



NEWS
LETTER

Endpoint

OF THE AUSTRALASIAN SOCIETY FOR ECOTOXICOLOGY
(now SETAC-AU)

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Message from the Editor

This issue of Endpoint will be the last of a very busy year for SETAC AU and the penultimate issue before Brisbane 2012. 2011 has had a number of highlights, most notably Ecotox 2011 in Darwin (the inaugural SETAC AU conference), and of course the sad news of the passing of Tony Roach.

2012 also promises to be a big year. Planning for Brisbane 2012 is well progressed as is the new bulletin of SETAC AU – the Australasian Bulletin of Ecotoxicology and Environmental Chemistry (ABEEC). Of course SETAC AU will be looking to send a young scientist from our ranks to Science Meets Parliament in 2012. More information on this very worthwhile event can be found on the Science and Technology Australia website (<http://scienceandtechnologyaustralia.org.au/>). This opportunity is fully funded by SETAC AU and will be invaluable to anyone starting a career in science

While I am mentioning Brisbane 2012 I would draw your attention to the update from Fred on pages 21 to 22. This promises to be a great event and I really hope as many members as possible make all possible endeavours to join us in Brisbane in July. I would also like to point out to the possibility of financial assistance that SETAC AU will offer to 8 students to cover travel. More details on this assistance can be found on page 23.

We continue to struggle with membership issues. It is extremely important to your organisation that your membership is up to date and details are accurate. If your details do not reflect your affiliation to the Australasian Chapter then your membership fees may not be passed on. Please follow the instructions that Munro has prepared on pages 18 to 20 to make sure membership is up to date.

It always astounds me where our members end up but Dayanthi's La Presidenta report about her moonlighting as a film critic is very unique.

The SETAC AU Council wishes all members, their families and friends a very safe and happy Christmas and New Year and look forward to hearing from you all in 2012.

David Everett (david.everett@derm.qld.gov.au) Editor-in-Chief

Sustaining Members



Office of
Environment
& Heritage

NSW Office of Environment and Heritage

<http://www.environment.nsw.gov.au>



Australian Government
Department of Sustainability, Environment,
Water, Population and Communities

Department of Sustainability, Environment, Water, Population and Communities

<http://www.environment.gov.au>



Hydrobiology

<http://www.hydrobiology.biz>



Ecotox Services Australasia

<http://www.ecotox.com.au>



ADVANCED
ANALYTICAL
AUSTRALIA

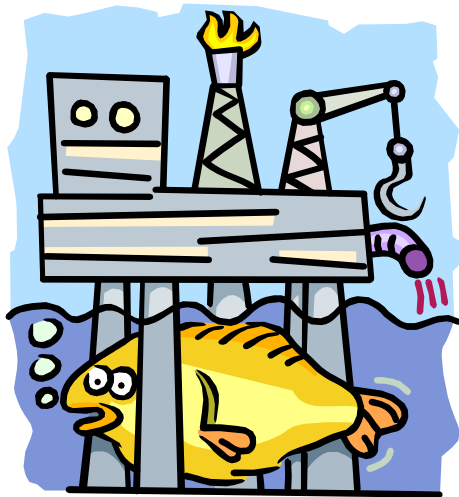
Advanced Analytical Australia

<http://www.advancedanalytical.com.au>

Conferences

SETAC NA Mexico Focused Topic meeting on "Pollutants in the Environment: Fate and Toxicity" in Merida, Yucatan, Mexico in August 2011.

Of great interest was the Oil Spill Symposium held jointly with the Society of Ecological Restoration that was held on the day prior to the start of the SETAC meeting. It included interesting presentations on the BP Gulf of Mexico Deepwater Horizon Oil spill and a number of talks relating to oil spills during the Gulf war and follow on remediation activities from Iraqi and Kuwaiti delegates. It was also fortunate that several Council members from SETAC NA attended this meeting and in a social conversation I was informed that SETAC NA was "sponsoring" a session at the Society for Risk Analysis "World Congress on Risk" to be held in Sydney in July 2012. I was very concerned that this would be a conflict of interest for SETAC since our SETAC AU conference was planned for July 2012 in Brisbane. However, several emails later, I was assured that the "sponsorship" was not financial but just a confirmation of support and Jenny Stauber has recently confirmed that she is involved in the session organisation and will try to persuade some of the international participants to stay on for the Brisbane conference, since the dates do not overlap. I will ask Jenny to keep us updated as the sessions develop.



Pharmaceuticals and Personal Care Products in the Environment: Research Priorities in Australia and New Zealand

Convened by: Rai Kookana and Alistair Boxall

I had registered for this conference but had to withdraw my registration since my travel authority was delayed at RMIT. This one-day CSIRO SETAC Australasia Workshop, was held in Adelaide on 5 October. It brought together stakeholders from Australia and New Zealand to discuss the top 20 questions and identify priorities on PPCPs in the Australasian environment and contributed to the SETAC Pharmaceutical Advisory Group (PAG) identification of its "top 20" global research and policy questions about the effects and risks of pharmaceuticals and personal care products (PPCPs) in the environment. Rai sent in a comprehensive summary of this workshop to the Globe and I requested that he also provide a summary to Endpoint.

I was also invited to be a guest panelist at the [Environmental Film Festival held in Melbourne](#) on the 14th of October. Three films including one on Plastic pollution of the Ocean, and one on Waste recycling were screened at the Kino Cinema. Over 200 people attended and participated in the follow on panel discussion with a moderator and 3 of us panelists. I ensured my bio included the Presidency of SETAC AU for some media exposure for us, while it was interesting that I was invited by a former student member of ASE who was one of the organisers of the Film Festival.

SETAC AU and Science and Technology Australia (STA)

Ross attended the STA AGM as a member of the STA executive and had my proxy vote for SETAC AU so he will report on developments and news from STA.

I have received two newsletters in the period since our last Council meeting and though Fred (website manager) has kindly set up a spot on our website where such information can be attached – I have not managed to attach these newsletters to the website (being a web novice!), and will do so with some help.

Online Subscriptions and Website

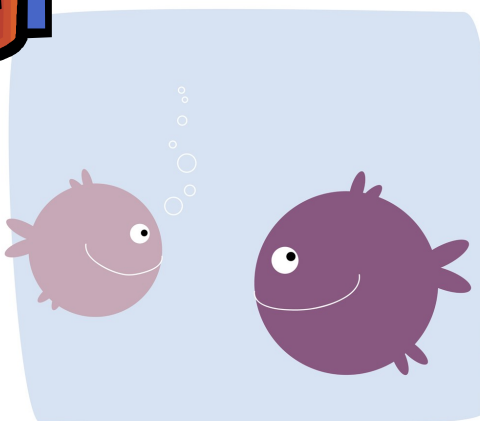
Fred will provide a separate website report, which I will not reiterate here, however the website is to be commended, despite it being a “work in progress”. Munro has allayed my concern regarding reminders to renew membership and has kindly written an “online subscriptions for dummies”.

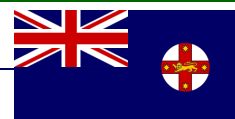
Animal Ethics

The revision of the National Code for the Care and Use of Animals for Scientific Purposes has been up for public comment (submissions closed the 2nd of December). I have not found any clause which will affect our ecotoxicology testing in a more detrimental manner than in the previous code. Ross has clarified the issue I raised about having to get the Animal Ethics Committee of your own Australian institution to approve any scientific work on animals that you conduct overseas and I am now assured that we will NOT have to go through two Ethics Committees.

John Chapman kindly volunteered to collate and write up a submission from SETAC AU, however I have not seen it yet and perhaps we have run out of time

Dayanthi Nugegoda
(dayanthi.nugegoda@rmit.edu.au)





The NSW SETAC members have been out of control this quarter – there is no stopping them – signs of their progress are everywhere. Below is a wee snippet of some contributions that have been made to the world of Environmental Toxicology and Chemistry. With this trajectory there will be no stopping the SETAC President from stepping forward to replace Kim Carr as the new Minister for innovation, industry, science and research.

Wishing you all a happy, warm and safe Festive Season
(and see you all in Brisbane in July 2012)

Best wishes,
Dianne Jolley (djolley@uow.edu.au)

Update from Ecotox Services Australasia (Chris Doyle)

First of all, congratulations to Amandine Vincent, who gave birth to a baby girl, Claire, in May. Amandine returned back to work in November and while the rest of us feel like nothing much has changed in the last six months, I am sure Amandine's world is now, at the very least, just that little bit different with a baby around. While Amandine was on maternity leave we had the pleasure of Yin Phyu helping us out with our QA system. It was great working with Yin and we thank her very much for her help during this time.

The end of winter has signalled an end to the hibernation of our honeybees and our hives are once again in production mode. For those of you that were lucky enough to sample our honey chocolates at the Envirotax 2011 conference, you may not be surprised to know that ESA's honey is now an award winner, with Rick Krassoi being awarded first place at the St Ives Agricultural Show. Well done Rick. Unfortunately there will be no celebrations for the worker bees that produced the honey in the first place, with a busy season ahead for honeybee toxicity testing. We currently run tests examining the effects of contact exposure to and ingestion of pesticides on adult worker honeybees, as is required for the registration of some pesticides. We are also investigating another test which looks at the effects of pesticides on honeybee larval development. With global declines in honeybee populations, these tests are critical to minimising further honeybee losses due to pesticide toxicity.

Our commercial activities have kept us busy and mostly off the streets since the Darwin conference. We have also been managing to keep up our research efforts in between commercial jobs, which is not always an easy task. Anneke Ralph and Tina Micevska are continuing with the development of a chronic toxicity test with the amphipod *Allorchestes compressa*. Matt Ribas has been investigating the effects of contaminants on embryonic development and hatching success of rainbowfish, while Stephen Sum is continuing his work with breeding spiny damselfish in the laboratory. Meanwhile, Zoe Fluit and Chris Doyle have been busy developing a number of toxicity tests using tropical species. There is currently a shortage of tropical toxicity tests available and ESA is working hard to develop more tests to satisfy the requirements of our more-northerly clients and regulators.

With the silly season descending upon us at a rapid rate, we would like to wish everybody a happy and safe festive season and we look forward to working with you in the New Year.



Amandine Vincent and Anneke Ralph isolating bees for testing

Regional Reports

New South Wales (Cont'd)

Update from Associate Professor Emma Johnston's Subtidal Ecology and Ecotoxicology Group at UNSW

Andrew McKinley will shortly be completing his PhD thesis in Associate Professor Emma Johnston's Subtidal Ecology and Ecotoxicology Research Group at the University of New South Wales. Andrew has found that larval fish are a potentially useful indicator of estuarine health. He writes: Fish are the world's most economically and culturally important group of wild animals. As a result, a great deal of effort is focused on understanding how human actions impact fish communities. Unfortunately, monitoring and research has focused almost exclusively on adult fishes and only a handful of studies worldwide have examined impacts on early life stages. Just as our own children are more sensitive to physical stress than adults, it is at the earliest life

stages that fish are most likely to be impacted by forms of disturbance such as pollution. I have conducted one of the first studies in the world to examine the impacts of pollution and habitat modification on wild marine fish larvae. My results demonstrate that stressors such as pollution and seagrass loss are likely causing major impacts on the composition, abundance, and diversity of larval communities. Some species are almost completely excluded by these stressors, while others truly flourish in highly contaminated environments. These impacts are of a much greater scale than what I have documented in parallel studies of adult fish. Impacts of this nature are almost entirely unmonitored and undocumented, but are likely to have far reaching ecological significance.



Andrew McKinley with a Port Jackson Shark

Emma Johnston (e.johnston@unsw.edu.au)

Update from Dianne Jolley at the University of Wollongong

An exciting and productive year for the analytical and environmental chemistry and toxicology group at Wollongong University. There are enthusiastic students everywhere we look. Patrice Couture the INRS laboratories in Quebec has just completed a sabbatical at Wollongong, where he worked with Laura Lopez (honours), Andy Davis, Bill Maher and myself. It was wonderful to have Patrice share his expertise with us. On the subject of INRS, Cassandra Smith (PhD student) has completed her 6-month research internship with Claude Fortin and Peter Campbell in the INRS laboratories in Quebec, and presented a poster at the November SETAC North America meeting in Boston. Her efforts to understand mechanisms of metal toxicity in microalgae have progressed well, with her work focusing on metal induced phytochelatin production in algae. Charlotte Watson commenced an honours project in collaboration with Merrin Adams at CSIRO, Lucas Height, in August where she has been looking at development of a chronic microalgal bioassay to assess contaminated sediment. Congratulations to David Strom who will be graduating in December from his PhD on factors contributing to copper bioavailability and toxicity in sediments. Daniel Ward has completed experiments on benthic organism sediment avoidance, had a manuscript published and is working as a consultant – you can read his student profile in this edition.

Our DGT research is also progressing strongly. An Environmental Trust supported project for selenium and arsenic DGT research is in collaboration with Peter Teasdale (Griffith University). Will Bennett has had three manuscripts accepted this year (Analytical Chemistry, Environmental Chemistry and Talanta) and will be submitting his thesis in December. Helen Price is hot on his heels, with two submitted papers and a plan to submit her PhD in 2012. Valérie Potron (intern from the University of Bordeaux (France)) also produced some wonderful results in a

Regional Reports

New South Wales (Cont'd)

project with Di Jolley and Stuart Simpson, and has now returned home to France – we will miss her enthusiasm for life! Elvio Amato (Milan, Italy) commenced his PhD with Di Jolley and Stuart Simpson in August, also as part of an Environmental Trust funded program.

Di Jolley (djolley@uow.edu.au)

Update from Sharon Hook CSIRO Land and Water, Lucas Heights

Congratulations to Antony Chariton, Sharon Hook, Stuart Simpson and their teams with the opening of a new research lab. A state-of-the-art environmental genomics laboratory that will support research into keeping our waterways healthy was opened at Lucas Heights. In officially opening the new facility, CSIRO Land and Water Chief Dr Neil McKenzie said scientists are applying environmental genomics, the study of DNA and RNA from biological organisms, to better understand the effects of pollutants on aquatic ecosystem health.

"One measure of the health of a water body is the diversity of species it supports. Where typically this involves a lengthy process of collecting and counting visible macroinvertebrate species under a microscope, CSIRO has developed a revolutionary genomic approach to identifying organisms in a water body," Dr McKenzie said.

The new initiative involves collecting DNA from all the organisms in the ecosystem and comparing it to a DNA database comprising hundreds of thousands of different species.

Using this method, over 1000 different organisms can be identified, ranging in size from microscopic to the standard macroinvertebrate species. Knowing the range of species allows scientists to determine whether and how a site is impacted by pollutants.

The complete article can be viewed through the following link: <http://www.theleader.com.au/news/local/news/general/lab-opened-to-battle-water-contamination/2282627.aspx>

Sharon Hook (sharon.hook@csiro.au)

Update from Megan Andrew-Priestley from the Ecology & Ecotoxicology Laboratory, University of Newcastle

After a few years of planning to write into endpoint, we have decided to stop being slack and contribute a brief summary of the activities of the members of our lab. Our PhD student, Thanvapon Yingprasertchai, is in the middle of his field and lab work. His project is investigating heavy metal exposure in Sydney rock oysters. A particular focus of his project is examining metal regulating gene and their tolerance to heavy metal exposure. Megan Andrew-Priestley submitted her thesis on "Sydney rock oyster as a bio-monitor of estrogenic compounds and metals" and she was excited to graduate in October. She has been working as a research assistant for the group since February. Dr Geoff MacFarlane recently received the prestigious Vice Chancellors Award for Supervision Excellence. We are very proud of him. Our molecular toxicologist, Dr Richard Yu has been studying the molecular mechanisms underlying endocrine disruption in fish and oysters, and will also embark on research into the screening and molecular mechanisms by which environmental chemicals lead to human infertility and obesity. Our program was excited to gain a new member, Professor Joe Bidwell who recently relocated to Newcastle from the US. Among other topics, Joe is interested in the energetic implications of long-term contaminant exposure in aquatic invertebrates. He has been busy establishing his research lab and looks forward to generating some actual data soon.

Megan Andrew-Priestley (megan.andrew@newcastle.edu.au)

Regional Reports

South Australia



Hi all,

After a brief mid-year hiatus we are rapidly approaching the end of another year. After a 3 month visit, Alistair Boxall finally returned to the bracing climes of a North Sea autumn. It was a very productive visit (as I look at the hundreds of samples still pending analysis) culminating in a SETAC Australasia workshop on the 5th October, looking at the research priorities relating to pharmaceutical and personal care products (PPCPs) in Australia and New Zealand. This workshop was a follow up to the SETAC Pharmaceutical Advisory Group (PAG) Top 20 global research and policy questions relating to PPCPs. It was therefore great to see representatives from regulators, policy makers, academia and research organisations attending this meeting. Overviews of current research activities and perspectives were given by Alistair Boxall (University of York/FERA), Stuart Khan (University NSW), Anu Kumar (CSIRO), Grant Northcott (Plant and Food Research New Zealand), Barrie Peake (University of Otago) and David Halliwell (WQRA). Overall the Top 20 questions formulated by the PAG were found to be relevant to Australia and NZ, although there were a number of factors that were thought to be unique to Australasia that should be considered further. For more details check out <http://www.setac.org/globe/2011/november/ppcp.html>. It wasn't all just hot air from Alistair though and he enthusiastically threw himself into field work too, although it strangely coincided with England getting done by France in the rugby; drowning his sorrows in sewage, perhaps? Anyway, I'm sure he will be motivating his students with photos of himself elbow deep in who-knows-what! We'll be looking forward to his return next year.

As soon as one person leaves, another fills the void and Anu has been very lucky to have Dr Peter Bain commencing with her. Peter previously worked as a post-doc at Flinders University developing cell-based bioassays for oxidative stress and other toxicity endpoints in fish. He will continue with this line of work by developing *in vitro* assays for EDCs using established human cell lines and primary fish cell cultures and commercially available fish cell lines. He also aims to set up EDC reporter assays using fish cell lines and receptors and, more generally, to develop a microarray for rainbowfish to assess changes in global gene expression in response to environmental contaminants. Phew, I hope I got that right – any mistakes in terminology are mine, which I'm sure Peter would be happy to clarify!

On the project front, our National Water Commission project on EDCs is drawing to a close; our final fish tests have been completed, the data has been crunched and we are busily trying to summarise three years work in one short report. The fish caging experiments were certainly a highlight of this work and we look forward to using this powerful and complex approach in future work. However, the integration of a number of aspects, including chemical and bioanalytical monitoring of water and sediments in conjunction with these fish exposure studies, made this a challenging and rewarding experience – almost brings a tear to the eye (from pleasure or pain, I can't really say at the moment!). Keep an eye out for the finished product sometime next year. Just to make sure we aren't kept idle, Anu has successfully applied for an AusAID collaborative project based in India to assist in the development of ecotoxicological and bioanalytical tools for managing organic contaminants in riverine systems, particularly relating to fish health.

I trust everyone else within SETAC Australasia has had a similarly fruitful year and we wish you all the best over the upcoming holidays and for 2012.

Cheers,

Mike Williams (Mike.Williams@csiro.au)



The Centre for Aquatic Pollution Identification and Management (CAPIM).

Things have been hectic down south since our last update. CAPIM has grown from a smallish group of academics, post docs, PhD students, research assistants and technical staff, to being a group of more than 30! There are a range of projects currently underway, and here are some of the highlights.

The impact of pesticides on benthic macroinvertebrates in a rural lake

Lake Hawthorn is located in the Sunraysia region of Victoria near Mildura, and in October 2010 CAPIM commenced sediment quality and toxicity monitoring in Lake Hawthorn as part of a DPI funded project to determine whether a locust control had any impact on aquatic ecosystems. Sediment was collected on three occasions within the lake, and was found to contain elevated concentrations of pesticides, which were also shown to be toxic to macroinvertebrates. The results also indicated that the pesticide contamination was not dispersed homogeneously throughout the lake sediments. Subsequently, the CAPIM freshwater and biomarker groups commenced a follow up study in September 2011 to assess the pollution risks in more detail.

The lake was divided into six sampling locations. Between three and five sites within each location were sampled for sediment and surface water and a range of chemicals were measured (including metals, pesticides and nutrients). Benthic macroinvertebrates were sampled in a subset of sites at each location for species abundance and diversity and also for changes at the sub-organism level on a number of biochemical biomarkers. Sediments were also assessed for toxic effects on survival, growth and emergence of *Chironomus tepperi* using a laboratory-based bioassay and impacts on indigenous macroinvertebrates using field-based microcosms. Preliminary results show that the pollutants present in Lake Hawthorn vary spatially and that they are toxic to aquatic life, and in addition, the study has highlighted the benefits of sampling strategically and the usefulness of a multiple lines of evidence approach for aquatic biomonitoring.



Bryant Gagliardi and Dan MacMahon sampling Lake Hawthorn.

CAPIM has also been fortunate to have a visiting post-doc from Argentina, South America working with us for the last 4 months. Dr Maria Ballesteros is a postdoctoral research fellow at the Ecotoxicology Laboratory of the Universidad Nacional de Mar del Plata, with a fellowship from the National Research Council (CONICET) from the Argentinean government. Maria has been working with CAPIM to develop a range of biomarkers for measuring the impact of exposure to sediment-bound pesticides in chironomids, including chironomids collected *in situ* in Lake Hawthorn, from laboratory exposures using spiked sediment and also from indigenous larvae from field-based microcosms. It was a pleasure having Maria work with us, and we look forward to continuing working with her and her research group in the future.

Regional Reports

Victoria (cont'd)

Estrogenic endocrine disrupting chemicals in estuaries

Emma Ferguson has recently completed her Masters degree on EDCs, where she measured concentrations of natural and synthetic estrogens in a local estuary, as well as conducting some lab tests with black bream embryos and 17 α -ethinylestradiol. The results indicate spatial, temporal and some tidal variation in estrogen concentrations in the estuary, and in addition, has helped us learn much more about the challenges of sampling tidal estuaries! Continuing on the EDCs theme, Kathryn Hassell spent some time in Japan earlier in the year, working with Masaki Nagae and Kiyoshi Soyano from Nagasaki University, on a fish biomonitoring project. Their test species is the common Japanese goby, *Acanthogobius flavimanus*, which is also found in southern Australia, going by the name yellowfin goby. The focus has been on gonad histology and measuring vitellogenin induction as an indicator of estrogenic endocrine disruption, using ELISA techniques to measure protein levels, and real-time PCR to measure both vitellogenin and estrogen receptor α gene expression. This is an on-going study whereby fish are being sampled in both countries.

Broadband projects to boost Victoria's digital economy

The Victorian Government has recently awarded a total of around \$4 million to support collaborative projects that utilise high-capacity broadband in order to develop new ways of improving service delivery in business/community, through the Broadband-Enabled Innovation Program (BEIP). Steve Marshall from CAPIM was one of the lucky recipients, and has received funding from the Department of Business and Innovation (DBI). The aim of Steve's project is to develop a new system which provides rapid, real-time diagnosis of water contamination, using macroinvertebrates and remote sensing technologies.

And with Christmas fast approaching all of the group are looking forward to some time off after the first round of Summer field sampling is wrapped up (weather dependent as always!), ready to come back and do it all again in 2012. On behalf of CAPIM, we would like to wish all of you a safe and happy Festive season, and look forward to seeing you all in 2012!

Sara Long, Claudette Kellar and Kathryn Hassell
(hoskins@unimelb.edu.au, ckellar@unimelb.edu.au,
khassell@unimelb.edu.au)



Maria Ballesteros sampling field microcosms

Regional Reports

Victoria (cont'd)

RMIT Ecotoxicology Research Group

We have had a busy and exciting year beginning with Tom Cresswell PhD candidate (co-supervised by Stuart Simpson and Ross Smith) winning an award for his excellent oral presentation on bioaccumulation of trace metals at Envirotox 2011 in Darwin and Dayanthi visiting ERISS for the first time despite prior joint grant applications and presenting her first ever talk on "nanoecotoxicology"! She then went onto globetrot rather a lot this year (see the President's report) leaving her very capable students to continue their research projects. In the last 2 months she has made 2 visits to China, the first to Chair a session on "Biomarkers in monitoring Environmental Toxicants" at the 1st World Congress of Environmental Biotechnology in Dalian and the 2nd an RMIT research workshop on "Sustainable Cities" in Tianjin where she presented a keynote on "Urban Water Pollution" including some of the work done on Freshwater EDCs in Melbourne waterways through her role in CAPIM. She has been invited to be a visiting Professor at the Institute of Urban Construction in Tianjin where they have a most impressive array of analytical instruments and do some testing using zebrafish. She will need a crash course in Chinese and will have to learn to climb stairs (they do not believe in using elevators!).

Admane Shanthanagouda (Gouda) was awarded his PhD on "Molecular responses of the Murray River Rainbowfish, *Melanotaenia fluviatilis* exposed to Endocrine Disrupting Chemicals". Look out for his interesting research papers in press. He is currently working on the ARC Linkage grant to complete some rainbowfish exposures with Dayanthi and Fred Leusch. Kavi Chinnathamby completed her lab work and is busy writing her thesis on mosquitofish and biomonitoring Melbourne wetlands. Ana Miranda (CAPIM research scholar) has been successful in collecting and culturing Flat Headed Gudgeons in the RMIT Aquatic Facility while completing exposures of fish to androgenic chemicals. A new PhD candidate Roocha Shah joined the research group and is working on the effects of toxicants on thyroid function in silver perch and brown trout. She was fortunate to participate in a CAPIM field project in the Eildon reservoir and is now an expert at bleeding fish while working on thyroid assays. Vuong Ho Vu has returned to Vietnam to complete the second stage of his Masters research project on contaminated river sediments in Ho Chi Minh city and a new Honours student Ryan Betson is working his way through terrestrial microcosms and bioremediation of trace metals. Liliana Zalizniak joined the academic staff and is looking for good Honours students in Ecotoxicology to join our group. Merry Christmas to all.

Dayanthi Nugegoda (dayanthi.nugegoda@rmit.edu.au)



Gouda extracting mRNA



Roocha Shah sampling fish blood

Regional Reports

New Zealand



Jacqui Hoswell (ESR, Wellington) leads the Ministry for Science and Innovation (MSI) funded project "Closing the loop – rebuilding our soils with biosolids". The project takes a multi-expertise and holistic approach to explore options for the sustainable management of biosolids. Of the 200,000 dry tonnes of biosolids produced annually in New Zealand over 90% is disposed of in landfills. There is a strong scientific case that land application is the most sustainable option, because biosolids contain high concentrations of valuable nutrients that can reduce dependence on artificial fertilisers. However, this approach may be unacceptable to the public, due to uncertainties around possible environmental and human health risks arising from the contaminants present in biosolids. Our programme aims to characterise the environmental risks arising from application of biosolids in different land management options and to integrate this knowledge with social, cultural and economic considerations. A key focus of our research is to understand what happens to mixtures of micro-contaminants (metals and organic contaminants) when they interact with each other and with the soil. It is now recognised that additive effects from multiple chemicals can result in a combined effect level that can be greater than the sum of the individual effects. A range of soil biological indices (e.g. soil enzymes, sensitive microbial biosensors, and *Rhizobium*) and ecotox testing (e.g. earthworms and spring tails) are being carried out to determine impacts of the metal + organic mixtures. Preliminary results are suggesting that triclosan (a commonly used antimicrobial in bodycare products) could negatively impact soil microbial communities and that the presence of triclosan in combination with a heavy metal increases toxicity.

Jacqui and her group are also working on another waste project investigating Environmental and Health risks of Greywater use in New Zealand. Greywater is the wastewater collected from the laundry and bathroom (excluding toilets) and contains a complex highly variable mixture of microbes and chemicals. Greywater re-use is not a low risk activity as it can contain significant concentrations of microbes and chemicals potentially having an impact on the environment and public health. While greywater management is extensively practiced around the world, there is limited experience in New Zealand and little information relevant to the New Zealand context, in particular the impacts of biological and chemical contaminants in greywater on soils and groundwater. For development of environmental management plans, linking to appropriate current research is important for improving consistency around NZ. There are currently no national guidelines or health risk assessments for greywater re-use, making decisions relating to sustainable management of greywater difficult and inconsistent across the country.

This project is investigating the impacts of greywater contaminants on soil biology, fertility and structure, water quality and public health. Appropriate soil types, irrigation rates and systems designs and controls for greywater systems will be recommended and best practice guidelines developed for the New Zealand environment. Linking the biophysical science to social science, we are investigating how communities balance risk/benefits of new sustainable technologies.

Louis Tremblay (Louis.Tremblay@cawthron.org.nz)

Student Representatives Report

Many postgraduate students conduct their studies away from their host university, often during collaborations with other universities or institutions. This can often mean that the student misses workshops such as scientific writing, preparing for conferences and publications and time management, all of which are essential tools for the postgraduate scientist. As one such student (Tom is enrolled at RMIT in Melbourne but lives and conducts research in Sydney) Tom receives a blog post by Dr. Inger Mewburn who is a Research Fellow at the School of Graduate Studies at RMIT. Inger writes a blog entitled *The Thesis Whisperer* (search for this title in Google), which is dedicated to helping research students. The blog often has guest contributions from around the world and offers some very sound advice to all students, especially those without access to campus services. We encourage you to have a look at the blog and get involved in the feedback section.



In this feature, we hope to offer some advice and experiences from established career scientists on making the transition from study to employment. In this edition, we are very pleased to have the insights from Prof. Dayanthi Nugegoda, Ecotoxicology, RMIT University and Dr. Catherine King, Terrestrial and Nearshore Environment, Australian Antarctic Division.

Prof. Dayanthi Nugegoda (Dayanthi.nugegoda@rmit.edu.au)

"When I applied for my first academic job in Australia in 1994 I knew no-one here, had no contacts and had no Australian experience and I was surprised that I was immediately offered the position. I later heard that one influential member of the selection panel had reviewed my application, seen just the name of my referee (who was my PhD supervisor in the UK, Philip Rainbow) and stated to everyone on the panel "If Phil Rainbow is her referee and she has published 7 papers with him, she must be excellent and is easily the top candidate", they didn't even bother to call or write to him - only to another referee.

Based on this my advice would be: it is whom you know, who you work with (for your research degree, after or in collaboration with) and for an academic position, your publications, that are crucial. Look internationally as well - the world in terms of job mobility is very open now."

Till I walked into the interview they actually had kept referring to me as "he" since the rather strange name threw them! It amuses me now when I remember the look on the faces of the entire panel when I walked into the room for my interview - I think they expected a male!"

Dr. Catherine King (cath.king@aad.gov.au)

Student Representatives Report

Cont'd

"Moving from the relatively free and self directed life of a university student into employment is certainly a daunting but also exciting prospect for most young scientists. The best bits of advice I think I can give students in this transitional phase based on my own experiences and observations are firstly, to use your supervisors and the professional societies you belong to, to network as much as possible and to get to know people that are working in fields and at places of interest to you. Actively seek out opportunities, and then make sure you embrace them whole heartedly when they arise. Many of the short term jobs that I had in my early career were the result of getting to know fellow scientists at conferences and meetings, and then through perseverance, chasing up people and leads. This is in fact how I scored my first trip as a researcher to Antarctica while I was still a postgrad student. This experience early on in my career really clarified for me where I wanted to head with my own research and the sort of science that I wanted to be involved in - I haven't looked back since!

The second main piece of advice I would offer to students approaching the end of their degrees (and here I definitely speak from experience!) is to make sure you really do finish off things before you move onto the next phase in your career. In particular, it is so very important that you publish the findings of your thesis in refereed journals along the way as much as is possible, so that your research is out there for the scientific community to access easily. You will certainly find that once you start your working life, you are rarely in full control of your time and what you do, so writing up your research, particularly when you have to do this out of hours, can fall down on your list of priorities. And lets' face it, the sad fact is, other than your family, your partner and your supervisors, who really will ever get to read your thesis? Good luck guys!"

The SETAC-AU student representatives.

Bianca Sfiligoj, Tristan Stringer, and Tom Creswell

(Bianca.Sfiligoj@aad.gov.au, tristanjstringer@gmail.com, Tom.Cresswell@csiro.au)

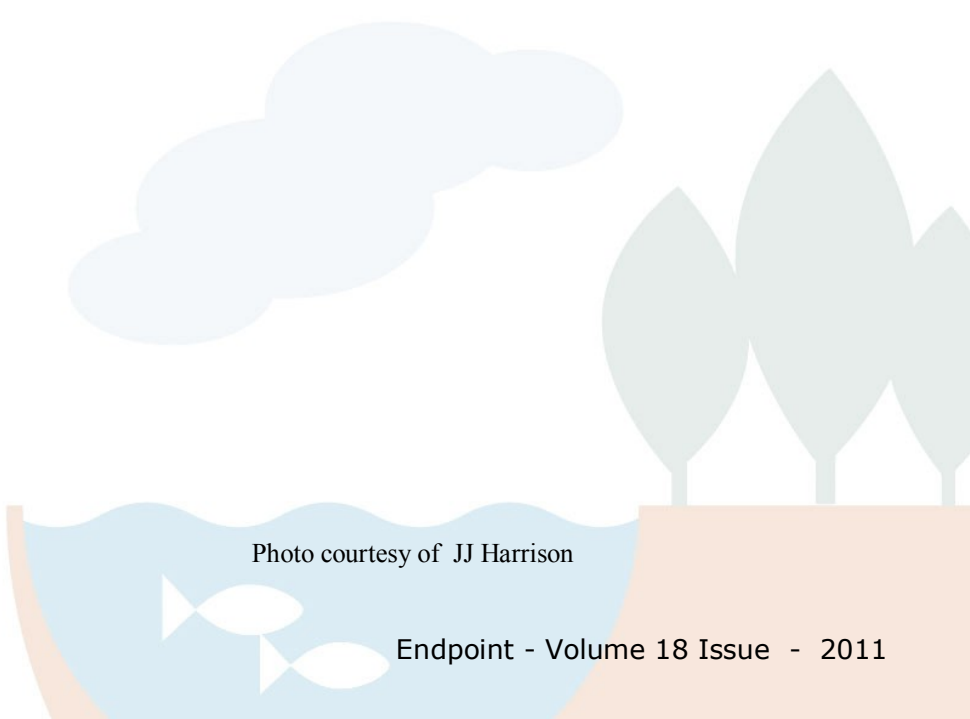


Photo courtesy of JJ Harrison

Name: Daniel Ward

Institutions: University of Wollongong (UOW) and CSIRO Centre for Environmental Contaminants Research (CECR)

Degree: PhD (Chemistry)

Supervisors: Dr. Dianne Jolley and Dr. Stuart Simpson

Estimated time of completion: February 2012

Thesis title: The response of marine epibenthic fauna to short exposures to contaminated sediment: a study of avoidance and toxicity

How did you get involved in ecotoxicological research?

At the age of 8, I knew that I wanted to have a career in environmental protection and conservation. Initially I wanted to become a marine biologist, however as I grew older, I became more aware of the range of environmental problems that the world is facing and my interests broadened. I enrolled in a Bachelor of Science (Environment) at the University of Wollongong (UOW), which covered all disciplines of science. This gave me the opportunity to study a range of subjects, however my interests were in biology (incl. biodiversity and ecology) and chemistry (incl. analytical and environmental). In my third year of study, I was fortunate enough to be offered an Honours research project with Dr. Dianne Jolley which was to be co-supervised by Dr. Stuart Simpson at CSIRO CECR. The project was a study of the dietary toxicity of particulate Cu sulfide to a marine deposit feeding amphipod, *Melita plumulosa*. The project really interested me as it combined my interests in environmental chemistry and biology and had a greater application towards environmental protection.

What led you to your PhD project and what's the importance of your work?

I thoroughly enjoyed the ecotoxicology research during my Honours year and wanted



to continue research in the area. After completing my project, I spoke to my supervisors about the direction that I wanted to take my research and we came up with a project that fit my interests. I enrolled at UOW and was offered an Australian Postgraduate Award for the duration of my candidature.

My research has focussed on the use of behavioural endpoints to assess the 'health' of marine sediments. I have specifically looked at the ability of marine invertebrates (an estuarine snail, a harpacticoid copepod and an epibenthic amphipod) to detect and avoid contaminated sediments. Based on the rate at which the organisms avoided contamination (in hours), I then investigated lethal and sub-lethal toxicity associated with the short-intermittent exposure to contaminated sediment.

Our research shows that the mobile benthic invertebrates studied here will actively migrate away from areas of sediment contamination. This movement reduces their exposure time to contaminated sediments, reducing the risk of acute toxicity (in comparison to sessile organisms that remain in contaminated sediments). However, contaminant concentrations in surface sediments are not homogenous and as these organisms move across the sediment surface they will repeatedly come into contact with patches of contamination, effectively resulting in pulsed exposure to contaminated sediment. Repeated short term exposure to contaminated sediment may not necessarily result in acute toxicity, but I have found that it does have a significant impact on reproductive success.

What are your plans for the future?

My primary goal is to finish my PhD. I have completed all the experimental work and am currently writing my thesis and accompanying publications. Once I have submitted, I hope to gain a position with an environmental consulting company (and maybe get a life back!).

Dan has recently had a paper accepted for publication (congratulations!). We asked him to briefly talk about the publication process:

Title of paper:

An Assessment of Three Harpacticoid Copepod Species for Use in Ecotoxicological Testing

Summary of the abstract:

In this study, four harpacticoid copepod species (*Nitocra spinipes*, *Tisbe tenuimana*, *Robertgurneya hopkinsi*, and *Halectinosoma* sp.) were isolated from clean marine sediments, and procedures for laboratory culturing were developed. Water-only exposure to dissolved copper (Cu) showed that *T. tenuimana* was the most sensitive species. LC50s were also determined for adult *N. spinipes* exposed to cadmium, copper, zinc, ammonia, and phenol. A ranking system was generated based on the ease of handling and culturing, rate of maturity, food selectivity and sensitivity to Cu. From this ranking, *N. spinipes* was determined to be the most suitable species for use in developing sediment-toxicity tests. The measurement of total reproductive output of *N. spinipes* during 10-day exposure to whole sediment was found to provide a useful end point for assessing the effects of sediment contamination.

Ref: Arch Environ Contam Toxicol (2011) 61:414-425

Did you encounter any issues submitting your paper for publication? If so, what were they?

For starters, the online submission sites aren't always as easy as they appear, so give yourself enough time! The first time that I submitted my paper to a journal it was rejected which was a little disheartening, but the reviewers did an excellent job and provided some really great suggestions. With the help of my supervisors, I made some changes to the paper based on the comments that I received and resubmitted it. These comments strengthened the quality of the paper, which I think will improve the impact of the work. The second time around, my paper was accepted and I am delighted with the outcome.

What advice can you give to others wanting to publish for the first time?

While it is disheartening to have your manuscript rejected, the comments that come back from the reviewers are useful and help to make the paper clearer and stronger. It is very satisfying to see your manuscript proof come back from the publisher once it has been accepted – it makes all the hard work you put into it worthwhile. The process isn't as daunting as it first appears, and it is great to have made a contribution to the greater scientific community.

Daniel Ward
(daniel.ward@csiro.au)

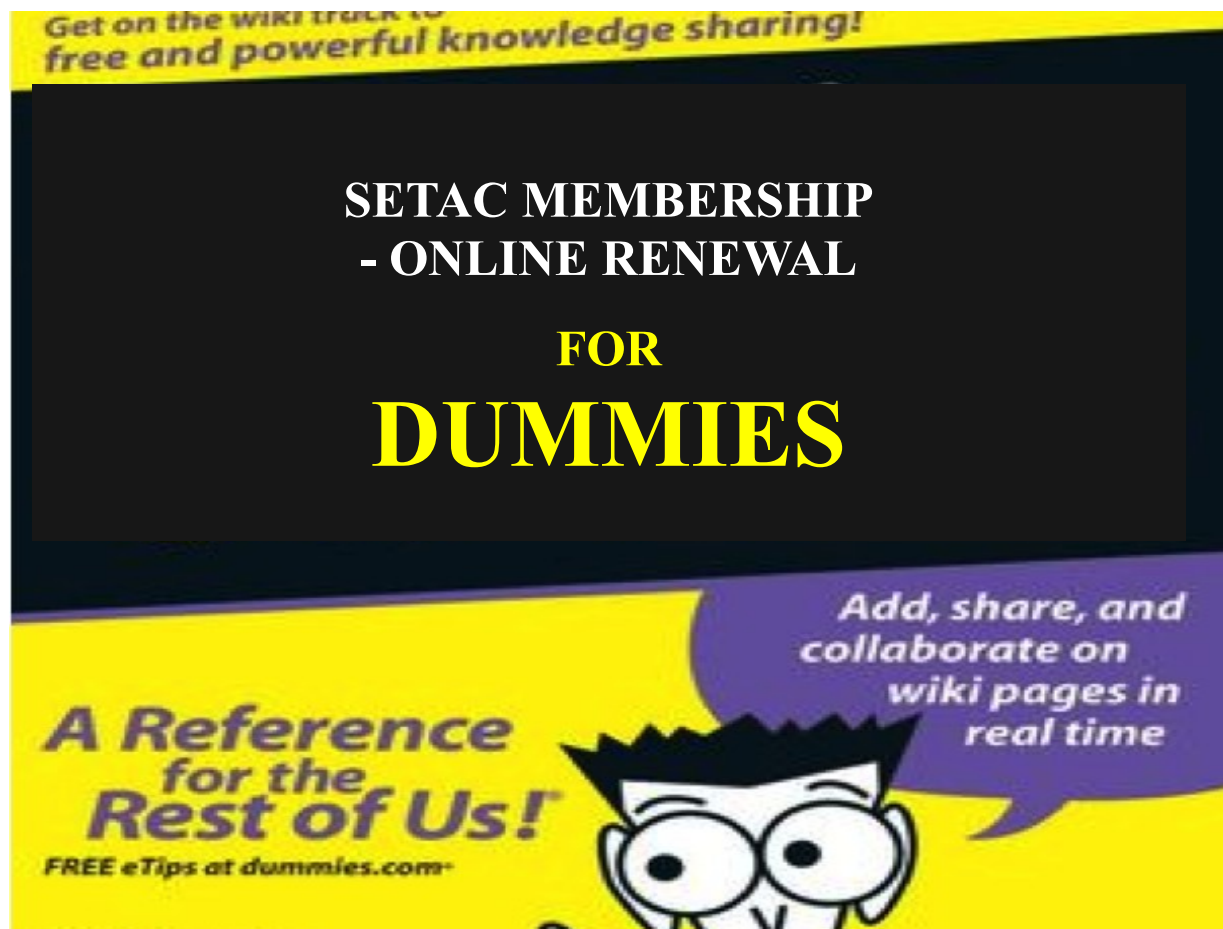
THIS CONCERNS YOU



We have an ongoing problem with members who “disappear” because they neglect to update their contact details. If you change any of your contact details, there are **TWO** things you need to do:

1. Update your contact details at setac.org to ensure that you still receive SETAC notices and online publications such as *Globe*. You do this by editing your “Profile” after logging in (see the guide for online membership renewal in this issue of *Endpoint*).
2. Email the secretary of SETAC AU (f.leusch@griffith.edu.au) to ensure you still receive SETAC AU notices and *Endpoint*





Background:

Following the plebiscite of members, the Australasian Society for Ecotoxicology (ASE) became a Chapter of SETAC Asia Pacific on 1 January 2011.

Consequently we are all members of the Society of Environmental Toxicology and Chemistry (SETAC) to whom we pay annual membership fees in US dollars. This fee gives online access to SETAC journals and member discounts to conferences and workshops globally, as well as discounts on publications, etc. The full benefits and entitlements of members are online at setac.org

A number of ASE members were already paid-up for 2011 at the date of transfer, and were given SETAC membership for 2011 at no further cost.

How to renew membership (also known as "paying your dues")

IMPORTANT - You may not get a reminder from SETAC. So if unsure whether you have dues to pay, or may have paid but then forgotten, **YOU** must log on to SETAC and **LOOK** to see if you have an unpaid invoice. Here is where to go to do this.

First, go to www.setac.org

The home page looks like this (see next page)

EndPoint Feature

SETAC Membership Renewal (cont'd)

The screenshot shows the SETAC website homepage. At the top left is the SETAC logo, which consists of three hexagons containing a bird, a plant, and a water wave, with the text 'SETAC' below them. To the right of the logo is a 'User Login / Journal Access' section with a text input field and a 'Go' button. Below this is a link for 'Create New Account - Forgot Password'. A horizontal navigation bar contains links: HOME, ABOUT SETAC, MEMBERSHIP, STORE, CAREER CENTER, CONTACT, ANNUAL REPORT, GLOBAL PARTNERS, PUBLICATIONS, COMMUNITIES, and E-KNOWLEDGE. Below this bar is a section for 'SETAC GEOGRAPHIC UNITS' with links for EUROPE, ASIA/PACIFIC, LATIN AMERICA, and NORTH AMERICA. On the left side, there is a vertical menu with links: JOURNALS, MEETINGS, ADVISORY GROUPS, COMMITTEES, GEOGRAPHIC UNITS, CHAPTERS AND BRANCHES, AWARDS AND GRANTS, and a 'WEBSITE SEARCH:' field with a 'GO' button. The main content area features two large images: one of trees with the text 'Environmental Quality Through Science' and another of a wave. Below these images are social media links for Twitter, LinkedIn, Facebook, YouTube, and RSS. At the bottom, there are three sections: 'SETAC News' with a date 'November 24, 2011' and text about the 6th SETAC World Congress; 'Welcome to SETAC' with a description of the society and its mission; and 'Coming Meetings' with a poster for the 'BERLIN SETAC World Congress 2012'.

Next, you enter your User Login (normally your surname) and your password (it's a 6 digit number sent to you by SETAC). If you forgot your surname, ask a trusted colleague. If you forgot your number, use the "Forgot Password" button and it will be emailed to you. Be patient, it may take a while for that email to arrive. Remember Apollo 13? Well, Pensacola is not that far from Houston, - - - but I digress - - - .

With a successful log in, you should have ended up here:

The screenshot shows the SETAC user dashboard after a successful login. The top header features the SETAC logo and the text 'setac.org'. Below the header is a navigation bar with links: HOME, SETAC STORE, SETAC MEETINGS, MY SETAC, and CONTACT SETAC. The main content area is divided into two columns of links. The left column includes: SETAC Journals, Go to Shopping Cart, My Receipts, Join SETAC/Reg.Chapters, Profile, The SETAC Store, and SETAC Communities. The right column includes: Member Status, Pay Outstanding Invoices, Subscribe, Add Event Items to your Registration, Directory Lookup, and a search bar labeled 'SETA Search through the Directory'. At the bottom, there is a footer with the text '©SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY' and a 'WEBMASTER' link.

EndPoint Feature

SETAC Membership Renewal (cont'd)

If you click on "Member Status" (top of right hand column), you will get your current payment status (date joined, type of membership, date paid up to, etc.). Yes, I know the date format is not what we are used to, but remember this is Apollo 13 territory! You can figure it out (trust me, I'm a scientist like you) it's month, day, year. Logical, huh?

If you click on "Pay Outstanding Invoices" (next station down the right hand column), you will see an invoice for your 2012 "dues" (that's what you owe). Unless of course you have already paid them!!!! In that case, log out (actually there is no logout button – you just close that browser window). Why, you ask? Well remember what happened on Apollo 13 and you have your answer!

You may of course have other invoices (for example you bought something from the SETAC store – station 6 on the left hand column).

You can also see any unpaid invoices at "My Receipts". (Houston logic)

NOW for the paying part !! (drum roll optional)

You do this at the "Pay Outstanding Invoices" page (if you are not there, you need to get there by fair means or foul). If you are totally lost, start again by logging in at setac.org

So, here we go:

1. click "add to shopping cart". (this puts your invoice into the virtual shopping cart).
2. Click "go to checkout". (yes, well, - on screen that is).
3. Choose your payment type:

Option 1: **If you choose "check"** (which translates as "cheque") you will end up with a printable invoice that you can staple to your international cheque (in US\$ purchased from a bank of your choosing) and mail off to Pensacola. This is a slow and expensive option. Possible but not recommended.

Option 2: **If you choose one of the offered credit cards** you get a window for entering your card details, fill it in, press "Submit Payment" and you are done!

WHAT CAN GO WRONG?

In a word – "heaps". But help is at hand!!!

If the invoice seems wrong, or your name and details are muddled, go to "Profile" and choose "Edit" and fix it up.

There is also an email address to go to with things you can't fix yourself

FINALLY:- A SPECIAL NOTE FOR MEMBERS IN PNG

We understand that there are difficulties in transferring payment in Kina to US\$ without paying high bank charges. We are making arrangements to avoid this problem and the SETAC AU Treasurer will email you individually explaining how to renew your membership in Kina from 31 December 2011. PLEASE DO NOT PAY your SETAC invoice direct to SETAC. Wait until you get your email from the SETAC AU Treasurer.

Munro Mortimer (munro@ozemail.com.au)

Conference Announcements



Navigating through extreme weather events in a changing environment: Implications for environmental toxicology and chemistry

4th – 6th July 2012, Brisbane, Qld

<http://www.setac.org/sapau/brisbane2012>



Invitation

We are thrilled to be hosting the 2nd SETAC AU conference – BNE2012 in July 2012. Sessions and session chairs are now finalised, and we are keen to hear back from you. We hope you are thinking of putting in an abstract!

Who should attend

We are pleased that **Prof Martin Holmstrup** (Aarhus University), **Dr Robert Letcher** (Environment Canada) and **Prof Jenny Webster-Brown** (University of Canterbury) have all accepted our invitation to present a key-note address at the conference. More information will be available shortly on the conference website (<http://www.setac.org/sapau/brisbane2012/speakers.html>).

Abstract Submissions

We have opted for short abstracts (300 words max), and decided against a lengthy revision process – and so the abstract submission deadline has been extended to the 10th of February 2012, about 3 months away. Don't forget to put it into your calendars! Submission couldn't be easier: download the template from the website (<http://www.setac.org/sapau/brisbane2012/abstract.html>), and email your completed abstract to brisbane2012@setac.org.

Conference Announcements

SETAC Au Brisbane 2012 (cont'd)

Session Topics

- Impact of extreme weather events and climate change
- ET&C in extreme environments
- Micropollutants and emerging contaminants
- Metals
- Mixtures and multiple stressors
- Environmental monitoring
- Biomarkers and biosensors
- Soil and sediments
- Water quality
- Air quality
- Environmental impacts of coal seam gas
- Risk assessment and environmental guidelines
- Salinity
- Statistics and computational techniques

Student Travel Awards

Good news for struggling students: 8 travel awards of \$800 will be awarded for the conference. See the note on page 22 for more details on how to apply.

Venue and Accommodation

The conference will be hosted at the St Lucia Campus of the University of Queensland. We are putting together a list of both on- and off-campus accommodations. The St Lucia campus is easily accessible by bus (12 min) or CityCat (25 min) for those who would prefer to stay in Southbank. Once finalised, the options will be listed on the website (<http://www.setac.org/sapau/brisbane2012/accommodation.html>).

Important Dates

Abstract submission closes:	10 February 2012
Abstract acceptance notification:	1 March 2012
Student travel award application due:	10 March 2012
Early bird registration closes:	4 May 2012
Conference:	4-6 July 2012

For further information

If you would like further information, please visit the official conference website at <http://www.setac.org/sapau/brisbane2012>, or send us an email at brisbane2012@setac.org.

Award Announcements

Brisbane 2012 Student Travel Awards

SETAC AU is offering 8 STUDENT TRAVEL AWARDS each of \$800 to assist student members of SETAC AU to attend the Brisbane conference in July 2012. These awards are intended to assist students with the cost of registration, travel and accommodation to attend the conference.

Eligibility; A student member of SETAC AU on or before 1 December 2011, who is presenting (oral or poster) at the Brisbane conference in July 2012.

The applicants will be ranked on the basis of merit by a selection panel appointed by SETAC AU Council against the following criteria:

- Length of time as a member;
- Stage of completion of course of study and whether part or full time;
- The availability of other sources of assistance;
- Nature of presentation (oral or poster);
- Proposed session and relevance of the proposed presentation to the session;
- Previous ASE or SETAC travel award assistance.

Applications should include a brief (no more than 150 words) statement by the applicant arguing their case for assistance and include a copy of their abstract.

Applications close on the 10th of March 2012. Applications (addressing each of the above criteria, in order) should be emailed to Dr Scott Wilson s.wilson@cqu.edu.au.



Contaminated Site Assessment, Remediation and Management (CSARM)



UNIVERSITY OF
TECHNOLOGY SYDNEY

Professional Development Short Courses for Environmental Scientists

Six self contained modules are presented throughout 2012 and will cover the legal and regulatory requirements governing CSARM, site and risk assessment approaches to investigation, remediation plans and site management reporting obligations. Presenters include regulators, site auditors, environmental law experts and academics specialising in this complex field.

2012 Program Available Now – Registrations Open – only 25 places available per module

YOU SHOULD ATTEND IF YOU ARE

- An ecologist, ecotoxicologist, environmental scientist, environmental health officer, manager or consultant seeking to update your knowledge,
- a new graduate entering this multidisciplinary field, as part of your career development
- thinking about a UTS Master of Science, by coursework, program – the CSARM courses contribute 18 credit points

2012 Program at a glance:

Module A: Ground Rules for Contaminated Sites 8th -10th February, 2012

Module B: Effective Site Assessment 28th - 30th March, 2012

Module C: Demystifying Contaminants 30th May - 1st June, 2012

Module D: Contaminants and Toxicity 18th - 20th July, 2012

Module E: Risk-based Site Assessment 19th - 21st September, 2012

Module F: Remediation Principles and Closure 7th - 9th November, 2012

Cost per module (GST incl.): \$1340, Early Bird registration (closes 3 weeks prior to each module) \$1139. Two or modules \$1050

For more information, contact Marea Martlew 02 9514 1766, marea.martlew@uts.edu.au
2012 Program details at www.science.uts.edu.au

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This form is a tax invoice when a payment is made

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☐ Cheque enclosed
(please make payable to ASE in AUD)

☐ Credit card
(Mastercard or VISA only - please complete below)



☐ Mastercard ☐ VISA For the amount of: AUD\$ _____

Card number

Name _____ Expiry date /
(please print name as it appears on card)

Signature _____ Date _____

Return this form with your payment in AUD to:

Munro Mortimer
54 Highcrest Drive
Browns Plains, Qld 4118
Australia

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Student Reps	Tom Cresswell/Bianca Sfiligoj (Aust) Tristan Stringer (NZ)

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