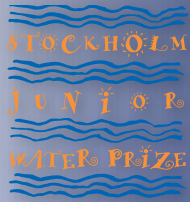




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**FINALISTS 2011**

# Stockholm Junior Water Prize

**ARGENTINA  
AUSTRALIA  
BELARUS  
CANADA  
CHILE  
CHINA  
CYPRUS  
FRANCE  
GERMANY  
ISRAEL  
ITALY  
JAPAN  
LATVIA  
MEXICO  
NETHERLANDS  
NORWAY  
REPUBLIC OF KOREA  
RUSSIAN FEDERATION  
SINGAPORE  
SLOVAK REPUBLIC  
SOUTH AFRICA  
SRI LANKA  
SWEDEN  
TURKEY  
UKRAINE  
UNITED KINGDOM  
UNITED STATES  
VIETNAM**

**STOCKHOLM JUNIOR WATER PRIZE**  
**15**  
**1996-2011**

# The Stockholm Junior Water Prize

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Each year, the international Stockholm Junior Water Prize competition brings together the world's brightest young scientists to encourage their continued interest in water and the environment. Each of the finalists represented in Stockholm are the champions of national competitions with thousands of participants entering unique projects in 30 countries.

This year, we are very proud to celebrate our 15th anniversary of the prize and welcome the winners of national competitions in Argentina, Australia, Belarus, Canada, Chile, China, Cyprus, France, Germany, Israel, Italy, Japan, Latvia, Mexico, Netherlands, Norway, Republic of Korea, Russian Federation, Singapore, Slovak Republic, South Africa, Sri Lanka, Sweden, Turkey, United Kingdom, Ukraine, USA and Vietnam.

After 15 years, we have learned that brilliant young minds can find inspiration in some unlikely places. Ingenious teams from the world over have shown how to clean water and protect marine environments with everything from oysters to eggshells. They also see opportunity and hope where most find challenges and developed solutions that are cost-efficient, immediate, and applicable the world over. In this catalogue, you can learn more about the innovative research that

earned each of the 2011 finalists a chance to compete for this international honor.

During their time in Stockholm, all of the finalists have the special opportunity to meet and learn from the present leaders of the global water community and make life-long friendships with international compatriots who share a passion for water and science. This includes a once-in-a-lifetime chance to receive the international prize from H.R.H. Crown Princess Victoria of Sweden, during an exciting ceremony, which will be held this year on Tuesday August 23.

You also have the opportunity to meet this next generation of water leaders by visiting their booths in the exhibition area T. The water challenges they face will be more intense, intricate and expansive than ever before. Looking at the work that has brought to Stockholm, they have created

a compelling case to show they are up to the task.

## **ABOUT THE STOCKHOLM JUNIOR WATER PRIZE COMPETITION**

The competition is open to young people between the age of 15 and 20 who have conducted water-related projects focusing on local, regional, national or global topics of environmental, scientific, social or technological importance. The international winner receives a USD 5,000 award and a prize sculpture. As a result of the competitions, thousands of young people around the world become interested in water.

H.R.H. Crown Princess Victoria of Sweden is the Patron of the Stockholm Junior Water Prize.

ITT Corporation is the global sponsor of the Stockholm Junior Water Prize.

## The International Jury

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The International Jury includes experts within the field of water who, by committee consensus, appoint the winner of the international final. The decision is based on the written report, a short presentation of the display material and interviews with the finalists. The Stockholm Water Foundation Board appoints the Jury members.

### **THE 2011 INTERNATIONAL JURY MEMBERS ARE:**

Dr. Fredrik Moberg, (Chair), Sweden; Mr. Björn von Euler, USA; Ms. Charlotte de Fraiture, Ghana; Ms. Eileen O'Neill, USA; Dr. Piet Lens, Netherlands; Ms. Susana Sandoz, Bolivia; Mr. Alex Simalabwi, Sweden and Ms. Helene Brinkenfeldt (Secretary), SIWI, Sweden.

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# The 2011 Finalists

## ARGENTINA

### Removing Arsenic

*By Edgardo Agustin Devia, Felipe Badin and Lautaro Molinengo*

The Argentinian team's research on ground-water samples in the city of Leones, showed that arsenic levels in the water was dangerously high (106.6 µg.l-1), and well above what is considered safe for consumption by the World Health Organization (10 µg.l-1). To address the problem, they compared the effectiveness of two methods to remove arsenic: solar oxidation (SORAS) and heterogeneous photocatalysis with titanium dioxide. They found that SORAS treatment was able to remove 94 per cent of arsenic and was significantly more effective than the more commonly applied method of photocatalysis with titanium dioxide. They concluded that SORAS is an inexpensive, readily available and easy to use solution for people to remove arsenic from drinking water at home.

### NATIONAL ORGANISER AND SPONSORS

AIDIS ARGENTINA, AySA, ITT FLYGT  
ARGENTINA, Ecopreneur, Sudamericana  
De Aguas, Enersystem, Agua De Los Andes,  
Aguas Cordobesas, APRA and Epas Mendoza.

## AUSTRALIA

### Does Phosphate Runoff From Golf Courses Contribute to Eutrophication in Adjacent Water Bodies?

*By Mathuja Bavanendrakumar*

This study investigated whether phosphate runoff from golf courses contributes to eutrophication in adjacent waterbodies. Seven golf courses with internal lakes were randomly selected in the Gold Coast, and for each, a water body within a one kilometer radius was chosen. It was found that all internal lakes in the golf courses, and adjacent natural waterbodies tested had eutrophication occurring in them, indicating moderate to high risk of algal toxication. Moreover, five out of seven golf course internal lakes and three out of seven of the adjacent water bodies had excessive phosphate concentrations, which indicates that runoff from golf courses were likely contributing to the eutrophication. The study concluded that reduced fertiliser use on golf courses could lessen local eutrophication.

### NATIONAL ORGANISER AND SPONSORS

ITT Water and Wastewater, SA Water and  
Allconnex Water.

## BELARUS

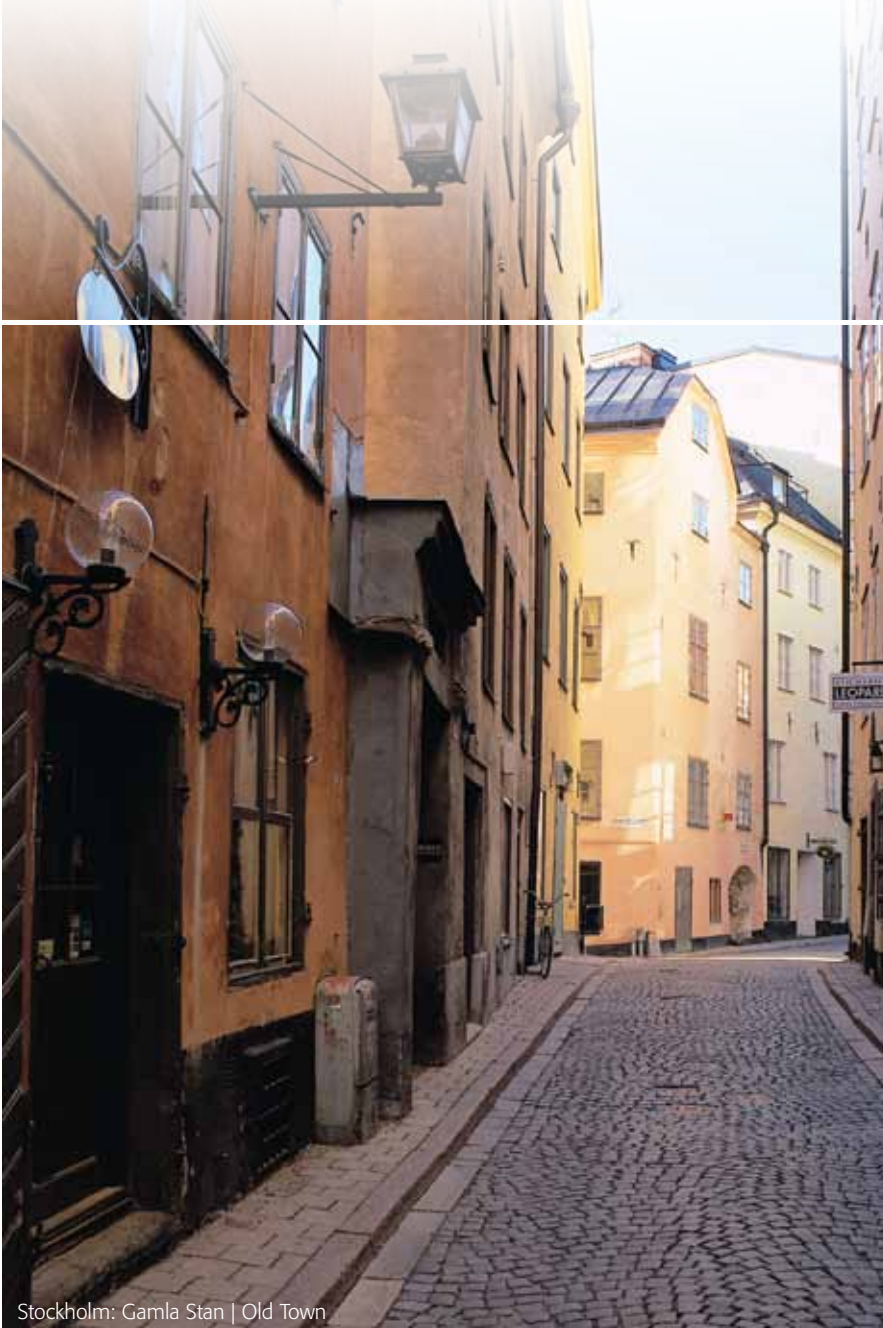
### The Role of Water in the Reduction of Greenhouse Gas Emissions on Degraded Peatlands

*By Vera Parvatava*

This project investigated the relationship between agricultural practices in peatlands and their corresponding greenhouse gas emissions. Using an assessment tool to link vegetation types and mean water level fluctuation with annual emission factors, the Belarusian finalist was able to calculate the emission reduction potential of rewetting the land. In the 329 hectares surveyed, emissions ranged between 8,5 and 24 tonnes of CO<sub>2</sub> equivalent per year, and totaled nearly 6000 tonnes CO<sub>2</sub> over the entire area. The project estimates that rewetting the entire territory could save over 3000 tonnes of CO<sub>2</sub> per year.

### NATIONAL ORGANISER AND SPONSOR

Coca-Cola Beverages Belarus.



Stockholm: Gamla Stan | Old Town

Photo: Edelipix

## CANADA

### The Hazards of Nanosilver Uncovered

*By Shayla Larson and Adam Noble*

The Canadian project examined the effects of nanosilver, an increasingly common commercial and industrial antimicrobial agent, on *Euglena*. This photosynthetic protozoan may represent an indicator of the potential impact of nanosilver on living organisms in fresh water ecosystems. Results of this study indicated that absorbed nanosilver is toxic to *Euglena* cells, and can result in structural and functional changes and cell death.

#### NATIONAL ORGANISER AND SPONSORS

WEAO, CWWA, WCWA, RESEAU, BCWWA, ACWWA, ITT Water and Wastewater.



## CHILE

### **Cleaning the Ocean From Oil Contamination with Feathers and Bacteria**

*By Rolf Sommer Catalán and Bruno León Campos Cabrera*

Accidents involving oil pollution in the ocean require strategic planning and responses. The Chilean team's research highlighted potential solutions: bird feathers can be used as strong adsorbents of contaminants, which combined with a newly isolated strain of bacterium "corynobacterias" can metabolise contaminants and clean water contaminated by oil.

#### **NATIONAL ORGANISER AND SPONSORS**

Chilean Chapter of the International Hidrological Programme and the General Water Director of the Chilean Government, Aguas Andinas, Homecenter Sodimac, Nestlé, Colbún, AIDIS, ALHSUD and SOCHID.

## CHINA

### **Water Dog – Reservoir Cleaning Controller**

*By Mengdi Liao, Jianwen Li and Shiyu Shi*

The Chinese team invented a new cleaning and monitoring system for reservoirs: the Water Dog. The Water Dog is a low cost, accurate, easy to operate, unmanned operation that can monitor water quality in real time and its use is completely pollution free. The system is also flexible, where any district can set individual thresholds to match the targeted water standards in their local area.

#### **NATIONAL ORGANISER AND SPONSORS**

Center for Environmental Education and Communications of Ministry of Environment Protection of China, ITT corporation and Guangdong Experimental High School in Guangdong P.R. China.

## CYPRUS

### **Turn Your Grey Water Into Green In the Shower**

*By Alexandros Constantinou and Maria Ioannou*

The Cyprian finalists personal experience with strict water restrictions in their home country inspired them to look for smarter ways to get more out of the water they use at home. Using existing green technology, they developed a system that enables bath water to be recycled, reused and come out at the desired temperature. The design is financially viable, user-friendly, easy to install, saves water and reduces energy consumption. They claim that their system can help improve access to clean water; boost local economies through green investment and help Cyprus meet the EU CO<sub>2</sub> emission standards.

#### **NATIONAL ORGANISER AND SPONSORS**

Water Museum of Lemesos, Hellenic Bank, PricewaterhouseCoopers Ltd, ie Muhanna & Co Actuarial Services and Phileleftheros Newspaper.







Stockholm: Sergels Torg | Sergel Square

Photo: Edelplex

## FRANCE

### **Sediments in Seyne: How Do Sediments Release in Seawater?**

*By Laura Cerdan, Julia Bastos Reinaldo and Kenza Bouaziz*

Plans to renovate the harbor of la Seyne on the Mediterranean shore have been delayed several times due to the presence of sediments that prevent dredging. Removing the sediments, however, would release a significant amount of pollution into the seawater. Faced with this dilemma, the French team conducted a series of experiments, developed new analysis, possible measures and potential solutions for clean dredging and initiated a public awareness campaign to educate local stakeholders on the issue.

### **NATIONAL ORGANISER AND SPONSORS**

Minister of Ecology, Sustainable Development, Transportation and Housing  
Department of France, Seine Normandy  
Water Agency, ITT France, VEOLIA Water and Hydroplus.



## GERMANY

### **Preventing Eutrophication: Ammonium as an Abiotic Factor in the Ecosystem Tide-Elbe**

*By Mathias Dehn and Jasper Feine*

Ammonium, a component of agricultural fertiliser, is produced during the bacterial decomposition of organic material and is found in human and animal feces. High ammonium concentrations is a common problem seen in many rivers that are subject to intensive human use, such as the Elbe. This project measured the spatial and seasonal variations in ammonium concentrations in the Tide-Elbe in 2010, and their implications on eutrophication found in various areas found in the river.

#### **NATIONAL ORGANISER AND SPONSORS**

Dr. Kock, Prof. Dr. Elsholz, Gymnasium Hochrad, University of Applied Sciences in Hamburg and University of Hamburg.

## ISRAEL

### **SOWP-DTS – Solar Water Purification Using a Drop Technology System**

*By Maya Braun and Avishai Ketko*

Hundreds of millions of people lack access to safe drinking water. It is one of the most pressing problems faced by humanity. The Israeli team designed a water purification device that uses sunlight to disinfect water. Through detailed analysis of the geometric properties of the water drop and applied understanding of the laws of optics, they were able to create a device that is able to concentrate UV radiation from the sun onto the water, trap UV energy within each water drop and ultimately result in clean water. The technology uses renewable solar energy, is inexpensive and has a wide spread applicability in areas most in need.

#### **NATIONAL ORGANISER AND SPONSORS**

The Faculty of Engineering at Tel Aviv University, the Raquel and Manuel Klachky Fund, the Mellanox Technologies Company and the Water Authority.

## ITALY

### **An Aquarium Under the Microscope: A Study of Zooplankton in a Resur- gence Environment Reproduced in a Laboratory**

*By Umberto Lavagnolo*

The quality of water, and quality of life for its many guests, is largely determined the composition of micro-organisms in the water body. This project replicated the aquatic environment found in a natural resurgence in Verona, Italy in a laboratory and performed tests to study how possible changes to the environment caused by human activities can impact the biological balance of the water body. It was able to link the presence of certain species to specific water characteristics, which the author concludes can be identified as “biological indicators”.

#### **NATIONAL ORGANISER AND SPONSORS**

Fast, Foist, Aica, Flygt, Intel High patronage, Presidente della repubblica italiana Patronage, Governo italiano, Minidtero dell'istruzione, Ministro per le politiche europee, Ministro della gioventù, Regione Lombardia Cooperation of, CusMiBio, Inaf, Milset Europe, NetPoleis, SSP and Ugis.





Stockholm: Globen | The Globe Arena

## JAPAN

### Forging Information Networks to Face a Silent Threat: Addressing Alien Species in Water Environments

*By Daichi Ogata, Mikage Aoki and  
Miki Nakajima*

The Japanese team researched the causes for the expansion of two alien species in their local water environment: Asian clams and New Zealand mudsnails. They discovered that nature conversation activities were a primary catalyst and that poor access to information on alien species has stunted concerted action. To solve the problem, they developed a new “information network of alien species” and have raised awareness on how alien Asian clams seriously threaten native species in Japanese water ecosystems.

#### NATIONAL ORGANISER AND SPONSORS

Lion Corporation, CTI Engineering Co., Ltd.,  
Nippon Koei Co., Ltd., Pacific Consultants  
Co., Ltd., Tokyo Construction Consultants Co.,  
Ltd., Japan Federation of Construction  
Contractors Inc. and Executive Committee  
of River Day.

Photo: Edelpix



## LATVIA

### Assessing the Ecological Quality of Lake Engure with Macrophytes

*By Linards Klavins*

This study compared differences in ecological health in Lake Engure and analysed the possibility to use water plants, macrophytes, for water quality evaluations. Ecological quality assessment methods have a great potential for evaluation of surface waters. Amongst different aquatic species, macrophytes can easily be used for water quality evaluation. The Latvian students were able to elaborate an ecological quality map and study new possibilities to use macrophytes for lake quality assessments.

#### NATIONAL ORGANISER AND SPONSORS

Riga City Council Education, Culture and Sports Department.

## MEXICO

### Reducing the Water Footprint for Biodiesel Production

*By Luis Alberto Lira-Hernandez*

Applying a research model developed at the University of Twente, Netherlands, the Mexican project demonstrated how the water footprint of the biodiesel manufacturing process could be reduced by improved water reuse. They found that water used to wash biodiesel could be reintroduced to wastewater treatment plants without any further treatment or processing. The effluent is a viable alternative to replace fresh water during the manufacturing process of biodiesel and therefore can reduce the need to draw from new freshwater resources.

#### NATIONAL ORGANISERS AND SPONSORS

Embajada de Suecia, Academia Mexicana de Ciencias, CONAGUA, Camara Sueco Mexicana de Comercio, IMJUVE, Gobierno de la Ciudad de Mexico, UNAM, Grupo Urrea, Kemira, Tetrapack, ITT Industries, Sandvik, Ericsson, Colegio de Ingenieros Ambientales, AC. and ALFA LAVAL.

## NETHERLANDS

### Unlocking the Potential of Local Wastewater Treatment

*By Rogier Burger*

Today, wastewater treatment is organised in a way that focuses on “removing pollutants” from water, and in the process it uses a lot of energy. However, there are valuable materials that can be recovered from what we call ‘waste’ water. New systems to recover and reuse those materials could be used produce energy, and also reduce treatment costs. The Dutch project details a “Decentralised Ecologic Manufacture Approach” (DEMA) which improves the separation of ‘black’ and ‘grey’ water and can reduce costs, recycle materials and reuse water and energy. The sustainable DEMA is applicable across the world and could make a difference in the quality of life for many people.

#### NATIONAL ORGANISER AND SPONSORS

Netherlands Water Partnership, Ministry of Infrastructure and the Environment, partners for Water and Wetsus.





Stockholm: Östermalmshallarna | Food Court at Östermalm

## NORWAY

### **Pool Water and Health Issues: A Scientific Analysis on the Connections Between Water Quality and Health Issues in Public Swimming Pools**

*By Henning Kaland and Kristoffer Karud*

Extended exposure to hypochlorite in pools has been linked to asthma as well as a host of other possible health complications, some more serious than others. The Norwegian team performed an in depth assessment of water quality in swimming pools in Oslo, with detailed measurements of bacteria, hypochlorite and particle content and pH levels. The young scientists concluded that the water quality in the pools were within national regulations, but that regulations on hypochlorite should be reassessed to ensure public safety.

#### **NATIONAL ORGANISER AND SPONSORS**

Norwegian Hydrological Committee,  
Norwegian Water Association, VA-yngre,  
Norwegian Water Resources and Energy  
Directorate, Statkraft, Clean Water Norway and  
Godt Vann Drammensregionen.

Photo: Edelipix

## REPUBLIC OF KOREA

### **Introducing a New Climate Coast Guard: Coastal Erosion Protection From the Impacts of Climate Change**

*By MSung Eun Jang, Hayejin Moon and Dhoyeon Kim*

Climate change is likely to cause sea level rise, and corresponding increases in the height of waves can lead to serious erosion in beach and coastal areas. The Korean team engineered a blockade to protect beaches from erosion. Initial test of their MECS design (Mushroom-shaped Eco Coastal Structure) were estimated to be able to avoid 44-50 per cent of erosion. They hope that their work is a first step towards creating an engineering solution to erosion.

#### **NATIONAL ORGANISER AND SPONSORS**

Woong Jin Coway. Co., Ltd, Ministry of Public Administration and Security, Ministry of Land, Transport and Maritime Affairs, Ministry of Environment, Korea University and The Hwajeong Peace Foundation.

## RUSSIAN FEDERATION

### **Water Map of Kazan City**

*By Aigul Khafizova and Oleg Shamaev*

Using original methods and standard techniques of environmental mapping, the Russian team developed a digital map of water resources of Kazan city, based on a bit map topographic base. The map contains an inventory of 200 urban water reservoirs. The maps are available online on the Russian webpage of the international web-based project [www.GreenTeen.org](http://www.GreenTeen.org), and is also posted at [www.GreenMap.ru](http://www.GreenMap.ru), a site created by high school students. The map has also been published in print as an environmental guidebook.

#### **NATIONAL ORGANISER AND SPONSORS**

Environmental Projects Consulting Institute, Coca Cola Hellenic Russia, State Grant of the Russian Federation, Federal Ministry of Natural Resources and Ecology, ROSVODOKANAL Group and Evraziyskiy JSC.

## SINGAPORE

### **Use of a Natural Fibrous Sorbent for Oil Spill Cleanup**

*By Kai Sheng Leonard Tan, Mohammad Mustafar Bin Abdul Razak and Jin Hao Tan*

Oil spills pose a major threat to the marine environment. In this project, Kapok, a natural agricultural fibre which possesses outstanding hydrophobic-oleophilic characteristics, was studied for its ability to absorb crude oil. It was found to be very efficient compared to commercial sorbents, retaining oil at almost 50 times its weight. When placed under pressure, 98 per cent of the oil could be recovered, and thus help minimise the wastage of crude oil.

#### **NATIONAL ORGANISER AND SPONSORS**

Ngee Ann Polytechnic, Lien Foundation, Public Utilities Board (PUB) and Singapore's National Water Agency.



## SLOVAK REPUBLIC

### Natural Treatment of Water and Its Effect on Unicellular Organisms

*By Dominika Pelegrinová and  
Nikolette Zavillová*

This project investigated the potential use of natural zeolite (of the clinoptilolite type) and hydrolytic enzymes isolated from rainworms as a natural option for water treatment. The experimental purification method was applied to water samples taken from three separate sources. Each sample contained ciliates, whose activity could be tested before and after treatment through fluorescence spectroscopy to evaluate the impact of the treatment method. Zeolite was found to improve water quality, lower total concentration of ammonia and remove odors, colour and some organic compounds, but did not change pH levels.

#### NATIONAL ORGANISER AND SPONSORS

Young Scientists of Slovakia, Bratislava Water Company (Bratislavská vodárenská spoločnosť), East Slovakia Water Company (Východoslovenská vodárenská spoločnosť), Slovak Research and Development Agency, Ministry of Education, Science, Research and Sports of Slovak republic and Ministry of Environment of the Slovak republic.



Stockholm: Drottningholms Slott | Drottningholm Palace

Photo: Edelpix



## SOUTH AFRICA

### Water Conservation in Windmills

*By Hendrick Fourie and Gideon de Jager*

The South African team sought to improve the design of windmills to ensure that water was used as efficiently as possible. In their model, they fitted a by-pass valve to redirect the water to the groundwater source and added a ball-valve to the reservoir to cut off excess incoming water. They believe that such improvements are needed at all levels of society for South Africa to grow with its relatively limited water resources.

#### NATIONAL ORGANISER AND SPONSORS

Water Research Commission, University of KwaZulu-Natal and Cape Peninsular University of Technology.

## SRI LANKA

### From pollutant to pulp: Industrial Symbiosis of Textile Finishing, Paper Recycling and Pulp Production

*By: Prasan Warnakula*

The objective of this research was to investigate the possibility of making paper pulp out of low grade recycled paper. The young Sri Lankan scientist found that some nutrients from wastewater from the textile finishing industry could enable a symbiotic process. Aluminum, which needs to be removed from the industrial wastewater can be absorbed in paper pulp, to improve its stability. Following a series of experiments and trials, the project indicates that it is possible to reduce the water requirement for pulp production and improve the treatment efficiency of the textile industry wastewater.

#### NATIONAL ORGANISER AND SPONSORS

ITT Corporation, USA, Industrial Solutions Lanka (Pvt) Ltd. (ISL) Community Led Environmental Awareness Network (CLEAN).

## SWEDEN

### Lagena: Bottle Made by Nature

*By Josefin Pettersson and Emma Högström*

Lagena is an innovative bottle design that makes it possible to transport 78 per cent more water per truck than is done with the average plastic water bottle. Shifting to Lagena would translate into significant reductions in CO<sub>2</sub> emissions. The bottle is made out of polylactide (PLA), which is renewable, fully biodegradable and does not release hydrocarbons when it is reabsorbed by the earth. The Swedish inventors envision Lagena as an attempt and a suggestion to present smarter solutions to secure global water supply and reduce the emissions of CO<sub>2</sub> and hydrocarbons into the environment.

#### NATIONAL ORGANISER AND SPONSORS

ITT Water & Waste Water, Svenskt Vatten, Tyréns, Urban Water, Norrköping Vatten and Vattenmyndigheterna.





Stockholm: Rådhuset | Stockholm City Hall

Photo: Edelpix

## TURKEY

### Clean Energy From Dirty Water: Producing Electricity From Wastewater Using Exoelectrogen Anaerobic Bacteria in Microbial Fuel Cells

*By Ozan Ozkan, Cem Celik and Emre Suna*

This study aim to use Exoelectrogen Anaerobic Bacteria in microbial fuel cells to produce electricity and prevent pollution from wastewater discharge. The Turkish students systems was able to generate electricity and treat wastewater to 90 per cent efficiency. Their design was unique in its electrote shape, and used no extra substrate, chemical compositions or buffer solutions. Their work makes a strong case for the use microbial fuel cells to treat water pollutants.

#### NATIONAL ORGANISER AND SPONSOR

General Directorate of State Hydraulic Works Turkey.

## UKRAINE

### Splitting Oil From Water: Purifying Water From Oil Pollution Using Magnetic Separation Through Fine-Dispersed Magnetite

*By Dmytro Danylchuk*

This project explored the feasibility of magnetic separation as a method to clean water that has been polluted by oil. Fine-dispersed magnetite was applied as an experimental method to remove oil and some oil derivatives from the water. A thin-layer chromatography was utilised to monitor the results, which suggest that the magnetite is a potentially effective treatment option that can be used during the liquidation of shelf oil spills.

#### NATIONAL ORGANISER AND SPONSORS

DOW, Ecosoft, JSC, AK Kyivvodokanal and EKOinform Publishing House.



## UNITED KINGDOM

### Sampling Efficiency of Plankton Net

By Katie Forbes

The UK research project provided new insights into plankton analysis. Detailed understanding of plankton is crucial to evaluating marine ecosystems, as plankton is a strong indicator of how external pressures are affecting the ocean's food chains. Plankton have short life cycles, which means that changes in their quantity provide an indication of how pollutants, climate change and other external forces affect the marine food chain and especially fisheries. Sampling must therefore be accurate and producing precise results that will identify accurately the subsequent variations in the ecosystem.

#### NATIONAL ORGANISER AND SPONSORS

The Chartered Institution of Water and Environmental Management (CIWEM) and Marine Scotland with Nuffield Foundation.

## UNITED STATES

### Development and Evaluation of a Microfluidic Co-Flow Device to Determine Water Quality

By Alison Bick

By combining co-flow microfluidic devices, cell-phones, and the indicator chemical Coli-ert-18, a novel way of determining water qualities was found. The cell-phone takes an image of the channel and analyses it. A statistically significant positive correlation between bacteria concentration and yellow pixel intensity in the images were identified. In comparison, the new device is 18 hours faster, 200 times less expensive, and as accurate as the standard bacteria tests.

#### NATIONAL ORGANISER AND SPONSORS

Water Environment Federation, ITT Corporation, The Coca-Cola Company and Delta Airlines.

## VIETNAM

### Carpet Cleaning: Absorbing and Retaining Oil Spills Through a Melaleuca Cajuputi Bark Carpet

By Hien Ly Cong, Hay Nguyen Tri and Liem Nguyen Thanh

The Vietnamese team sought to protect the Mekong River Delta from oil spills with a smart, and readily available solution. They innovated a "Melaleuca Cajuputi bark carpet", which is not only beautiful but is also extremely effective in absorbing spilled oil in water bodies. According to their tests, the carpet is able to collect up to 97 per cent of oil in rivers and canals, making it an aesthetic and economical solution to protect water resources.

#### NATIONAL ORGANISER AND SPONSORS

Vietnam Association for Conservation of Nature and Environment, Canon Singapore Pte Ltd – representative office in Vietnam and Vietnam Environment Administration



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# Stockholm Junior Water Prize Winners 2010



Alexandre Allard and Danny Luong, Canada receiving the 2010 Stockholm Junior Water Prize from H.R.H. Crown Princess Victoria.

Photo: Cecilia Östhammar, Exray

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# Stockholm Junior Water Prize Winners

- 2010** | Alexandre Allard and Danny Luong, Canada  
"Research on Biodegradation of the Plastic Polyesterene"
- 2009** | Ceren Burçak Dag, Turkey  
"A Solution to Energy-Based Water Contamination:  
Rain as an Alternative Environmentally Friendly Energy Source"
- 2008** | Joyce Chai, USA  
"Modelling the Toxic Effects of Silver Nanoparticles Under  
Varying Environmental Conditions"
- 2007** | Adriana Alcántara Ruiz, Dalia Graciela Díaz Gómez  
and Carlos Hernández Mejía, Mexico  
"Elimination of Pb(II) From Water Via Bio-Adsorption  
Using Eggshells"
- 2006** | Wang Hao, Xiao Yi and Weng Jie, China  
"Application Research and Practice of a Comprehensive  
Technology for Restoring Urban River Channels Ecologically"
- 2005** | Pontso Moletsane, Motebele Moshodi  
and Sechaba Ramabenyane, South Africa  
"Nocturnal Hydro Minimiser"
- 2004** | Tsutomu Kawahira, Daisuke Sunakawa  
and Kaori Yamaguti, Japan  
"The Organic Fertilizer – an Alternative to Commercial Fertilizers"
- 2003** | Claire Reid, South Africa  
"Water Wise Reel Gardening"
- 2002** | Katherine Holt, USA  
"Cleaning the Chesapeake Bay with Oysters"
- 2001** | Magnus Isacson, Johan Nilvebrant  
and Rasmus Öman, Sweden  
"Removal of Metal Ions from Leachate"
- 2000** | Ashley Mulroy, USA  
"Correlating Residual Antibiotic Contamination in  
Public Water to the Drug Resistance of *Escherichia coli*"
- 1999** | Rosa Lozano, Elisabeth Pozo and Rocío Ruiz, Spain  
"Echinoderms as Biological Indicators of Water Quality  
in the Alborán Sea Coast".
- 1998** | Robert Franke, Germany  
"The Aquakat – a Solar-Driven Reactor for the  
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