secretary at IGSsec@aol.com.

individuals, for the 2002 to 2005 IGS Awards (see p. 3). We look forward to receiving nomination files for individuals who have demonstrated outstanding contributions to the development and use of geotextiles, geomembranes, related products, or associated technologies through their scientific and technological achievements. Finally, on 31 July 2006, student nominations are due from each IGS Chapter for the IGS Student Award. IGS Student Award recipients will attend the *8ICG* in Yokohama (see p. 4).

IGS News Continues to go Digital

IGS News will celebrate its 20-year anniversary with the November 2005 issue! This 20-year anniversary issue will be the first issue available in electronic format *only*. IGS Members (individual and corporate) will be able to view *IGS News* on the IGS web site using their personal identification numbers. As a result of electronic distribution only, the IGS will incur a major cost savings and provide its membership with a quick and easy method for viewing the contents of each issue, searching for articles or topics of interest, and other related useful information.

We are very pleased and positive about this move into solely digital distribution and we hope that you will also see this as a positive step into the digital age and innovation!

9th International Conference on Geosynthetics in 2010

Conference Organizers Sought

The IGS invites Chapters and interested organisations to express their interest in organizing and hosting the *9th International Conference on Geosynthetics (9ICG)*, which will be held in 2010. The history of the ICGs is as follows:

- First ICG, Paris, France, 1977
- Second ICG, Las Vegas, USA, 1982

- Third ICG, Vienna, Austria, 1986
- Fourth ICG, The Hague, The Netherlands, 1990
- Fifth ICG, Singapore, 1994
- Sixth ICG, Atlanta, USA, 1998
- Seventh ICG, Nice, France, 2002
- Eighth ICG, Yokohama, Japan, 18-22 September 2006

The IGS Secretary will provide prospective hosts with a detailed information package that informs and instructs interested parties on the proper procedure to prepare a bid to host the Conference. Interested Chapters and organisations should contact the IGS Secretary (see contact information on page 23).

Call for Candidates for the IGS President, Vice-President, and IGS Council: Term 2006 to 2010

Nominations due 31 January 2006

The 2006 IGS Election will be the first IGS electronic ballot. *Three ballots, one each for the election of President, Vice-President, and eight Council Members, will be posted electronically on 1 June 2006 with balloting to close on 31 July 2006.* Results will be announced at the General Assembly, in Yokohama, Japan, during the *8ICG* (September 2006).

The election of the IGS President, Vice-President, and the eight new Council Members, and the appointment of the Immediate Past-President, will be for a four-year period (2006 to 2010).

IGS Council Member Election

The IGS bylaws prescribe that up to half of the Council be elected every two years. IGS Members will have the opportunity to elect eight Members to the IGS Council for a four-year term, starting in 2006.

The eight IGS Council Members, whose term of office expires in 2006, are:

- G. Bräu (Germany)
- S.P. Corbet (UK)
- Ph. Delmas (France)
- M. Maugeri (Italy)
- H. Miki (Japan)
- E. Palmeira (Brasil)
- P.E. Stevenson (USA)
- W. Voskamp (The Netherlands)

The IGS bylaws stipulate that a

Council Member may be elected to two consecutive terms; hence, G. Bräu, M. Maugeri, H. Miki, E. Palmeira, and W. Voskamp are eligible for re-election. They will have completed one, four-year term as Council Members by 2006.

Under a special bylaw provision, Elizabeth Peggs was co-opted in January 2005 due to D. Halloran's resignation, thus, E. Peggs is eligible to stand for election in 2006.

Members co-opted in 2002 (E. Alio, C.B. Bao, B. Christopher, and G.V. Rao) must stand for election or stand down from the Council.

The IGS encourages any IGS Member, who is able to attend all IGS Council meetings, to consider standing for one of the Council positions. It is important that all geographical regions are represented on the Council and that its Members reflect the scope of the geosynthetics discipline.

IGS Secretary, Treasurer, and Immediate Past-President

According to the IGS bylaws, Dr. D. Cazzuffi will become an IGS Officer in his capacity as Immediate IGS Past-President following the General Assembly. The Secretary and Treasurer (the other two officers of the IGS) will be elected by the new IGS Council at a meeting of the Council, after the General Assembly.

Information/Instructions for All Candidates

Under the bylaws of the IGS, only IGS Members are eligible for these positions. Candidates must be able to travel to and attend the IGS Council meetings, which are held at least once per year. Meetings of the IGS Council are generally held in conjunction with international and regional conferences.

A signed letter of application together with a biographical note (not exceeding 12 lines) and a photograph should reach the IGS Secretary no later than **31 January 2006**. Candidates must strictly adhere to the 12 line limit to ensure equal presentation space for all candidates. In their letter to the IGS Secretary, candidates must clearly identify their country of residence and position for which they are seeking election. IGS Members may run for more than one position, in which case a separate statement for each position is required.

Biographical notes and photos will be published in the March 2006 issue of *IGS News*.

The newly formed IGS Council will meet several times (typically in Asia, America, or Europe) and, when possible, in conjunction with major geosynthetics and geotechnical engineering events.

Should you require further information, please contact President D. Cazzuffi, or Secretary P. Stevenson (see contact information on p. 23).

*reported by Karina McInnis
IGS News Editor*

IGS Awards: Call for Nominations 2002 to 2005

Nominations due 31 January 2006

IGS Awards will be granted in 2006 to individuals or groups of individuals who have made an outstanding contribution to the development and use of geotextiles, geomembranes, related products, or associated technologies through their scientific and technological achievements.

The Awards recognize the achieve-

ments completed and/or the validity of which has been demonstrated during a four-year period preceding the year of the Award (i.e., 2002 through 2005 inclusive).

The winning entries will also be featured at the IGS booth at any conference held under the auspices of the IGS and will be publicized in *IGS News*, in

a special press release on the IGS web site, and in other publications.

Timeline and Deadlines

Nominations must be received by the IGS Secretary no later than **31 January 2006**.

The deadline for receipt of award candidate presentation packages is 31 March 2006. Presentations will be for-

warded by the Secretariat to the Award Committee by 15 April 2006, and the Committee will meet in Cardiff, UK, in June 2006 to finalise their decisions, draft citations, and report by 30 June 2006. Awards will be presented in Yokohama, Japan, in September 2006 at the *8ICG*.

The Two IGS Awards

The Young IGS Member Award

This Award is for IGS Members who are less than 36 years of age on 31 December 2005.

The IGS Award

A maximum of five IGS Awards will be granted. Each award will consist of a specially commissioned medal and a diploma.

Candidates

Each entry is restricted to a maximum of four persons, at least one of whom, must be an IGS Member. All IGS Members are eligible with the exception of the IGS President and Members of the Awards Committee.

In the case of a group submission to the Young IGS Member Award, all members of the group must satisfy the age requirement. Any individual or group that is a candidate for the Young IGS Member Achievement Award is

automatically considered for both award categories (unless requested otherwise by the candidate). However, a candidate may only receive one award for the 2002 to 2005 period.

Nominations

Candidate nominations must be typed in English on plain paper (i.e., not letterhead paper) and submitted to the IGS Secretariat (see address on page 23). The nomination should include:

- a clear statement of the considered candidate's contribution (e.g., if the contribution is a product, provide a clear definition of the product; if it is a paper(s), book, and/or report, provide a full reference for each; if it is a construction method, provide a clear description of the method and any references, etc.) and;
- a statement indicating the originality and significance of the candidate's contribution to the discipline (i.e., in the field of geotextiles, geomembranes, related products and/or associated technologies).

Nominations may be made by any IGS Member except for Members of the Awards Committee. Under the IGS Awards rules, any IGS Member can nominate himself/herself for any award. The IGS Education Committee, Corporate Members Committee, and

IGS Chapters will be invited to make nominations.

Nominated candidates will be contacted by the IGS Secretary and asked to agree to stand for an award and will be required to submit materials as directed by the Awards Committee. All correspondence and activity related to nominations and award entries will be carried out in the strictest confidence by the IGS Secretary and the Awards Committee.

IGS Awards Committee

The Award Committee, which was nominated in Austin, Texas, at *Geo-Frontiers 2005*, will be formed between July and December 2005.

The Awards Committee comprises five IGS Members; one of whom serves as Chair. The Committee is appointed by the Council. The Members are selected so as to represent a broad cross section of geosynthetic-related technologies and experience. The IGS Secretary will attend all meetings of the Awards Committee as an observer and coordinator.

Additional Information

The full text of the IGS Awards rules can be obtained by contacting the IGS Secretary, Mr. Peter Stevenson.

reported by Karina McInnis
IGS News Editor

IGS Student Awards: 2005 to 2006

The IGS Student Awards will continue its successful inauguration with the fourth Award period of 2005 to 2006. The Awards will be assigned in 2006, and all successful candidates will attend the IGS international conference in 2006.

The IGS Student Award was established to disseminate knowledge and to improve communication and understanding of geotextiles, geomembranes, related products, and associated technologies among young geotechnical and geoenvironmental student engineers around the world.

An IGS Student Award will consist of a cheque of US\$1,000 for each winner. This award amount must be used to cover conference participation costs.

An IGS Student Award will be

assigned to only one student per Chapter; the selected student should be an undergraduate, M.Sc., or Ph.D. student. Students must be no older than 35 in the year the award is granted.

To ensure student representatives from each chapter participate in the program to the fullest extent possible, the chapters must accomplish the following:

- Chapters must hold a contest or conduct a nomination process to select the student candidate to represent them.
- Chapters must notify the IGS of the name of the student selected by **31 July 2006**.
- The IGS will transfer US\$750 to the student immediately upon receipt of chapter notification. IGS Student

Award recipients will be asked to submit a written report to the IGS Secretary on the international conference and on the IGS-related conference activities. Upon receipt of the report, which is due 30 days after the conference, the remaining US\$250 will be transferred to the student.

To ensure the maximum benefit to the students, the *conference organizers* must provide the student with a copy of the proceedings and admission to the sessions, and organize a recognition event for the students.

reported by Karina McInnis
IGS News Editor

8ICG - Full Speed Ahead!

Yokohama, Japan, 18 to 22 September 2006



On 11 and 12 May 2005, the International Paper Selection Committee (IPSC) met at the planned conference venue for the 8th International Conference on Geosynthetics (8ICG) in Yokohama, Japan, under the Chairmanship of Professor Kuwano. The purpose of the meeting was to plan the technical content for the Conference, which will be held on 18 to 22 September 2006.

Approximately 395 abstract submissions were received for approval, i.e., 310 were submitted from individuals and 85 were submitted through the various IGS Chapters as case study abstracts. This is an excellent figure, which demonstrates the high interest in geosynthetics research and applications technology. The IPSC has approved approximately 385 abstract submissions for full paper submission.

Abstract Submissions, Acceptance Rates, and Subjects

Table 1 shows a breakdown of the abstract submissions by geographical area. Some 38% of the total submissions came from North East Asia (Japan, China, Korea, and the West Pacific) – the “home region” for the 8ICG. However, all geographical regions are well represented. This shows the strong international interest in geosynthetics.

Table 2 shows a breakdown of the abstract submissions according to geosynthetics subject matter. Reinforced soil is the subject of 35% of the abstracts. However, interestingly, 9% of the abstracts deal with innovative geosynthetics and construction methods. This demonstrates that innovation and the generation of new ideas is alive and well in the geosynthetics industry.

Conference Program

The 8ICG will extend over five days including pre-conference courses. Table 3 presents the planned Conference Program. Post-Conference technical visits are also planned on 23 September. One of the three Keynote

Lectures and the Giroud Lecture will be held on each day of the Conference. Each Keynote Lecture will reflect a specific geosynthetics theme, with each

ture have been planned to demonstrate the advancement of the application technology of geosynthetics.

Table 1: Submissions by geographical region.

Region	Individual submission	Chapter submission	Total
NE Asia	43%	33%	38%
Europe	27%	30%	28%
North America	10%	2%	9%
SE Asia	4%	14%	6%
South America	6%	6%	6%
Australasia	2%	10%	4%
Middle East	3%	5%	4%
South Asia	3%	0%	3%
Africa	2%	0%	2%
Total	100%	100%	100%

Table 2: Submissions by subject matter.

Subject matter	Total
Reinforced soil	35%
Transportation	12%
Landfills	10%
Innovative geosynthetics and construction methods	9%
Hydraulics	8%
Erosion control	4%
Others	8%
General subjects	14%
Total	100%

paper written by a recognized international group of experts. The three Keynote Lectures will be “Seismic Stability of Reinforced Soil Walls,” “Hydraulic Applications of Geosynthetics,” and “The Performance of Geosynthetic Barrier Systems for Landfills.” The Giroud Lecture will be held on the first day of the Conference immediately following the Opening Session. The title of the Giroud Lecture will be “Geotextile Containment: Old and New.” The three Keynote Lectures and the Giroud Lec-

There will be eight Parallel Sessions for paper presentations, with each session reflecting one geosynthetics theme. The IPSC is also considering Special Sessions on specific technical issues involving geosynthetics. One such Special Session, “Practitioners and Academics Forum,” is outlined by Prof.

Richard Bathurst in the following article on page 6 of this issue. More details regarding other potential Special Sessions will be provided in upcoming issues of *IGS News*.

Conference Facilities

The Conference facilities at the Pacifico Yokohama were inspected by the IPSC members

and everyone considered them excellent. The main conference hall can accommodate up to 1,000 people with the three large meeting rooms (for the parallel sessions) accommodating up to 300 people each. The exhibition hall is located between the main conference hall and the large meeting rooms.



Members of IPSC standing in front of the 8ICG conference centre in Yokohama, Japan (left to right): Fumio Tatsuoka, Richard Bathurst, Chris Lawson, Robert Holtz, Masashi Kamon, Jean-Pierre Gourc, Junichi Koseki, and Jiro Kuwano. (Not present were Heinz Brandl and Daniele Cazzuffi).

Table 3: Planned 8/CG program.

	18 September (Monday)	19 September (Tuesday)	20 September (Wednesday)	21 September (Thursday)	22 September (Friday)
9:00 – 9:30	Training		Keynote Lecture 1	Keynote Lecture 2	Keynote Lecture 3
9:30 – 10:00	Courses &	Opening and			
10:00 – 10:30	IGS Council	Special Lecture	Coffee	Coffee	Coffee
10:30 – 11:00	Meeting	Giroud Lecture	Parallel Sessions 3	Parallel Sessions 6	Parallel Sessions 8
11:00 – 11:30		Exhibition			
11:30 – 12:00		Lunch	Lunch	Lunch	Lunch
12:00 – 12:30					
12:30 – 13:00					
13:00 – 13:30	Registration begins	Parallel Sessions 1	Parallel Sessions 4	Parallel Sessions 7	Special Session
13:30 – 14:00		Coffee	Coffee	Coffee	Coffee
14:00 – 14:30		Parallel Sessions 2	Parallel Sessions 5	IGS General Assembly	Concluding Session
14:30 – 15:00					
15:00 – 15:30					
15:30 – 16:00					
16:00 – 16:30					
16:30 – 17:00					
Evening		Ice Breaker/ Poster session	Poster session	Football match	Banquet

Access to the lunch area will be through the exhibition hall, with morning and afternoon coffee served within the exhibition hall.

For More Information

Conference Secretariat
 8/CG-Yokohama 2006
 E-mail: info@8icg-yokohama.org
 www.8icg-yokohama.org

reported by Chris Lawson and Junichi Koseki (Vice Chair of Scientific and Program Division, Organising Committee of 8/CG), IGS Members

Call for Speakers: 8/CG Practitioners and Academics Forum

Due Date for Nominations: 15 November 2005

Background

Practitioners and academics in the geosynthetics fraternity have as a common goal the development and promotion of geosynthetics for civil and geoenvironmental works. Nevertheless the comment is often made that these two groups do not always communicate despite the obvious synergies.

A Special Plenary Session will be held during the 8/CG to help bridge this gap by identifying areas of research by academics that have potential applications to practitioners and potential geosynthetics research opportunities identified by practitioners.

Organization of Forum

The Forum will be 90 minutes in length and be held as a Special Plenary Session during the 8/CG. The forum will be organized by Professor Richard J. Bathurst who has been appointed session chair.

Selected practitioners will be given 6 to 10 minutes to describe an application or product type that has potential application but requires research to be fully realized. It is envisaged that three to five practitioners will present.

Selected researchers from academia will be given 6 to 10 minutes to describe a current novel research area that they are pursuing that has potential benefit to practitioners in the form

of a new or nascent geosynthetics technology, product type, test method, generic design tool, or an improvement on a geosynthetics-related function or functions. A total of three to five academics will present.

Following the presentations by academics and practitioners, there will be a discussion open to the floor that will allow members of the audience to comment on the ideas presented and to offer other potential research ideas or applications. The open discussion will last 30 minutes. The speakers will be seated as a panel to field questions from the audience, each other, and the moderators.

The session will have two moderators (the session chair representing academia and one eminent person from practice) and a secretary. The session chair will introduce the session, the moderators will introduce the speakers and facilitate the discussions. The secretary will assist to keep the session speakers on time.

The presentations will be generic in nature and avoid any focus on a particular product. The speakers will not be required to prepare a written contribution to the Conference proceedings. However, speakers will be required to submit presentation materials to the session chair in advance of the Forum so that an article summarizing the forum can be published in *IGS News*

following the Conference. The list of speakers and topic titles will be printed in the Conference program for circulation prior to the Conference.

Nominations for Speakers

If you believe that you could make a valuable contribution as a speaker representing practitioners or academics, or you would like to nominate someone, please contact the undersigned. Practitioners may be (but are not limited to) manufacturers, consultants, representatives from testing laboratories, government agencies or regulatory bodies, or industrial organizations. Each final nomination must be in the form of a one-page document that includes the name, affiliation and contact information of the speaker, title of the presentation, and a clear description of the topic and perspective of the presentation (practitioner or academic).

To be considered as a potential speaker, this document must be received by the undersigned by e-mail attachment no later than **15 November 2005**. The selected speakers will be notified by 30 November 2005.

*reported by R.J. Bathurst, Session Chair and IGS Past-President
 E-mail: bathurst-r@rmc.ca*

2005 Mercer Lecture: Dr. Jean-Pierre Giroud

Contribution of Geosynthetics to the Geotechnical Aspects of Waste and Liquid Containment



Introduction

Dr. Jean-Pierre Giroud (USA) has been chosen to present the 2005 Mercer Lecture. Dr. Giroud is Past President of the IGS and Chairman Emeritus of Geosyntec Consultants. A practicing engineer with extensive field experience, he has developed and published many of the methods used to design applications of geosynthetics in landfills. Dr. Giroud has presented keynote lectures to numerous international conferences. In February 2005, he delivered the Vienna Terzaghi Lecture (see the March 2005 issue of *IGS News*).

Dr. Giroud will deliver his lecture in Osaka, Japan, in September 2005 at the *16th International Conference on Soil Mechanics and Geotechnical Engineering*; in Sardinia, Italy, in October 2005 at the *Tenth International Waste Management and Landfill Symposium, Sardinia 2005 Conference*; and in Kwazulu-Natal, South Africa, in October 2005, at the *Landfill 2005 Conference*.

Mercer Lecture History

The Mercer Lecture is a biennial lecture sponsored by Tensar International with the endorsement of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) and the IGS.

The objective of the Lecture is to help promote co-operation of information exchange between the geotechnical engineering profession and the geosynthetics industry by giving an eminent practitioner the opportunity to undertake a lecture tour on the subject of Geosynthetics in Geotechnical Engineering.

The Lecture is given on three occasions, with each occasion being on a different continent. The venue and date is agreed upon by the selection committee, which comprises representatives from Tensar International, the ISSMGE, the IGS, and previous Mercer Lecture award winners.

The Lecture was presented by Professor Bob Koerner (USA) in 1992, Pro-

fessor Jean-Pierre Gourc (France) in 1994, Professor Fumio Tatsuoka (Japan) in 1996, Professor Alan McGown (UK) in 1999/2000, and Professor Richard J. Bathurst in 2003/2004.

2005 Mercer Lecture Abstract

Geosynthetics are indispensable in modern waste containment and, more generally, in geotechnical and geoenvironmental engineering. They provide new solutions and, at the same time, pose new challenges to geotechnical engineers. The two main geotechnical goals in waste containment design are the control of liquids that transport contaminants and the short- and long-term integrity of landfills. The lecture will show how geosynthetics are used to achieve these geotechnical goals and will identify areas where research and development are needed.

The first part of the lecture will address the contribution of geosynthetics to liquid control. Composite liners, which associate clay (and/or bentonite geocomposites) with geomembranes, are orders of magnitude more effective than clay alone. However, it will be shown that geotechnical engineers are challenged by aspects of material behavior that are unusual in traditional geotechnical engineering, such as: desiccation of clay or bentonite even when these materials are covered with a geomembrane, and geomembrane wrinkling due to thermal expansion, two mechanisms that may impair the effectiveness of composite liners. Another aspect of liquid control is the use of drainage layers to collect and remove leachate. The benefits that result from the use of geosynthetic drainage materials will be mentioned. At the same time, the challenges associated with these materials will be discussed, such as the use of time-temperature superposition to predict the long-term compressive creep and the resulting decrease in hydraulic transmissivity of geosynthetic drainage materials.

The second part of the lecture will address the contribution of geosynthet-

ics to short- and long-term integrity of landfills.

The steep slopes needed to increase waste storage capacity lead to stability problems. Geosynthetics are extensively used in landfills to reinforce slopes, but their use is associated with numerous challenges. On one hand, geotechnical engineers are well prepared to deal with stability problems. On the other hand, they have to face new challenges such as: the development of slip planes in slopes with multiple interfaces, the influence of pore pressure on the behavior of waste, and the influence of gas pressure on the stability of landfill covers. Also, it will be shown that geosynthetic drainage materials, which appear to be equivalent to granular drainage materials from the viewpoint of the impact of drainage on slope stability based on traditional steady-state flow calculations, are in fact not equivalent as shown by transient flow calculations. Thus, a greater factor of safety regarding flow capacity is required from geosynthetic drainage materials to achieve the same safety regarding stability as granular drainage materials.

The examples mentioned above are only a few of the geosynthetics benefits and associated challenges that will be presented in the lecture. Field situations, including failures, will be shown using numerous photographs. Technology transfer from the use of geosynthetics in waste containment applications to the use of geosynthetics in liquid containment applications will be illustrated by applications of geosynthetics in large dams. The lecture will provide useful information to practicing engineers and the challenges presented will inspire researchers.

reported by Karina McInnis, IGS News Editor, with contributions from Dr. J.P. Giroud, IGS Past President

2005 Rankine Lecture by Professor R. Kerry Rowe Past President of the IGS

Long-Term Performance of Contaminant Barrier Systems

The 44th Rankine Lecture was presented by Professor Kerry Rowe at Imperial College, London, UK on Wednesday, 23 March 2005, to a gathering of over 700 attendees comprising geotechnical and geosynthetic engineers, researchers, students, and others. Professor Rowe drew on his wide experience as a geotechnical and geoenvironmental engineer, and researcher, to speak eloquently and comprehensively on the long-term performance of contaminant barriers – a subject he has increasingly made his own.

Long-Term Performance of Contaminant Barriers

Modern barrier systems comprise a number of different elements and may include a geotextile filter overlying a granular leachate collection layer, geotextile protection to a primary geomembrane, a compacted clay or geosynthetic clay liner and, for double lined systems, a leak detection system and secondary composite liner. Contaminant transport through each element of such a liner may be by advection, with a general flow of water in accordance with Darcy's law, or by diffusion, which takes place in response to a concentration gradient even if there is no, or even inward, flow. In the lecture, Kerry covered seven inter-related performance issues: clogging of leachate collection systems, landfill temperature, flow/leakage through liners, diffusion through liners, lifetime prediction for geomembrane liners, desiccation of clay liners, and contaminant transport through composite liners.

A granular leachate collection layer at the base of a landfill may clog as a result of the growth of a biomass within the pore space and the bio-induced precipitation of inorganic matter, particularly calcium carbonate. This was dramatically illustrated by photographic evidence from laboratory columns and a real leachate collection system at the Keele Valley landfill, which on exhumation after 4 to 5 years of operation

showed extensive clogging. However, the impact of clogging on the service life of a granular leachate collection system can be reduced by using a uniform coarse drainage material (the larger the particle size, the longer the service life); placing a suitable filter between the waste and the drainage layer; minimizing the flow in critical regions (e.g., by increasing the thickness of the drainage layer and reducing the spacing between leachate collection pipes); and regular cleaning of the leachate collection pipes. Some landfill management prac-



2005 Rankine Lecturer, Prof. R. Kerry Rowe (centre) with 1991 Rankine Lecturer Prof. James Mitchell (right) and BGA Chair, Tony Bracegirdle (left).

tices, e.g., leachate recirculation or operation as a flushing bioreactor to accelerate waste degradation, will increase the load on the leachate collection layer; in these circumstances, it is particularly important that steps to mitigate clogging are taken.

As the leachate collection layer clogs, its permeability reduces and leachate mounding can result. As well as increasing leakage through a liner due to increased advection in response to the increased hydraulic gradient, this can lead to an increase in temperature on the inside of the barrier system. Even with a well operating leachate collection system, microbial activity in the landfill is likely to result in a liner temperature of between 30°C and 40°C; the presence of a leachate mound could increase this to 60°C. This increase in temperature

will increase both the hydraulic conductivity (permeability) and the diffusion coefficient – and hence leakage due to advection and diffusion, respectively – by a factor of nearly 2.

Kerry then focussed on the interface between the primary geomembrane liner and the compacted clay or geosynthetic clay liner below it. Measured leakage rates are generally much higher than those calculated on the basis of a realistic number of holes per hectare, assuming intimate contact between the geomembrane and the underlying compacted clay layer. However, intimate contact between an HDPE geomembrane and the underlying clay is not easy. Kerry showed photographic evidence of the large number of wrinkles (at least 80 in 630 m²) likely to occur in practice, and the defects such as holes, cracked welds, and poor seams likely to be associated with these wrinkles. A simple analysis confirmed holes in wrinkles as the cause of the observed leakage rates, and it was demonstrated that a composite barrier comprising a geomembrane overlying a geosynthetic clay liner is likely to be more effective than a geomembrane overlying compacted clay in terms of minimizing leakage.

Turning from advection to diffusion, Kerry showed that while a geomembrane is resistant to the diffusion of chloride ions, it does not form such an effective barrier to the diffusion of non-polar organic compounds such as BTEX and chlorinated solvents. Control of the migration of these substances will depend on sorption and biodegradation in a clay liner or attenuation layer. The service life of a geomembrane will depend on protection from tensile strains, temperature, and oxidative degradation. Oxidative degradation is slowed by antioxidants that are incorporated into the geomembrane material as part of the manufacturing process, but become depleted over time as a result of exposure to air, water, or leachate. Antioxidant depletion is more rapid in leachate than in

water, than in air, and at elevated temperatures; thus, the predicted service life of a primary HDPE geomembrane liner in a typical municipal solid waste landfill at 35°C is, at about 150 years, less than that of the secondary liner (over 600 years at 20°C).

Throughout the lecture, Kerry made extensive use of real case data to illustrate his points and fully recognized the role of microbiology and chemistry in explaining and understanding key aspects of the behaviour of contaminant barriers. Despite sometimes complex interactions, the behaviour of contaminant barrier systems is now understood and numerical models are available that can be used to predict service lives and contaminant transport over the life of the landfill. This is due in no small part to the work carried out or inspired by Kerry and presented in the lecture. The importance of his contribution is brought into focus by impending legislation in Europe and elsewhere that will change fundamentally the nature of landfilled waste; although the amount should reduce, its pollution potential will probably increase and the design of effective contaminant barriers will become even more essential than it is now.

Kerry ended the lecture by acknowledging his family, mentors Bob Quigley

and John Booker, colleagues, collaborators and major funder the Natural Sciences and Engineering Research Council of Canada. The vote of thanks was proposed by Professor William Powrie (University of Southampton) and passed with acclamation.

Rankine Dinner Celebration

Following the Lecture, approximately 350 persons (British Geotechnical Association (BGA) members, IGS Members, and guests) attended the dinner organized by the BGA.

The top table was reserved for BGA Chair, Tony Bracegirdle, and as many past Rankine Lecturers as can be present. The top table this year included past Rankine Lecturers, Arthur Penman, who proposed the loyal toast to the Queen of England, John Burland, Brian Simpson, John Atkinson, and John Mitchell, who proposed the toast of congratulations and thanks to Kerry Rowe.

A large number of IGS Officers and Members attended the lecture and the dinner. Dr. Daniele Cazzuffi (President), Prof. Fumio Tatsuoka (Vice President), Mr. Peter Stevenson (Secretary), Mrs. Rosemary Stevenson (Office Manager), Dr. and Mrs. Gerhard Bräu and Prof. Michele Maugeri (Council Members), and Mr. Nick Kantartzis and Mr. J.P.

Magnan (IGS Chapter representatives for Greece and France, respectively), formed the main IGS table. Bernard Myles and Steve Corbet (Council Members), both hosted tables with a mixture of geosynthetic interests. Jim Paul (former Council Member) hosted a table that included employees and clients of Tensar International. The UK IGS Chapter populated another table, which included the Committee of the UK Chapter and some members – Derek Smith (Chair), Russell Jones (Vice Chair), Dave Shercliff, and Neil Dixon.

During the evening, a raffle was held to raise funds for the UK's emergency engineering aid organization 'RedR.' RedR maintains a registry of engineers, both fully qualified and with some experience, who are willing to undertake voluntary relief engineering work in disaster areas or to work in poorer third world areas on poverty relief work. The raffle raised over £2,500.

The support from the geosynthetic community for Kerry's delivery of his Rankine Lecture – the most prestigious geotechnical lecture – was a demonstration that our science is now a fully fledged part of Geotechnical Engineering at all levels.

reported by Steve Corbet, IGS Council Member, and William Powrie

Tsunamis, Earthquakes, and Geosynthetics

How can IGS Members Help?

It is now approaching six months since the Indonesian Tsunamis, and it is apparent that the people in the region still need help in reconstructing their infrastructure and their lives.

Seismic activity in the region still continues. We have seen more earthquakes at Nias, and the Krakatau volcano is now larger than the one that exploded so famously 120 years ago.

Geosynthetics are very useful for rapid re-construction of infrastructure in remote areas. They are light and easy to carry, rapidly deployed and highly adaptable to various situations. However, at present most of the work

is being done by NGOs or Aid Agencies whose volunteer forces are not very familiar with geosynthetics. It would appear that conventional concrete structures are being planned instead. The last thing the people of the region need is brittle conventional concrete structures that will fall apart in the

next substantial earth tremor.

What can be done about this?

These NGOs are from all over the developed world, so geosynthetics people around the world can speak to them in their own back yard and spread the influence of geosynthetics at a time when they are greatly needed.

IGS Council Members Participating in the Tsunami Relief Initiative

Daniele Cazzuffi
President IGS, Italy
Cazzuffi@cesi.it

Peter E. Stevenson
IGS Secretary
1/864 855 0504
IGSsec@aol.com

Mike Sadlier
Tsunami Coordinator
Member AAC, Australia
Sadlier@attglobal.net

John Cowland
Member AAC
Hong Kong, China

Masami Kamon
Chair AAC, Japan

E.C. Shin
Member AAC, Korea

Cheng-Gang Bao
Member AAC, China

G.V. Rao
Member AAC, India

We sometimes hear the question “What does the IGS do for its members?” This is an opportunity for the IGS members to do something for the IGS so that all of the IGS Membership will benefit.

To help with this, the *IGS Education Committee* is fast tracking a leaflet about the generic use of geosynthetics in tsunami and earthquake reconstruction. The leaflet will highlight applications, the advantages of geosynthetics, and provide references for further information. The leaflet will soon be available on the IGS web site.

The Goal: We want the IGS Membership to get this leaflet into the hands of

NGO Management and Project Managers around the world.

Some of the applications that will be discussed in the leaflet are:

- Geotextiles, geonets, geogrids, and geocomposites for drainage, reinforcement, and separation applications involved with coastal protection, roadworks, and other basic infrastructure construction.
- Geomembranes for water storages, containment and treatment of waste water, and solid waste management.

The leaflet will mention the following advantages of geosynthetics in these works:

- Geotextiles, geonets, and geocomposites for drainage, reinforcement and separation applications can be readily adapted and used by the local people, which will help them to be involved in their own reconstruction processes.
- Geosynthetics generate flexible structures, which have been shown to be more resilient to earthquake action.

We urge the IGS membership to support this initiative for our mutual benefit and the benefit of the people in these devastated regions.

reported by Mike Sadlier, IGS Council Member and Tsunami Coordinator

Tsunami Reconstruction with Geosynthetics

Asian Institute of Technology Tsunami Forum, held on 6 to 7 June 2005

The Tsunami of 26 December 2004, which struck the Indian Ocean Basin, affected hundreds of thousands of people in countries including Thailand, Sri Lanka, Indonesia, and India. Its death toll has risen to over 260,000 victims. Many survivors have had their lives disrupted since coastal tourism, fisheries, mariculture, and agriculture have been seriously affected and housing and public infrastructure have been destroyed. There is urgent need to restore, rehabilitate, and repair the damages of the affected areas and provide aid to people in these areas.

Leading scientists and advocates were invited to participate in the Asian Institute of Technology (AIT) Tsunami Forum to better understand tsunami phenomena. The Forum was organized by the AIT in partnership with the United Nation Environment Program (UNEP), Asian Disaster Preparedness Center (ADPC), Thai Ministry of Natural Resources and Environment, and others. The Forum took place at the AIT Conference Center on 6 to 7 June 2005. This article is a summary of the information published in the Forum proceedings.

The Damage Done

The tsunami wave height distributions in Thailand are shown in Figure 1. The

wave heights were greater at flat shorelines and shallow seawater depths. Consequently, beach resorts with greater seawater depths and steeper shorelines experienced only slight damage. Wide vegetated areas not only protect shorelines, but also obstructed drifting debris that has destructive

power when combined with water flow.

Figure 2 shows airphotos before and after the tsunami at Khao Lak, Phanga, Thailand, identifying areas that experienced the greatest devastation. Small and structurally weak buildings directly open to the coastline were completely destroyed, while large and structurally

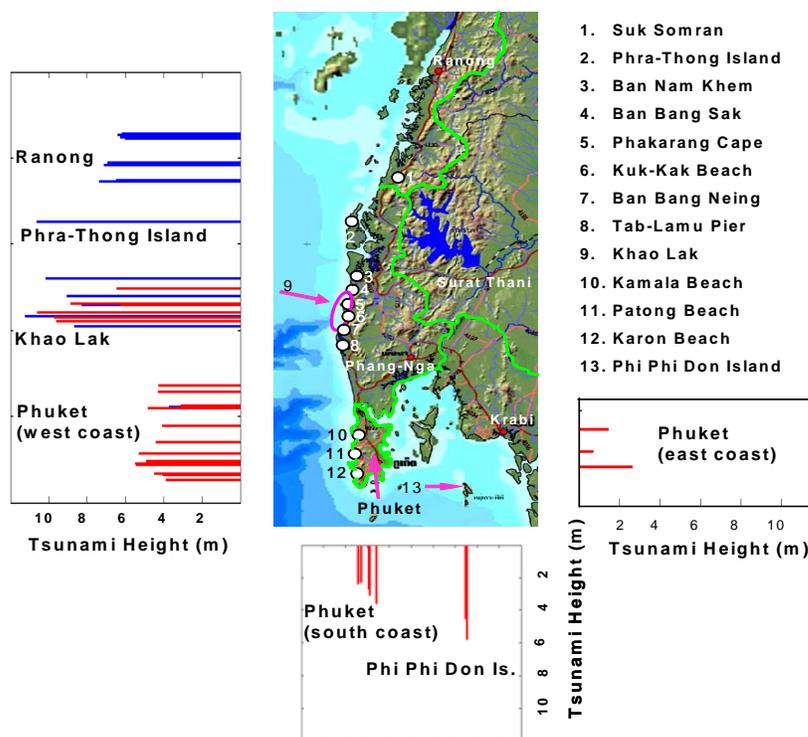


Figure 1. Tsunami waveheight distribution in Thailand, measured by a Japanese team led by Prof. Matsumoto of Akita University and a Thai team led by Dr. Nakhorn Poovarodom, Thammasart University.

strong buildings remain standing. However, the foundations of large buildings still experienced scour and erosion damage, with erosion also causing damage to seawalls and earth structures.

General Preventative Planning Measures

Ground elevation is a key factor in determining the extent of damage: even a small hill, 2 m in height, provided protection to the houses built on the

destructive effects of tsunami. In general, there was selective damage to beaches depending on the morphology, topography, and depth of the seawater in the coastal area.

The Indonesian Engineering Association (IEA) presented proposals at the Forum for reconstruction that incorporate safety/evacuation measures in the event of a future tsunamis. The first proposal calls for a mangrove buffer zone and a canal between the fishing

How can the IGS and geosynthetics use be involved in tsunami reconstruction?

We need to influence policy makers, aid agencies, consultants, and contractors and encourage the use of geosynthetics in design guidelines and proposals for repair and reconstruction of infrastructure. *Research* is needed to investigate the following questions as applied to areas affected by tsunamis:

- Why the selective damages of tsunami?
- Can geosynthetics prevent scouring of shallow foundations?
- Can geosynthetics prevent erosion damage of earth structures?
- Can geosynthetics be used to construct high embankments or “escape hills”?
- Can geosynthetics be used to construct buffer zones between villages and the coast?
- Can breakwaters and seawalls protect tourist beaches?

We currently have the geosynthetic technologies for the reconstruction of damaged infrastructure. The utilization and application of geotubes, geogrids, geotextiles, geocomposites, geocontainers, geopipes, geomembranes, etc. are urgently needed not only to save costs, but also to provide flexible and composite structures. We need to construct breakwaters, seawalls, revetments, slope reinforcements, etc., to prevent scouring, erosion, and other related devastations of infrastructures. Coastal road embankments require strengthening with geosynthetics and to be elevated to serve as seawalls in the buffer zones.

*reported by Dennes T. Bergado,
President of IGS-Thailand*



Figure 2. Coastal erosion due to tsunami in Khao Lak, Phanga, Thailand.

hill. Also, natural sand dune deposits at some beaches in Phuket, Thailand (e.g., Karon Beach) helped reduce the

villages and the coast. The second proposal includes an escape hill or high building concept.

Call for Papers for the International Symposium on *Tsunami Reconstruction with Geosynthetics*

8 to 9 December 2005, Bangkok, Thailand

The international symposium on *Tsunami Reconstruction with Geosynthetics – Protection, Mitigation and Rehabilitation of*

Coastal and Waterway Erosion Control will be held in Bangkok, Thailand, on 8 to 9 December 2005 at the Asian Institute of Technology (AIT) under the

auspices of the IGS.

The IGS, in cooperation with the King Mongkuts University of Technology Thonburi (KMUTT) and the Asian

Center for Soil Improvement and Geosynthetics (ACSIG) is inviting you all to participate in this Symposium.

It will take years of effort from different engineering disciplines to recover from the recent devastation caused by the Tsunami in South Asia. Geosynthetics can play an important and vital role in protection, mitigation, and rehabilitation efforts in affected coastal areas. Traditional construction techniques utilizing rock, concrete, and steel are being increasingly challenged by alternative geosynthetic solutions used in revetments, scour protection, berms, artificial reefs, reclamation, and dunal stabilisation to name but a few. The use of geosynthetics has advantages (over traditional techniques) such as speed of construction, flexibility and durability, use of local soil materials rather than imported quarry products, and cost effectiveness.

The objective of the Symposium is to bring together experts in these fields such that all participants can learn the latest geosynthetics developments, technologies, applications, and design techniques for erosion control, as well as for repair and rehabilitation of infra-

structure and, particularly, how these can be applied to the rehabilitation of the Tsunami-devastated areas.

Invited Presenters

Several international experts have already expressed their availability to deliver Keynote, Invited and Technical Lectures, including Prof. B. Indraratna (Australia), Prof. K. Yasuhara (Japan), Prof. H. Ohta (Japan), Dr. S.L. Shen (China PR), Prof. C.C. Huang (Taiwan ROC), Prof. E.C. Shin (Korea), Ir. C. Lawson (Malaysia), J. Babin (Thailand), and Y.T. Weng (Taiwan), M. Francis (USA), and Prof. F. Tatsuoka (Japan). These experts come from industry and academia, as well as government agencies.

Abstracts and Contact Information

The submission of abstracts of approximately 300 words is invited. For accepted abstracts, authors will be invited to submit a full paper. It is required that the author, or a co-author, present the accepted paper during the Symposium. Please submit abstracts to: Prof. Dennes T. Bergado, Director Asian Center for Soil Improvement and

Geosynthetics (ACSIG)
Asian Institute of Technology (AIT)
P.O. Box 4, Klong Luang
Pathumthani 12120 Thailand
Tel: 66/02 524 5512, 02 524 5500 or
02 524 5864 (Thai)
Fax: 66/02 524 6050, 02 524 5509
E-mail: bergado@ait.ac.th

Deadlines

Abstracts due: 1 September 2005
Full papers due: 1 November 2005

Registration Fees

The following Symposium registration fees include a copy of the Symposium Proceedings, lunches, and coffee breaks for 2 days:

- *Foreign Participants:* US\$150
- *Thai Participants:* Baht 4,000 (US\$100)
- *IGS Members:* Baht 3,000 (US\$75)
- *Students:* Baht 1,000 US\$25

Accommodation

Windsor Suites Hotel
Klongtoey, Bangkok
www.windsorsuiteshotel.com
E-mail: info@windsorsuiteshotel.com

Sardinia 2005 -- Tenth International Landfill Symposium

S. Margherita di Pula (Cagliari), Italy, 3 to 7 October 2005

The *Tenth International Landfill Symposium, Sardinia 2005*, will be held in S. Margherita di Pula, Cagliari, Italy, on 3 to 7 October 2005 under the auspices of the IGS.



The International Landfill Symposia in Sardinia were established to disseminate knowledge and experience in waste management and landfills. The Symposia have rapidly become the international reference forum, where leading experts present their research activities and experiences and discuss new concepts and technologies.

Specific Symposium Topics

- Waste policy and legislation
- Waste management strategies
- Public concern and education

- Waste management assessment and decision tools
- Waste characterization as a tool for waste management strategies

- New concepts for waste collection
- Waste minimization and recycling
- Biological treatment
- Thermal waste treatment
- Mechanical biological treatment prior to landfilling
- Sanitary landfilling
- Integrated wastewater and solid waste management
- Special sessions

The Symposium will include oral presentations, poster sessions, specialised sessions, a "Landfill Products Forum" for company presentations, a

small exhibition, as well as specific Workshops focused on the main controversial aspects of waste management and landfilling.

Official Language

The official language will be English. All papers must be written and presented in English. Authors will be expected to attend the Symposium and present their papers.

More Information

For further enquires and information on registration, exhibition, etc., contact the Organizing Secretariat:
Tel: 39/049 8726986
Fax: 39/049 8726987
E-mail: info@sardiniasymposium.it
www.sardiniasymposium.it

5th International Congress on Environmental Geotechnics

Opportunities, Challenges and Responsibilities for Environmental Geotechnics, Cardiff, Wales, UK, 26 to 30 June 2006

The International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) and the British Geotechnical Association (BGA, the British member society of the ISSMGE) are pleased to announce the *Fifth International Congress on Environmental Geotechnics (5ICEG)*, which will be held between the 26 and 30 June 2006 in Cardiff, Wales, UK – Europe's youngest capital city. The Congress will be held under the auspices of the IGS.

To stimulate communication and discussion, a number of Plenary Sessions will be held, which will cover a wide range of issues with invited experts presenting the state of the art, supported by well-documented case histories and "real industrial examples." These will be followed by panelled open Discussion Sessions, where the most challenging aspects of each topic will be cast open for debate. A Poster Session at the Exhibition Hall will compliment the formal Plenary and



Discussion Sessions.

This Congress is the fifth in the series of prestigious international congresses on environmental geotechnics held by the ISSMGE. Following the successes of the previous congress held in 2002 in Rio de Janeiro, Brazil, the 5ICEG promises to be a truly global affair of prestigious international calibre.

The congress will provide a unique forum for academics, industry, and government practitioners to share their findings and expertise.

Session Themes

Papers under the following session themes will be presented:

- Remediation
- Barrier Design (Nuclear Waste Disposal)
- Testing and Monitoring
- Sustainability
- Fate and Transport
- Waste Reuse/Waste Management (Radioactive Waste)

- Regulation and Risk Management
- Tailings/Sludge Ponds/Underwater Geoenvironmental Issues
- Mine Sites, Tailing Dams, Dredgings, and Lagoons
- Integrated Management of Groundwater & Contaminated Land

The above are intended to be indicative of themes and are not intended to be exclusive or to discourage the submission of other relevant papers. Abstracts were due 1 December 2004.

Conference Organizers

The Congress is being organized by the Geoenvironmental Research Centre, Cardiff University, supported by the Transport Research Laboratory (TRL) and the Building Research Establishment (BRE).

More Information

A bulletin containing details of the Congress program, registration procedure, accommodation, and other details will be issued in 2005 (see page 21 for contact information).

Synopsis of the First IGS Czech Chapter Seminar

8 February 2005, Prague, Czech Republic

On 8 February 2005, the Czech Chapter of IGS (IGS CZ) organized the "Geosynthetics in Civil Engineering Practice" seminar in Prague, which was attended by designers, consultants, contractors, government officers, and university students. The purpose of the Seminar was to provide a comprehensive review on the use of geosynthetics in various applications (separation and filtration, drainage, reinforcement, protection, and barriers).

The following individuals presented at the Seminar:

Petr Hubik: Terms and definitions in geosynthetics
Lumir Mica and Jiri Vanicek: Function of separation, filtration and drainage. Erosion control
Ivan Vanicek and Dalibor Grepl: Geosynthetics in soil reinforcement
Lukas Farsky and Pavel Mann: Fluid barriers
Vitezslav Herle: Current specification for use of geosynthetics



Prof. I. Vanicek's presentation (sitting, left to right: P. Komarek, Chair of IGS CZ, and R. Korolevic).

With exception of Lukas Farsky and Prof. Ivan Vanicek, all lecturers are members of IGS CZ. Mr. Petr Komarek, Chair of the IGS CZ, presented the opening and closing talk for the Seminar.

There were 262 paying Seminar participants; members of IGS CZ

Council and lecturers received free admission. Apart from the lectures, seven geosynthetics manufacturers and dealers exhibited their products. Participants received a CD with all presented lectures and the geosynthetics terms and definitions vocabulary.

The participants appreciated the Seminar, which facilitated the advertisement of the IGS CZ to the engineering public.

*reported by Vitezslav Herle
Vice Chair of the IGS Czech Chapter*

XVII Italian National Conference on Geosynthetics

Held on 14 October 2004, Bologna, Italy

The *XVII Italian National Conference on Geosynthetics* was held on 14 October 2004 in Bologna, Italy. The Conference was jointly organized by the Italian Chapter of the IGS (AGI-IGS) and the Bologna Association of Engineers and Architects (ASSIABO) with the participation of the Technical National Committee on Waste Disposal (CTD) and the International Waste Working Group (IWWG) under the auspices of the Italian Environmental Ministry, the Italian Transportation and Infrastructures Ministry, and Bologna University. More than 200 participants attended the Conference, which was organized into two different sessions.

First Session

The first session was chaired by Daniele Cazzuffi (IGS President) and focused on the use of geosynthetics in contaminated sites: two keynote lectures and four papers were presented.

The first keynote lecture was presented by Mario Manassero (Polytechnic of Torino) and focused on the engineering problems related to remediation design of contaminated sites. In particular, the use of geosynthetics in different remediation technologies was emphasized.

The second keynote lecture was presented by Giovanni Pietro Beretta

(University of Milano) and focused on the geological and environmental aspects of remediation design and contaminated sites.



Some of the *Italian National Conference on Geosynthetics* participants (from left to right): Andrea Cancelli, Raffaello Cossu, Erio Pasqualini, Michele Maugeri, Daniele Cazzuffi, and Mario Manassero.

The four presented papers detailed design and construction problems related to some of the applications described in the two above keynote lectures. In particular, these papers focused on Italian and other European case histories in which geosynthetics were used widely.

Second Session

The second session was chaired by Michele Maugeri (AGI-IGS President and IGS Council Member) and focused on the use of geosynthetics in waste disposal: two keynote lectures and four papers were presented.

The first keynote lecture was presented by Raffaello Cossu (University

of Padova) and addressed the long-term impact of ancient waste disposal and also described a new technology (i.e., open waste disposal) for the reduction of this impact.

The second keynote lecture was presented by Erio Pasqualini (University of Ancona) and described the geotechnical problems related to the design of waste containment systems and slurry trench cut-off walls.

The four presented papers detailed the design and construction problems related to some of these applications. In particular, problems related to leachate and biogas control, cover systems, enlargement of ancient waste disposal, and use of new technology (open waste disposal) were

described.

Other Activities

At the end of each session, fruitful and interesting discussions took place. Also, during the Conference, a special lecture, presented by Pietro Baraton (Italian Transportation and Infrastructures Ministry), focused on the level of actuation of European norms in Italy.

The *XVIII Italian National Conference on Geosynthetics* will be held on 12 October 2005 in Bologna and will address the application of geosynthetics in roads and railways.

*reported by Nicola Moraci
IGS Member*

International Workshop on the Hydro-Physico-Mechanics of Landfills

Held on 21 to 22 March 2005, LIRIGM, Grenoble, France

The *International Workshop on the Hydro-Physico-Mechanics of Landfills* was held on 21 and 22 March 2005 at the University of Grenoble, France. The Workshop was organized by IGS Members, Jean-Pierre Gourc and Patrick Pierson, of the Laboratoire interdisciplinaire de géologie et mécanique (LIRIGM) under the auspices of the IGS and the ISSMGE (Technical Committee 5, Environmental Geotechnics).

Objective of the Workshop

The Workshop objective was to combine the knowledge and skills of landfill experts from academia and industry in different disciplines ranging from geomechanics and geosynthetics, to hydraulics, biochemistry and physics.

For more than ten years, the “Geosynthetics and Environmental Geotechnics” team of LIRIGM has been involved in landfill and geosynthetics research. It is clear that, as for geosynthetics research, landfill studies require transdisciplinary exchanges of information. A better understanding of the global behaviour of waste and barriers (mineral/geosynthetic) versus time requires an interdisciplinary approach.

On the other hand, the concept of “sustainable development” has altered landfill practices, with the objective to reduce the long-term environmental impact of all waste management techniques within the time frame of one generation. However, especially in Europe, updated landfill practices are significantly different from country to country with regard to mechanical-biological pre-treatment, thermal pre-treatment and inertization, and in situ aeration or leachate recirculation (bioreactors). These different techniques necessitate the alteration of the landfill cover design.

Participants and Workshop Program

A total of 78 individuals were invited to

participate, coming from 12 countries, with 53 academics and the remaining 25 individuals from industry. The majority of the participants were invited to contribute an oral presentation. The program was divided into two parts: (1) the first day was dedicated to the properties of in situ landfill waste material; and (2) the second day to landfill cover design.



The 43 presentations were given in the following different sessions:

- 1.0 *Introduction*, Daniele Cazzuffi, IGS President, and Mario Manassero, Chair of TC5-ISSMGE
- 1.1 *Hydro-Physical Properties of Waste*, Mario Manassero, Chair, Politecnico di Torino, Italy
- 1.2 *Characterization of the Degradation of Waste*, Neil Dixon, Chair, Loughborough University, UK
- 1.3 *Bioreactors*, William Powrie, Chair, U. of Southampton, UK
- 1.4 *Mechanical Properties of Waste: Field Monitoring*, Luis Lemos, Chair, U. of Coimbra, Portugal
- 1.5 *Mechanical Properties of Waste: Modelling*, Orencio Villar, Chair, U. of Sao Paulo, Brazil
- 2.0 *Opening Lecture*, “The mass balance, a supporting tool for a sustainable landfill management,” Raffaello Cossu, Padova University, Italy
- 2.1 *Case Histories*, Raffaello Cossu, Chair, Padova University, Italy
- 2.2 *Hydro-Physical Properties of Barriers (I)*, Karl-Joseph Witt, Chair,

Weimar University, Denmark

2.3 *Hydro-Physical Properties of Barriers (II)*, Daniele Cazzuffi, Chair, CESI, Italy

2.4 *Geotextiles for Landfill Cap Cover*, Andre Rollin, Chair, Canada

The contributions were complementary comprising laboratory studies, field-monitored case studies, as well as theoretical modelling.

Special Events

A meeting of Technical Committee 5 of the ISSMGE and the defence of Madalena Barroso’s PhD thesis titled “Mass transfer through geomembrane seams at the geomembrane-GCL interface” took place in conjunction with the Workshop.

Also, the first evening was dedicated to the Gala dinner overlooking Grenoble City at the Bastille.

Conference Proceedings

Proceedings are available on the web site, www.lirigm.ujf-grenoble.fr, under the heading “events,” or visit www.geosyntheticssociety.org.

Future Workshops

The Workshop was considered a success by all participants and, in all likelihood, can be called the “*First*” *International Workshop on Hydro-Physico-Mechanics of Landfills* since several individuals volunteered to organize the “*Second*” International Workshop on this topic within two years.

In parallel, following discussions with Prof. Masashi Kamon, at Kyoto University (Japan), it was decided to organize a joint University of Kyoto-University of Grenoble workshop in Kyoto on the same topic at the beginning of April 2006 in coordination with the Japan-Korea and Japan-Malaysia seminars on the Environment.

*reported by Jean-Pierre Gourc
IGS Member*

Robert M. Koerner Symposium on Geosynthetics and Geosynthetic-Engineered Structures

Held on 2 June 2005, Baton Rouge, Louisiana, USA

The Robert M. Koerner Symposium on Geosynthetics and Geosynthetic-Engineered Structures was held on 2 June 2005, in Baton Rouge, Louisiana. The Symposium was organized by “geosynthetics” friends of Prof. Robert M. Koerner (Geosynthetics Research Institute) in honor of his research achievements.

This Symposium was part of a larger Conference on Mechanics and Materials (*McMat 2005*), which is a joint meeting held every four years between three societies (American Society of Civil Engineers, ASCE, American Society of Mechanical Engineers, ASME, and the Society of Engineering Science, SES). The Symposium was open to all participants of *McMat 2005*.

Since the ASCE Engineering Mechanics Division Committee on Inelastic Behavior introduced the geosynthetic sessions three years ago in all of its mechanics and materials conferences (2002 at Columbia University; 2003 at the University of Washington; and 2004 at the University of Delaware), the subject has gained increasing popularity. So much so, that it was considered timely to further attract the interest of researchers from different disciplines by holding a symposium.

In response to increasing interest, Drs. Hoe I. Ling (Columbia University) and Victor N. Kaliakin (University of Delaware) organized the *Robert M. Koerner Symposium*.

Technical Background

The conventional methodologies of analysis have been working very satisfactorily for routine design of geosynthetic-engineered structures, such as reinforced soil walls and landfill systems, but the community requires improved methodologies of analysis to advance the state of the art. For instance, the behavior of rate and time dependent polymeric products, includ-

ing creep and stress relaxation, require a robust constitutive model for analysis. The focus on dynamic and cyclic behavior of reinforced soil walls in recent years also requires sophisticated numerical tools for analysis, including constitutive models for geosynthetics and soils.

The application of geosynthetics to different fields and difficult environments indeed poses many challenging problems to the engineering community. It is believed that sufficient background and interest should be delivered to the engineering mechanics communities so that they will also be involved. Thus, the *McMat 2005 Conference* provided a unique opportunity to propagate research ideas and applications for geosynthetics and geosynthetic-engineered structures.

Symposium Presenters and Subjects

A total of 14 papers were presented at the Symposium in three sessions chaired by Hoe Ling, Yoshiyuki Mohri, and Victor Kaliakin. The Symposium started with a brief address by Hoe Ling, followed by an introduction to Bob Koerner by Dov Leshchinsky of the University of Delaware.

The presentations comprised general applications of geosynthetics, to extremely challenging environments (Gordon Boutwell), methodologies of design and analysis of landfills (Bob Koerner) and retaining walls (Dov



Robert M. Koerner Symposium presenters and session chairs: Back Row (from left) - Huabei Liu, Patrick Naughton, Songtao Yang, Ahmet Pamuk, Warat Kongkitkul, Yoshiyuki Mohri, Radoslaw Michalowski; Front Row (from left) - Hoe Ling, Robert Koerner, Dov Leshchinsky, Gordon Boutwell, Kianoosh Hatami, Tadatsugu Tanaka, Victor Kaliakin, Kenichi Matsushima, Akinori Hazama.

Leshchinsky, Akinori Hazama, Kianoosh Hatami, Songtao Yang, and Patrick Naughton), geopipes (Ahmet Pamuk and Kenichi Matsushima), and foundations (Radoslaw Michalowski). A few presentations focused on the constitutive modeling of geosynthetic materials (Huabei Liu, Victor Kaliakin, and Warat Kongkitkul).

One of the *McMat 2005 Conference* Parallel Keynote Lectures, given by Professor Tadatsugu Tanaka, was delivered in conjunction with the Symposium. Professor Tanaka described failure analysis with shear banding of geomaterials that include reinforcements.

Proceedings and Information

A hard copy publication of this Symposium in honor of Professor Koerner is currently under preparation and will be available to interested readers. Additional details will be posted at the following website:

www.civil.columbia.edu/~ling/koerner.

reported by Hoe I. Ling and Victor N. Kaliakin, IGS Members

Report on Geosynthetics China 2004

17 to 19 November 2004, Shanghai, China

IGS Secretary, Pete Stevenson, and IGS Council Member, John Cowland, attended *Geosynthetics China 2004*, from 17 to 19 November in Shanghai, China. The main purpose was to support the Chinese Chapter of the IGS (CCIGS) with the additional goal of recruiting new corporate members.

Concerning corporate members, three significant contacts were made with prospective new members. In addition, communications and support of established corporate members Bonar, Hui Kwang, Newgrid, and Tenax occurred. Of the new prospects, the company Saint Gobain Technical Fabrics has now joined the IGS as a corporate member. The firms Jiangsu Dingtai and Beijing Orient Science

entered into lengthy discussion, but have not yet come on board. In addition, 100 brochures created expressly for Chinese corporations were distributed. The brochure describes the IGS and its goals in Chinese and English, and it is expected that these documents may generate additional interest and possible candidates.

The IGS was treated extremely well by the event organizers, particularly, Wang Yan-Xi, the head of China Nonwovens Technical Association (CNTA) and Chi Jing-Kui of the Chinese Technical Association on Geosynthetics (CTAG) and CCIGS. CNTA is the Chinese equivalent of the Industrial Fabrics Association International (IFAI) and the Association of the Nonwoven

Fabrics Industry (INDA) and has close ties with IFAI, INDA, European Disposables and Nonwovens Association (EDANA), and other international organizations. CTAG is a Chinese geosynthetics organization, which gives strong support to CCIGS. The IGS was introduced to a number of influential individuals, including the Executive Vice Minister of Science and Technology, who encouraged the IGS to establish communication and cooperation with our Chinese counterparts.

The opportunity was taken to discuss the timing of future geosynthetics events in Asia and to encourage mutual support.

*reported by Pete Stevenson
IGS Secretary*

Book Review:

Application of Geosynthetics in Irrigation and Drainage Projects

Introduction

Conservation of water resources is becoming increasingly important as the demand for water from agriculture, domestic, and industrial sectors and surrounding ecosystems steadily rises and new sources become more scarce. There is increasing evidence that conventional methods used to reduce seepage losses from irrigation canals are not performing as expected. The adoption of innovative construction techniques using geosynthetics in irrigation and drainage projects is an important step forward to conserving our water resources worldwide.

During the last three decades, the geosynthetics industry has developed a wide range of materials that can be employed in irrigation and drainage projects, especially for controlling seepage and erosion. Geosynthetics now provide unprecedented possibili-

Author: Hervé Plusquellec (USA)

Publisher: International Commission on Irrigation and Drainage (ICID)
September 2004; Paper bound; 79pp; ISBN: 81-85068-88-7

Price: ICID members and Booksellers: US\$15; Non-ICID members: US\$30
(visit www.icid.org/publication.html to order on-line, or e-mail icid@icid.org)

ties for design and construction of low embankment dams, cost-effective solutions for slope and channel protection, and long-term solutions for control of seepage losses from reservoirs and channels.

Book Contents

ICID has published the book *Application of Geosynthetics in Irrigation and Drainage Projects* with the goal of keeping professionals involved in irrigation and drainage projects abreast with advances in the rapidly changing and expanding field of geosynthetics. The book is a compilation of available information on different types of geo-

synthetic materials and provides practical tips for selection, installation, procurement, and quality control to facilitate safe design and construction of irrigation and drainage structures incorporating geosynthetics.

The controversial issue of lining, or not lining, irrigation canals and the design and construction issues of lining with conventional hard materials or with the use of geosynthetics, is discussed. Special attention is given to techniques for lining existing canals with minimum interruption of irrigation service with the use of, for example, geocells, concrete-filled mattresses, or field-fabricated geocom-

posites. Also, the book discusses the selection of geomembranes based on the technical service requirements (not purely on cost considerations) and discusses the two main procurement methods based either on material or performance specifications.

The book contains more than 20 coloured photographs of real-life installations and the use of geosynthetics in various irrigation projects worldwide, e.g., the Fordah-Sadiqia Project in Pakistan. The book also provides a list of international organizations involved in the development of geosynthetics (and who provide services to geosynthetics industries and their clients), a model of performance-type technical specifications for the supply and installation of geomembranes, and technical specifications for the supply of laboratory equipment.

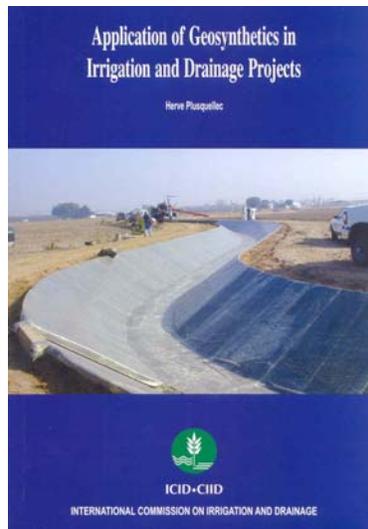
Geosynthetics experts, Mr. Michael Snell, United Kingdom, and Mr. Peter Stevenson, IGS Secretary, USA, have both reviewed the book. The Foreword is written by Dr. J.P. Giroud, Past President and Honorary Member of the IGS and Consulting Engineer and Chair Emeritus of GeoSyntec Consultants. In the words of Dr. Giroud:

“This document will certainly be an important contribution: more potential users will become aware of the applications of geosynthetics in irrigation and drainage projects, and will understand that these applications can be designed with methods that are as sophisticated as the methods used in

other branches of civil engineering.”

Who Should Read this Book?

This book is, and will be, of interest to various agencies dealing with execution of irrigation and drainage projects, irrigation and drainage engineers, plan-



ners, and financing and research institutions. It is hoped that it will stimulate consideration of the use of geosynthetics in upgrading existing irrigation systems in need of rehabilitation and modernization. The book will be useful, particularly for developing countries, where the application of geosynthetics is not keeping pace with the development of geosynthetics, but where massive investments are taking place for modernization/rehabilitation of irrigation and drainage systems.

The book would also be of interest to the geosynthetics industry,

including manufacturers, installers, and designers to better understand the issues faced by the irrigation community in their efforts to improve the performance of irrigation and drainage projects. There is a vast potential for application of geosynthetics in irrigation projects, which have yet to be explored to a significant degree by the geosynthetics industry.

About the Author

The author of the book, Mr. Hervé Plusquellec, has extensive field experience in design, management, and performance assessment of irrigation projects worldwide during his tenure with the World Bank. He has direct experience in the use of geosynthetics in large irrigation projects in Middle East, South Asia, and China. In the words of Dr. J.P. Giroud:

“Hervé Plusquellec should be commended for the preparation of this document. He is eminently qualified because of his extensive field experience and because he is well informed about geosynthetic products, design methods and specifications. ... Through this document, Hervé Plusquellec uses the most important development in the field of civil engineering of the past decades, geosynthetics, to serve the most important cause of the century, water.”

reported by Karina McInnis, IGS News Editor, with contributions from Dr. J.P. Giroud, IGS Past President

IGS MEMBER REMINDER

The November 2005 issue will celebrate the **20th anniversary of IGS News!**
At the recommendation of the IGS Communication Committee, the mode of distribution of the *IGS News* will shift solely to the IGS web site by the November 2005 issue.

Thus, this July 2005 issue will be the last issue distributed by mail.

AND

The recent bylaws ballot for 2004 resulted in unanimous approval to shift to *electronic balloting and communication*.

Please ensure the IGS Secretariat has received your e-mail address.

Geosynthetics International

An Official Journal of the IGS: Electronic Journal Free to IGS Members

Geosynthetics International is an official journal of the IGS and has established itself as a premier peer-reviewed journal on geosynthetics. The Journal publishes technical papers, technical notes, discussions, and book reviews on all topics relating to geosynthetic materials (including natural fiber products), research, behaviour, performance analysis, testing, design, construction methods, case histories, and field experience.

Geosynthetics International is only published electronically starting Volume 10 (2003) by Thomas Telford and is free to IGS Members. All others, e.g., corporations, companies, and university libraries, can subscribe at a rate of £325/US\$585. An individual rate for those non-members whose organisation subscribes, but would like an additional personal subscription (including the update CD) will be available for £60/US\$108.

The update CD is issued annually as part of the subscription for non-IGS Members and includes all papers published in that year. IGS Members can opt to buy the CD for US\$100.

Visit the Journal's web site given below for subscription information and instructions for accessing the latest issues.

Papers should be work not published in full elsewhere and should be sent to any of the following individuals:

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For subscription details visit the Journal's web site at:
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Geotextiles & Geomembranes

An Official Journal of the IGS: Electronic Journal Free to IGS Members

Geotextiles and Geomembranes is dedicated to the mission of the IGS, which is to promote the scientific and engineering development of geotextiles, geomembranes, related products, and associated technologies.

The Journal publishes technical papers, technical notes, discussions, and book reviews on all topics relating to geosynthetics, research, behaviour, performance analysis, testing, design, construction methods, case histories, and field experience.

Papers should be submitted electronically as a Microsoft Word or pdf file to: kerry@civil.queensu.ca. Please ensure the text is double spaced, there is an abstract with keywords included, and tables and figures are at the end following the text. Please check the Journal's instructions for authors for additional information regarding submissions. The Journal strives to provide the authors

with quick, constructive reviews, and we appreciate the author's hard work in addressing these comments and quick return of revised papers.

Geotextiles and Geomembranes is now available free in electronic format to IGS Members. To activate free access and to create your personal account, you will need your IGS Membership Number, which can be found on your IGS mailing label. If you do not know your Membership Number, please contact the IGS Secretariat at IGSsec@aol.com.

For instructions on how to activate access and create your personal account, go the following web site:
www.geosyntheticsociety.org/Journals_GG.htm

A hardcopy of *Geotextiles and Geomembranes* is available at a reduced subscription rate to individual and Corporate Members of the IGS.

Individual IGS Members may subscribe at an 82.5% discount: US\$154 for six issues. IGS Corporate Members may subscribe at a 59.5% discount: US\$356 for six issues. Please indicate that you are an IGS Member when requesting the special price.

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For more information on obtaining electronic and hard copy subscriptions to Geotextiles and Geomembranes please go to the following IGS web site:
www.geosyntheticsociety.org/Journals_GG.htm

CORPORATE PROFILE

Corporate Members of the IGS are encouraged to publish a Corporate Profile in IGS News. A maximum of three profiles can be published in each issue of IGS News. The criteria for the preparation and submission of Corporate Profiles are available from the Editor. There is no charge for having a Corporate Profile published; it is a benefit of corporate membership.



Since 1997, TINGEO has been an installer and distributor of engineered and critical geosynthetics solutions specialising in waterproofing, soil reinforcement, and erosion control systems.

TINGEO is based in southern



Spain and its growth can be attributed to the increasing need for high-calibre geosynthetics installers in Spain. Currently, TINGEO is active in more than 10 countries worldwide. Any geosynthetic product is available through TINGEO.

Applications

TINGEO's main activity is the supply and installation of waterproofing geomembranes and other related geosynthetics products. Our most frequently performed installation projects are:

- Landfills and Landfill Capping: domestic and industrial waste

TINGEO has been a Corporate Member of the IGS since 2003.

- Water Lagoons: waste water treatment lagoons and channels
- Golf Course Lagoons and Ornamental Ponds
- Tunnels
- Mining-leach Pads, Pond liners, and Tailing Dams
- Secondary containment

The TINGEO Team

TINGEO has more than 25 installation specialists, 4 engineers and site managers, and the latest machinery. Several of our installation specialists are certified by the International Association of Geosynthetic Installers (IAGI).

TINGEO's broad experience and innovative installation techniques guarantees our ability to meet (i) the strictest requirements of on site quality control management during geosynthetics installation, (ii) critical design requirements of the project, and (iii) strict installation schedules (for any size of project). In addition, we will work with the customer on the design and detailed solutions, or provide advice about complex and frequent installation problems.

TINGEO Construction Methods

TINGEO's team uses the most modern welding methods available in the industry and all jobs are monitored under a complete internal quality

control procedure to secure the performance of the installation in the long term. Several of the techniques applied by TINGEO were developed through self development and improvement of existing installation methods, all aimed at reaching maximum efficiency.

We consider that a customer is satisfied only when the job is running on schedule (despite the weather), the quality of the installation is near perfection, and when the quality manager on site has complete confidence in the TINGEO product.

Certification

TINGEO is ISO9001 and ISO14000 certified and is an IAGI Member.

Contact Information

The TINGEO commercial office is located in Sevilla, Spain. For more information, please contact:

Begoña Vega

E-mail: tingeo@tingeo.com

Tel: 34/902 439 026

www.tingeo.com



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Contact: TEKNIK Ltd.
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www.tekstilteknoloji.com.tr

*6th International Conference on Ground
Improvement Techniques*

*Coimbra, Portugal
18-19 July 2005*
Contact: John S Y Tan
E-mail: cipremie@singnet.com.sg, or
Contact: Prof Isabel Pinto
E-mail: isabelmp@dec.uc.pt
www.cipremier.com

StormCon 2005

*The North American Surface Water
Quality Conference and Exhibition*
*Orlando, Florida, USA
18-21 July 2005*
Contact: Steve Di Georgi
E-mail: stevedg@forester.net
www.forester.net/sc.html

*Geotechnical Engineering for Disaster
Prevention and Rehabilitation*
*Semarang, Central Java, Indonesia
3-4 August 2005*

Contact: Prof. Soedarto
E-mail: geoconfina@yahoo.com

4th ESIS TC4 Conference

*International Conference on Fracture of
Polymers, Composites and Adhesives*
*Lesdiablerets, Switzerland
11-14 September 2005*
Contact: Claire Norris
E-mail: tc4-conference@elsevier.com
www.tc4pca.elsevier.com/index.htm

**16th International Conference on Soil
Mechanics and Geotechnical Engineering*
Osaka, Japan

12-16 September 2005
Contact: Prof. Masashi Kamon
E-mail: 16ICSMGE@jiban.or.jp
www.icsmge2005.org

*3rd International Young Geotechnical
Engineers' Conference*
*Osaka, Japan
12-16 September 2005*

Contact: Prof. Ikuo Towhata
E-mail: towhata@geot.t.u-tokyo.ac.jp
www.jiban.or.jp/e/events/3iygec.html

Dam Safety 2005

*New Orleans, Louisiana, USA
25-29 September 2005*
Contact: Association of State Dam Safety
Officials (ASDSO)
E-mail: info@damsafety.org
www.damsafety.org

**Sardinia 2005*

*Tenth International Waste Management
and Landfill Symposium*
*S. Margherita di Pula, Sardinia, Italy
3-7 October 2005*

Contact: EuroWaste Srl
E-mail: info@sardiniasymposium.it
www.sardiniasymposium.it

**Landfill 2005 - Landfilling in
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*Kwazulu-Natal, South Africa
20-21 October 2005*

Contact: Peter Davies, Conference Chair
E-mail: nphuntpld@kaymac.co.za

*International Solid Waste Association
2005 World Congress*

*Buenos Aires, Argentina
6-10 November 2005*
E-mail: info@ars.org.ar, ars@isalud.org
www.iswa2005.ars.org.ar

*3rd Central Asian Geotechnical
Symposium*

*Dushanbe, Tajikistan
10-12 November 2005*
Contact: Dr. Jamshed Akhmedov
E-mail: saniiosp@tajnet.com

Civils 2005

*London, United Kingdom
22-24 November 2005*
Contact: Russell Kenrick
E-mail: russell.kenrick@emap.com
www.civils.com/civilshome.asp

XIIth World Water Congress of IWR
New Delhi, India

22-25 November 2005
Contact: Mr. G.N. Mathur
E-mail: info@worldwatercongress.org
www.worldwatercongress.org.

*Tsunami Reconstruction with
Geosynthetics*

*Bangkok, Thailand
8-9 December 2005*
Contact: Prof. Dennes T. Bergado
E-mail: bergado@ait.ac.th

GRI-19 and NAGs 2005

*Las Vegas, Nevada, USA
14-16 December 2005*
Contact: Jane Harris, NAGS
E-mail: janeharris@nagsigs.org
www.nagsigs.org/conferences.html

*GeoCongress 2006: Geotechnical
Engineering in the Information
Technology Age*

*Atlanta, Georgia, USA
26 February - 1 March 2006*
Contact: Dr. David Frost
E-mail: david.frost@ce.gatech.edu

www.asce.org/conferences/
geocongress06/

*XIIIth Danube-European Conference on
Geotechnical Engineering*
*Ljubljana, Slovenia
29-31 May 2006*

Contact: Slovenian Geotechnical Society
E-mail: danube.2006@fgg.uni-lj.si
www.danube-conference2006.si

GeoShanghai International Conference
*Shanghai, China
2-4 June 2006*

Contact: Dr. Jie Han
University of Kansas
E-mail: jiehan@ku.edu
www.geoshanghai.org

*5th International Congress on
Environmental Geotechnics*
*Cardiff, Wales, United Kingdom
26-30 June 2006*

Contact: Dr. David-Huw Owen
E-mail: OwenDH@cf.ac.uk
www.grc.cf.ac.uk/5iceg

*International Conference on Physical
Modelling in Geotechnics*
Hong Kong, China

4-6 August 2006
Contact: Ms. Shirley Tse
E-mail: gcf@ust.hk
ihome.ust.hk/~gcf/ICPMG2006/
index.htm

*VIth European Conference on Numerical
Methods in Geotechnical Engineering*
Graz, Austria

6-8 September 2006
Contact: Florian Scharinger
E-mail: florian.scharinger@tugraz.at
www.numge06.tugraz.at

*8th International Conference on
Geosynthetics (8ICG)*
*Yokohama, Japan
18-22 September 2006*

Contact: 8ICG Conference Secretary
E-mail: info@8icg-yokohama.org
www.8icg-yokohama.org

*International Solid Waste Association
2006 World Congress*
Copenhagen, Denmark

1-5 October 2006
Contact: Danish Waste Management
Association
E-mail: dakofa@dakofa.dk
www.iswa2006.dk

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*Note: Items in bold print are organized
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The International Geosynthetics Society



OBJECTIVES OF THE IGS

The International Geosynthetics Society was formed with the following objectives:

- to collect, evaluate, and disseminate knowledge on all matters relevant to geotextiles, geomembranes, related products, and associated technologies;
- to improve communication and understanding regarding geotextiles, geomembranes, related products, and associated technologies, as well as their applications;
- to promote advancement of the state of the art of geotextiles, geomembranes, related products, and associated technologies; and
- to encourage, through its Members, the harmonization of test methods, and equipment and criteria for geotextiles, geomembranes, related products, and associated technologies.

WHY BECOME A MEMBER OF THE IGS?

First, to contribute to the development of our profession.

By becoming an IGS Member you can:

- help support the aims of the IGS, especially the development of geotextiles, geomembranes, related products, and associated technologies;
- contribute to the advancement of the art and science of geotextiles, geomembranes, related products, and their applications;
- provide a forum for designers, manufacturers, and users, where new ideas can be exchanged and contacts improved; and
- become increasingly informed, involved, and influential in the field of geotextiles, geomembranes, related products, and associated technologies.

Second, to enjoy the benefits.

The following benefits are now available to all IGS Members:

- the IGS Membership Directory, published yearly;
- the newsletter, *IGS News*, published three times per year;
- free electronic issues of *Geosynthetics International* and *Geotextiles & Geomembranes*;
- a CD containing the 19 IGS Mini Lecture Series;
- a DVD containing the three IGS Videos;
- information on test methods and standards;
- discount rates on the purchase of any future documents published by the IGS and on the registration cost of all international, regional, or national conferences organized by or under IGS auspices;
- preferential treatment at conferences organized by or under the auspices of the IGS; and
- the possibility of being granted an IGS award.

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Membership of the International Geosynthetics Society (IGS) is open to individuals or corporations "... engaged in, or associated with, the research, development, teaching, design, manufacture or use of geotextiles, geomembranes, and related products or systems and their applications, or otherwise interested in such matters.". The annual fee for membership is US\$45 for individuals and US\$1000 for Corporate Members. Individuals of, or not of, corporations who voluntarily contribute a minimum of US\$200 annually to the IGS, in excess of their membership dues, will be mentioned in the IGS Directory in a separate list as benefactors.

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