NEWSLETTER

Endpoint

SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY AUSTRALASIA
(SETAC AU)

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CONTENTS

SETAC AUSTRALASIA

Message from the Editor

Welcome to the final edition of Endpoint for 2016. While the last edition only came out in September, it's been a busy few months and we have another jam packed edition for you.

You can read about exciting work that's going on in New South Wales, Queensland and South Australia in the Regional Reports section, and get to know two members, Steven Melvin and Divya Vinod, who are featured in the General Member Profile and Student Profile, respectively. A number of SETAC AU members have recently been recognised internationally, with Jenny Stauber, Mike McLaughlin and Chris Hickey named as 2016 SETAC Fellows, Graeme Batley receiving the SETAC Asia Pacific Lifetime Achievement 2016 award and Francesca Gissi awarded the SETAC/Proctor and Gamble Doctoral Fellowship for 2017. Congratulations to all!

A number of conferences were held over the last couple of months and you can read the reports (and check out some great photos!) from SETAC-AU Hobart 2016 and EmCon2016 and WiOW2016 in the Conferences and Workshops section.

Our student team has been very busy, with a packed student program at Hobart. Francesca Gissi, Nicole McRae and Rhys Cartlidge have been working together to establish the Asia Pacific Student Advisory Council. More details can be found in the Student Corner section.

Julia Jasonsmith and Rick van Dam represented SETAC AU at the Science & Technology Australia (STA) event Science meets Business in October and have provided an insightful overview of the event. Speaking of STA events, Science meets Parliament on again in 2017 and SETAC AU can nominate two members to attend. It's a great event and I would encourage SETAC AU members based in Australia to consider applying. Further details can be found in the Awards and Prizes section.

A quick update on the SETAC AU Mentor Programme, which aims to foster a collegiate society by improving the technical and career development of members - ten members have registered as mentees, but only three members have registered as mentors. Before pairing mentors with mentees, programme coordinator Tom Cresswell would like more mentors to be involved. Further details about this wonderful incentive can be found in the SETAC AU Mentor Programme section.

This is my first edition of Endpoint and I would like to thank Kath Hassell for the great job she's done editing Endpoint over the last year. I would also like to give a big thank you to Kath and Erik Prochazka for all their help getting me up to speed for this edition. Finally, thank you to everyone who contributed to this edition. We are always looking to improve Endpoint, so please get in touch if you have any suggestions for future editions.

Finally, I would like to wish everyone a very merry festive season and all the best for 2017!

Peta Neale (p.neale@griffith.edu.au)
Communications Officer

From El Presidente

Well it's getting close to the end of the year, and what an incredible year it has been for SETAC AU.

The Hobart conference was a great success. The conference was very well attended, and the quality of the science and the presentations were outstanding. I wish to personally thank Cath King, Kate Kiefer, Munro Mortimer and all the others on the organising committee for their brilliant work and dedication, it was wonderful to see it all come together.

In addition to the traditional sessions there was a wide range of extracurricular activities at Hobart, from student socials to the buddy program, and diverse range of workshops. Again, many thanks to all those involved in these activities. This was also the first conference where we had direct interaction with the general public via the Reddit "Ask us Anything" session – thank you to Francesca Gissi and to all those who offered their services during the session. While the questions covered a breadth of topics, the key areas of interest were plastics in the environment, climate change, endocrine disruptors and nanomaterials.

Speaking of conferences, as previously emphasised the Council is trying to restructure the way we organise our conferences, and most importantly, to minimise conflicts with SETAC Asia Pacific. As such, we have decided to organise AU conferences on alternate years to Asia Pacific, i.e. AU will now be held on odd numbered years. Work is already underway for organising next year's conference, which will be held adjacent to a DGT conference at the Gold Coast in September 2017. Di Jolley and Will Bennett are co-organising the meeting, and we shall keep you posted as details emerge.

In contrast to the previous statement, SETAC AU has also recently submitted a bid to hold the 2020 SETAC World Congress in Brisbane. At the time of writing, we are still awaiting to hear which city was successful, and I will keep you posted on the outcome as soon as I hear. An enormous amount of effort has gone into preparing and presenting the bid, and I just want to thank everyone involved, especially Tom Cresswell who did an exceptional job of pitching the conference to the World Council. In addition I would like to thank the team at Brisbane Marketing, the Brisbane Convention Centre and the Brisbane Council for all their support, my fingers are crossed.

After numerous reiterations, and a vote only slightly less contentious than the recent USA election, SETAC AU has a new logo! Many thanks to Tristian and Sommer for your patience, artistic skills and tenacity.

For those who were unable to attend the Hobart conference dinner, you may be unaware of the outcomes of the various SETAC AU awards and prizes. This year was extremely competitive, and my congratulations to all nominees.

The 2016 recipients are:

Mid-Career Medal: Dr Grant Hose

Early-Career Medal: Dr Anne Taylor

National Travel Fellowship: Dr Sara Long

Postgrad Research Publication Award: Thi Kim Anh Tran

Thesis Prize: Jennifer Halstead & Emma Knight

From El Presidente

As highlighted in this issue of Endpoint we are also currently taking nominations for Science Meets Parliament which will be held in March 2017. Please note that as the event relates specifically to the Australian parliament, applications are only available to Australian members.

As you are all aware we now have a new Council subsequent to voting at the Hobart AGM. While there many familiar faces, I wish to extend a warm welcome to our new members: Katelyn Edge, Chantal Lanctôt, Steven Melvin, Peter Bain, Minna Saaristo and Kundo Hundang. One obvious change which will leave a huge hole in our Council is the departing of our Past President, Di Jolley. Di, I cannot thank you enough for all the support and guidance you have given to SETAC AU and myself.

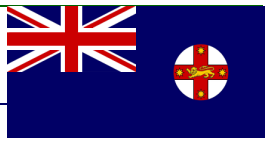
Finally, on a personal note, after 11 years at the Centre for Environmental Contaminants Research (8 of those with CSIRO), I have decided that it is time for a change. Consequently, I have decided to take on the position of Lecturer in Conservation Biology at Macquarie University. I'm extremely excited by the prospect, as the position will give me the opportunity to expand my research, keep a close eye on Grant Hose, as well as teach, something I am very passionate about.

Wishing you all a wonderful and safe New Year.

Anthony Chariton
President

Regional Reports

New South Wales



Aquatic Ecosystems group, ANSTO Environmental Research – Tom Cresswell
(tom.cresswell@ansto.gov.au)

Experimental work on the bioaccumulation and retention of radio Cs and Sr by mangrove crabs has now been completed and Tom is writing up the results, which he presented at SETAC AU in Hobart. One of the more interesting findings of the study was that when *Paragrapsus leavis* moult (ecdysis) during aqueous exposures, they significantly increase the rate of ^{85}Sr bioaccumulation for more than 46 days. Conversely, post-moulted crabs not only decrease their rate of ^{134}Cs bioaccumulation but they actually depurated ^{134}Cs for up to 20 days post-moult during constant exposure while their non-moulted cousins continued to bioaccumulate ^{134}Cs. Suggested answers for this phenomenon on a postcard to Tom please ☺

ANSTO Graduate Program member Emily Prentice has left the team on maternity leave and will be sorely missed. Emily's project on radionuclide sorption to microplastics has revealed that there was a greater amount of ^{134}Cs and ^{85}Sr adsorbed in the presence of biofilms (as yet uncharacterised) than in their absence. We hope to write up and publish the results from Emily's study in the coming months.

A recent project seed fund has been awarded to Tom Cresswell and Mat Johansen from the group, along with Di Jolley from the University of Wollongong (UoW) for a joint ANSTO/UoW project investigating the potential impacts of naturally occurring radioactive material (NORM) scale to aquatic ecosystems. The NORM scale builds up in sub-sea oil and gas pipes and can potentially provide a radiological dose to benthic organisms inhabiting the area surrounding the pipes. In cases of pipe corrosion, this NORM scale could also provide a direct chemical and radiological source to organisms.

University of Technology Sydney PhD student Divya Vinod has continued to work on selenium uptake in edible plants vitamin greens and sunflowers to phytoremediate contaminated mine sites. Currently, she is trying to hone in on the size of the proteins that the selenium is bound to using 1D SDS-PAGE. After the autoradiography and the cell fractionation work is complete on the final plant early next year she will be heading back to UTS to take a more detailed investigation on the selenium incorporation into protein.

CSIRO Land and Water, Lucas Heights, Aquatic Contaminants Group, Lisa Golding
(lisa.golding@csiro.au)

Jenny Stauber has been busy travelling overseas giving plenary presentations at SETAC AP in Singapore in September and at the SETAC World Congress in Orlando, USA in November. Jenny was pleasantly surprised that she was nominated as a SETAC Fellow, joining Graeme Batley, Chris Hickey and Mike McLaughlin as the only SETAC Fellows in Asia Pacific. She has also been recently appointed to the Reef Water Quality Independent Science Panel, so is on a steep learning curve to better understand herbicide impacts on the Great Barrier Reef. When she is in Sydney (rarely) she is having fun co-supervising some fantastic PhD students and leading several projects on metals risk assessment in tropical systems (funded by NiPERA) and developing a framework for environmental report cards for the mining industry.

Graeme Batley was awarded the SETAC Asia Pacific Lifetime Achievement 2016 award at the SETAC Asia Pacific conference in Singapore. This award acknowledges an outstanding level of contribution consistent with the goals of SETAC over a prolonged period. The Lucas Heights team also had a special lunch in honour of Graeme's impressive achievement.

Regional Reports

New South Wales

Graeme Batley being presented with the SETAC Asia Pacific Lifetime Achievement award by Ross Smith at the September 2016 meeting in Singapore.

PhD student Megan Gillmore and co-supervisor Lisa Golding made a recent visit to New Caledonia to present at a seminar day on research being conducted on the environmental and human health impacts of nickel mining in New Caledonia as part of the National Centre for Technological Research (CNRT) "Nickel and its environment". The collaboration was formed through the Nickel Producers Environmental Research Association (NiPERA) that funds Megan's PhD and connections through co-supervisors Jenny Stauber and Di Jolley. Fieldwork was also conducted as part of Megan's PhD investigating the effects of sediment exposure to nickel on tropical marine benthos. Megan will explain more about this in the next newsletter.

Megan Gillmore (front row far right) and Lisa Golding (front row far left) with CNRT researchers (front left to right: Peggy Gunkel-Grillon, Sylvaine Cordier, back left to right: Yannick Dominique, Farid Juillot, France Bailly) investigating the human health and environmental impacts of nickel mining in New Caledonia.

Regional Reports

New South Wales

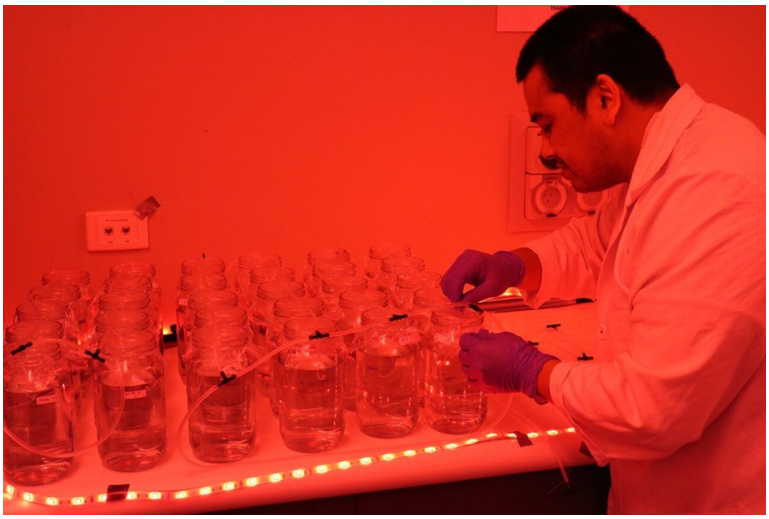
CSIRO Oceans and Atmosphere, Lucas Heights, Molecular Ecology and Toxicology Team, Sharon Hook (Sharon.Hook@csiro.au)

Francesca Gissi has had a successful year firstly receiving an AINSE Postgraduate Research Award which allows her access to the facilities at ANSTO, specifically the ITRAX XRF core scanner which will contribute to the research Francesca has been doing with Amanda Reichelt-Brushett (SCU) and Anthony Chariton (CSIRO) studying the uptake and distribution of metals in corals. This follows on from the experiments that Francesca, Amanda and Anthony did at the SeaSim facility in Townsville.

More recently, Francesca has been awarded the SETAC/Proctor and Gamble Doctoral Fellowship for 2017. Francesca's PhD project (Development of new risk assessment tools for nickel in tropical marine environments) is a collaboration between CSIRO, University of Wollongong and NiPERA (Nickel Producers Environmental Research Association), supervised by Dr Jenny Stauber (CSIRO) and A/Prof Dianne Jolley (UOW).

Sharon Hook has recently completed a project looking at the sensitivity of larval prawns to modern use pesticides on behalf of the Australian Prawn Farmers Association. The experimental work was done with Hai Doan and Deb Gonzago from Anu Kumar's team at the Bribie Island Research Station (jointly run by CSIRO Agriculture and Queensland DAFF). We had to "red out" all the lights, to minimize the stress to the larval prawns.

Announcement at SETAC North America, Orlando that Francesca Gissi was awarded the Proctor and Gamble Doctoral Fellowship for 2017.



Hai Doan from CSIRO Land and Water, Adelaide working on larval prawn experiments under "red-out" conditions with Sharon Hook from CSIRO Oceans and Atmosphere, Lucas Heights.

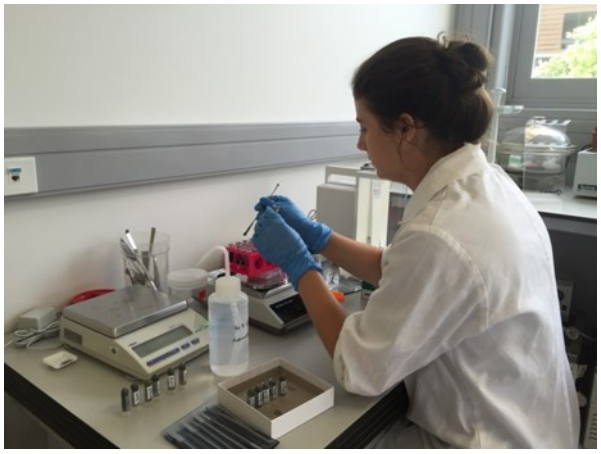
Applied Marine and Estuarine Ecology Lab, University of New South Wales – Dr Katie Dafforn (k.dafforn@unsw.edu.au)

We've had an exciting 2016 at the Applied Marine and Estuarine Ecology (AMEE) Lab. Our Director, Professor Emma Johnston, became the new Pro Vice-Chancellor (Research) at UNSW. While keeping up a busy research schedule, Emma has also been able to promote gender equality in science and increasing science representation in political decisions. Drs Graeme Clark and Ana Bugnot together with Emma embarked on an exhaustive review of "Coasts" for the State of the Environment Report 2016. We welcomed Sebastian Vadillo Gonzalez from Mexico who begins a PhD in sediment bioremediation with Emma, Katie and Paul Gribben (UNSW).

Regional Reports

New South Wales

We were also joined (briefly!) by Hannah Ward who completed a trans-Tasman honours project in macro-micro interactions under increasing sedimentation stress. This was done in collaboration with Professor Simon Thrush, Jen Hillman and Teri O'Meara from the University of Auckland.



Hannah Ward collecting mud from Mahaurangi Harbour and playing with DNA.

The Sydney Stormchasers, while no longer on weatherwatch, have been busy wrapping up data analyses and interpretation of stormwater impacts on microbes in sediments. Michael Sutherland published our first findings on links between contaminant hotspots in low flow estuarine systems and altered sediment biogeochemical processes in Estuarine Coastal and Shelf Science. Our bumper crop of 2016 PhD completions included Simone Birrer. Her thesis was titled "Microbes, contaminants, and molecular biomonitoring: Structural and functional sediment community responses to multiple stressors" and she has since begun a busy postdoctoral year of research with us. Upon handing in, Simone jetted off to the Torres Strait for a NESP collaborative project with JCU, CSIRO and AIMS that will investigate marine microbial communities in this remote region. Simone will also manage water quality microbial monitoring in the Hunter River in collaboration with the Water Research Laboratory (UNSW), UTS and Hunter Water. Our recent invited book chapter "Microbial community responses to contaminants and the use of molecular techniques" in Microbial Ecotoxicology synthesizes some of this progress in microbial biomonitoring and ecotoxicology.

(Left) Simone and partner Dominic synchronise PhD hand-ins! (Right) Suiting up to chase microbes in Torres Strait.

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We also organised a symposium titled "Land-based threats to coastal ecosystems" at the Society for Conservation Biology Oceania conference in Brisbane in July. In this symposium we had talks about a wide range of areas – from research to management strategies, from fish over reef and water quality to sediments – many including the use of modern techniques, such as remote sensing, molecular approaches and modelling.

Katie has also been busy communicating results from the stormwater study at the Ecological Consultants Association of NSW Conference and Edith Cowan University Research Week. She was excited to represent UNSW at the Universitas 21 Early Career Workshop in Scotland on 'Big data at the heart of 21st century research'. Closer to home Katie supported NSW OEH, Geoscience Australia and CSIRO as a co-convenor of the 30th National Estuaries Network Meeting and Conference Day. The theme this year was "Threats and risks in heavily developed estuaries: lessons from Sydney Harbour" where microbial biomonitoring, microplastics, modelling and eco-engineering of artificial structures took top billing.

(Left) Dr Kate Wilson, NSW OEH, opens the 30th National Estuaries Network Conference Day hosted at UNSW. (Right) NEN delegates tour research sites in Sydney Harbour with Katie.

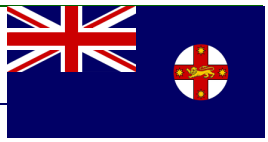
Our lab members continue a strong focus on manipulative investigations of contaminant stress. A recent publication from Mark Anthony Browne and Mariana Mayer-Pinto explores contaminant dosing systems. Jaz continues a post-PhD publication blitz, describing effects of "contaminant cocktails" in marine systems while on maternity leave with the newest AMEE lab member, Ruby. She has also published her study of biofilm change in response to elevated nutrients.

Mark and Emma's recent honours student Jen Halstead completed an insightful thesis on microplastics that was titled "Microplastics and non-synthetic fibres in the guts of wild caught fish from an urban estuary". Stay tuned for the forthcoming publication! There has also been another paper from the NCEAS Marine Debris Working Group that Mark co-led titled "The ecological impacts of marine debris: unraveling the demonstrated evidence from what is perceived".

Jennifer Halstead receiving the SETAC AU Thesis Prize at EmCon2016 and WiOW2016.

Regional Reports

New South Wales



Environment Protection Science, Office of Environment and Heritage (OEH), Katelyn Edge (Katelyn.Edge@environment.nsw.gov.au)

Karl Bowles from Environment Protection Science Branch (NSW Office of Environment and Heritage (OEH)) was Highly Commended for Exceptional Performance. Karl was nominated for providing high quality scientific advice to the NSW Expert Panel and the EPA on the PFAS contamination issues at the Williamtown Royal Australian Air Force base.

Karl Bowles (NSW, OEH) receiving the award for exceptional performance from OEH Chief executive - Terry Bailey.

Lisa Golding (lisa.golding@csiro.au)
NSW Regional Representative

Regional Reports

Queensland

Smart Water Research Centre – Fred Leusch, Jason van de Merwe, Steve Melvin, Peta Neale, Erik Procházka, Kimberly Finlayson, Chantal Lanctôt, Stephanie Chaousis, Shima Ziajahromi and Hannah Allan

Just a brief update from the Gold Coast since the last volume of Endpoint! Several current and previous team members were present at the Hobart conference.

Erik Procházka, Steven Melvin, Chantal Lanctôt, Peta Neale, Hannah Allen and Olivia King, at the banquet dinner.

Erik Procházka is currently taking a short leave from his PhD so that he can help out in various research and administrative roles around the University. He has recently been appointed on a 6-month contract (60%) as the OHSW Coordinator for the Australian Rivers Institute, and is also working as a casual Research Assistant for several projects through the Smart Water Research Centre. For example, he is currently working on a project validating a qPCR method for absolute quantification of *Bacteroids dorei* from different sources of fecal contamination, such as human, horse, foul, cow and sheep.

Jason van der Merwe and **Frederic Leusch** are continuing their research exploring ethical alternatives for exposure and effects assessment of contaminants on wildlife. PhD students **Kimberly Finlayson** and **Stephanie Chaousis** have been diligently working in this space, and **Gülsah Dogruer** has recently joined the group. **Gülsah's** project will work to 'couple metal exposure to adverse health effects in the endangered green sea turtle'.

Steven Melvin has been continuing his research on behavioural effects in fish exposed to environmental pollutants. The research he presented in Hobart was recently accepted in the journal Aquatic Toxicology – check it out online. Steven is currently hosting two Research Assistants from France, **Marie Petit** and **Marion Duvignacq**, who are continuing this line of research.

Along with behavioural ecotoxicology, **Steven** has been collaborating with **Frederic Leusch** and environmental chemist **Anthony Carroll** to develop a robust metabolomics workflow for toxicity testing and environmental monitoring. They have recently applied ^{1}H NMR spectroscopy to investigate sub-lethal physiological effects in larval amphibians exposed to pharmaceuticals. Keep an eye out for some very cool research in this space!

The work that **Peta Neale** presented at Hobart on applying chemical analysis and bioassays to assess the micropollutant burden in the Rhine catchment has now been published in Science of the Total Environment and can be found here.

Steven D Melvin (s.melvin@griffith.edu.au)
Queensland Regional Representative

Regional Reports

South Australia

Environmental Protection Authority South Australia (SA EPA) – Tracy Corbin (Tracy.Corbin@sa.gov.au)

The South Australian EPA have been busy recently conducting a project investigating the environmental harm of wastewater treatment plant discharges on freshwater environments and attempting to set discharge limits based on science rather than best managements practices by industry or compliance with guidelines. CSIRO Adelaide are assisting this project by conducting a series of toxicity tests, investigating endocrine disrupting potential using *in situ* caged studies and combining this with general water chemistry information, macroinvertebrate community biology and the University of Adelaide's study into the fate and processing of N. The next step is to conduct a mesocosm study and test different dilutions of the wastewater to determine the necessary dilution rate to minimise harm to the receiving waters. This will allow discharge limits to be determined.

The South Australian EPA has also started exploring the presence of tracers (pharmaceuticals and personal care products) in rural and urban streams across the state and we have also been surveying PFAS (per and polyfluorinated alkyl substances) in dolphins, fish and water in the Port River and Barker Inlet to evaluate its presence in waters and biota to understand risks from biomagnification. It is hoped that data on the magnitude and extent of PFAS in the marine environment will allow informed management of current discharges and chemical management and inform risk from legacy contamination already in the environment.

Contaminant Biogeochemistry and Environmental Toxicology Group, CSIRO Land and Water – Peter Bain (peter.bain@csiro.au)

Along with her role as group leader, **Dr Anu Kumar** has busy steering a number of projects involving international engagement. Among these are an Australia-India Strategic Research Fund (AISRF) project on the identification of key organic micropollutants in sewage effluents in India and South Australia and a DFAT-funded project on impacts of urban drains on river water quality in India. Anu travelled to India in September for AISRF project meetings at the Indian Institute of Toxicology Research (IITR) in Lucknow, and for discussions with other potential collaborators and funding bodies in Delhi. Anu also gave a presentation at Riversymposium 2016 in Delhi on the development of a water quality scorecard framework for the Ganga River. Anu presented highlights of recent work and co-chaired a session at the SETAC Asia-Pacific conference in Singapore, and co-convened the EmCon/WiOW 2016 conference in Sydney along with Dr Rai Kookana. **Dr Tulsi Tyagi** is currently visiting Anu's group at the CSIRO Waite campus as an Endeavour Fellow. **Dr Marijana Markovic** joined Anu's group this year from Serbia, initially as a volunteer fellow. Marijana was recently awarded a University of Adelaide Postdoctoral Fellowship to continue her work on graphene ecotoxicology, which will be supervised by Anu Kumar, Mike McLaughlin and Dusan Losic. Congratulations Marijana!

Anu Kumar and Peter Bain with project partners from the Indian Institute of Toxicology Research on a sampling trip to the Ganga River in Allahabad, India.

Dr Peter Bain (i.e., 'I') also travelled to India for Anu's AISRF project this year, spending two weeks at IITR-Lucknow in March and a week in September for project planning meetings, sampling trips and knowledge-exchange activities. As part of the project I have been developing and

implementing *in vitro* screening tools for endocrine disruptors using nuclear receptors from fish. I presented some of this work at SETAC AP in Singapore and at EmCon2016 in Sydney. I have also been working on a project looking at transcriptomic responses to acid sulfate drainage water in freshwater shrimp, which was recently published in BMC Genomics, and I'm looking forward to extending our work with SA EPA on *in situ* effluent toxicity studies in the Mount Lofty Ranges.

PhD candidate **Navdeep Bal** has made some interesting findings on the effects of glucocorticoids in aquatic organisms and gave oral presentations at SETAC AP and EmCon2016. **Supriya Lath** is working on the application of functionalised graphene for adsorptive remediation of heavy metals and gave a talk on her PhD project at SETAC AU Hobart. **Shima Ziajahromi**, a PhD candidate from Fred Leusch's Smart Water group on the Gold Coast, made another fly-in-fly-out visit to Anu Kumar's group in Adelaide recently to continue her ecotox studies on microplastics. Shima also gave a talk at EmCon2016.

The CSIRO ecotox team is always delivering their expertise to a wide range of different projects, and have recently been developing some new and exciting techniques; **Hai Doan** and **Deb Gonzago** have established a honeybee larval bioassay to study pesticide toxicity, while **Adrienne Gregg** has developed a nematode bioassay for application in terrestrial toxicology. Hai, Deb and Adrienne gave poster presentations at SETAC AU in Hobart in October.

Mike McLaughlin (2nd from right) with members of the infrared spectroscopy team and commercialisation partners Ziltek Pty. Ltd. at the National Measurement Institute's awards ceremony.

Congratulations to **Prof Mike McLaughlin**, who received a prestigious SETAC Fellow award at the Asia-Pacific meeting in Singapore in September in recognition of his long-term scientific achievements and contributions to SETAC. He joins CSIRO colleagues Jenny Stauber who also received the award this year, and Graeme Batley who joined the ranks in 2015. While on the topic of awards, Mike and his infrared spectroscopy team received the **2016 Barry Inglis Medal** from the National Measurement Institute for their innovative work on rapid detection methods for total petroleum hydrocarbons in soils, which has culminated in the development and commercialisation of a portable hand-held device for on-site measurements.

Yet more congratulations are due to **Mike McLaughlin** for winning an ARC Discovery Grant with Rob Fitzpatrick (CSIRO and University of Adelaide) and Luke Mosely (University of Adelaide) to study the effects of drought on pH and metal speciation in soils, and develop tools to assess current and future risks.

Dr Rai Kookana and Mike McLaughlin were recently awarded a NSW Environmental Trust grant for a project on predicting leachability of perfluorinated chemicals from NSW soils, which will start next year. On top of many and varied projects, Rai has had a busy year chairing the organising committee of the highly successful International Conference on Emerging Contaminants (EmCon2016) and Micropollutants (WiOW2016) in the Environment, which was held at the University of Technology Sydney in September. Following the conference, Rai and Anu hosted two of the international speakers, Dr Larry Barber (USGS) and Dr Melanie Kah (University of Vienna), who gave presentations at CSIRO Waite campus and spent some time discussing potential collaborations (not to mention some sightseeing!).

Dr Mike Williams has been busy with a NSW EPA-funded project on microplastics in land-applied compost (led by Jason Kirby) and a related study on aquatic toxicology of biodegradable plastics. On top of CSIRO projects on honeybees and unconventional gas extraction, Mike is continuing his work on the uptake and toxicity of pharmaceuticals in plants, some of which he presented at EmCon2016, and is also playing a key role a project funded by Dow Chemical Co. on the fate of chlorinated solvents in groundwater. In his spare time (haha) Mike chairs the SETAC

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Pharmaceuticals Global Advisory Group; if you missed the special issue of ET&C on pharmaceuticals in the environment that Mike and colleagues put together back in April, it's certainly worth a look.

Dr Jon Judy has been busy with a number of projects including wrapping up his postdoctoral work on nanomaterials uptake and toxicity in plants, leading a project on colloidal nutrient transport in the Great Barrier Reef region, and working on the NSW EPA microplastics project. Jon has also been active on the conference circuit, presenting talks at EmCon2016, SETAC AU Hobart and more recently at the SETAC World Congress in Orlando.

Congratulations to **Emma Knight** who received the SETAC AU Honours Thesis Prize at the recent SETAC AU meeting in Hobart. Emma gave a talk at the conference on her project which looked at the bioavailability and uptake of carbamazepine in soil-plant systems. A summary of Emma's project can be found below. Emma also presented a poster at the EmCon/WiOW 2016 conference in Sydney. Nice work Emma!

Emma Knight receiving the SETAC AU Thesis Prize at Hobart.

Last but not least, former Waite PhD candidate **Casey Doolette** has recently published a paper in PLOS ONE, co-authored by a number of CSIRO staff including Jason Kirby and Mike McLaughlin, on the use of molecular techniques such as metagenomics to generate species sensitivity distributions (SSDs) and set microbial toxicity thresholds for various forms of silver in soil. Potentially a very influential publication.

Peter Bain (peter.bain@csiro.au)
SA Regional Representative

Bioaccumulation, uptake and toxicity of carbamazepine in soil-plant systems—Emma Knight

My Honours research in soil science was conducted at the University of Adelaide and CSIRO Land and Water, Waite campus. For my Honours I investigated the bioaccumulation, uptake and toxicity of the active pharmaceutical ingredient (API), carbamazepine, in *Cucurbita pepo* (Zucchini). Carbamazepine has been detected in soils after the application of biosolids and use of reclaimed wastewater for irrigation purposes. However, we know very little about the terrestrial risks associated with this API. The aim of the research was to determine if carbamazepine was translocated to the fruits and leaves of the zucchini plant and if API accumulation negatively affected the growth or phenology of the zucchini plant. Concentrations of carbamazepine were detected in all treatments (0.1 to 20 mg/kg) and plant organs (root, stem, old and young leaves). Visually, the older zucchini leaves (>9 cm) showed signs of necrosis and chlorosis which increased in severity with increased treatment concentration. An effect concentration of 1.03 mg/kg (EC_{10}) was determined for the chlorophyll content in the older leaves. The results from my research indicate that carbamazepine can be toxic to zucchini; however, the levels at which these toxic end points were measured were at concentrations higher than currently measured concentrations in the environment.

General Member Profile

Dr Steven Melvin

Current Employer:

I am currently working as an environmental toxicologist at the Australian Rivers Institute (ARI), as a Griffith University Postdoctoral Fellow (GUPF). Apart from my research activities, I am currently the SETAC AU regional representative for Queensland, and a member of the Editorial Board for the SETAC journal Environmental Toxicology & Chemistry (ET&C).

Research Background:

I received both my MSc and PhD in environmental toxicology from the University of New Brunswick, which is located in eastern Canada. I first came to Australia as a visiting research fellow during my PhD in 2010, where I worked with Associate Prof Frederic Leusch on various aspects of *in vitro* toxicology. After completing my PhD, I was employed by Prof Vance Trudeau at the University of Ottawa to work as a lead investigator on a project studying the toxicity of contaminants in oil sands wastewater on native amphibians. I was recruited in 2013 as a Postdoctoral Researcher at CQUniversity, where I worked for three years as an ecotoxicologist on a broad multidisciplinary project exploring treatment efficacy and toxicological risks associated with pond-based sewage treatment systems in rural Australia. A large part of this project involved developing and applying behavioural toxicity tests, the results of which allowed me to secure my current position to continue this area of research at Griffith University.

Current Research Interests:

My research is broadly interested in investigating the toxicity of pharmaceutical contaminants and other common wastewater pollutants on aquatic organisms. This includes continued research applying behavioural methodologies, but more recently I have also been using untargeted metabolomics techniques to explore disturbances to broad toxicity pathways in fish and larval frogs. Specifically, I have been developing experimental methodologies using 1H Nuclear Magnetic Resonance (NMR) spectroscopy, to identify biochemical markers of exposure in animals exposed to different classes of pollutant.

The ultimate goal of my research is to improve our understanding of sub-lethal toxicological responses in aquatic wildlife exposed to environmental pollutants. To achieve this, I strive to apply cutting-edge experimental approaches to yield the most comprehensive information possible from individual toxicity tests.

Please contact Peta Neale (p.neale@griffith.edu.au) if you would like to be featured in an upcoming edition

Student Profile

Divya Vinod

Name: Divya Vinod

Degrees held: Bachelors of Biotechnology and Bachelors of Arts in International Studies major in German

Institution: University of Technology, Sydney

Supervisors: Dr Luigi Defilippis
Dr Tom Cresswell

Est. Compl. March 2018

Thesis Title: *Selenium Toxicity and Hyperaccumulation in Selected Plants, and Possible Incorporation of Selenium into Proteins Using Plant Tissue Culture and Proteomics*

Email: divya.g.vinod@gmail.com

About me

I was interested in how things works. Biological processes in the human body drew me in, but I didn't want to lock myself into a medical related field so I enrolled in a biotechnology degree and international studies degree majoring in German. The biotechnology course covered mainly human biochemical processes, but it also had a few subjects with environmental biochemistry which appealed to me the most because it looked at cellular processes that are built upon to allow the organism to function, which was (and still is) mind blowing.

After having covered the subject plant biotechnology in the semester before heading to Germany, I found out that the lecturer for that subject, Lou, would also be in Germany, so in 2011 after having travelled through Europe, I decided to track down my now supervisor and check out what was going on in the lab he was in at the University of Tubingen, Germany. This experience was pivotal in leading me to the field I am in now. I set eyes on the most amazing botanical gardens at this university that I had ever seen, so on my return to Sydney I finished my degree and decide to enrol into a MSc in Science Research looking at selenium uptake in plants.

PhD Research

Coal mining in Australia injects billions of dollars into the economy each year but the extent of the impact, let alone remediation efforts, is less investigated. Selenium is a naturally occurring element that is heavily associated with coal mining. In small concentrations it is essential for the normal functioning of the human body and animals; however, it can easily become a toxic element at higher concentrations in the environment as may occur at sites surrounding coal mines. During the process of coal mining, selenium is surfaced and in contact with air and water, and selenides and elemental selenium transform into extremely water soluble forms of selenium, i.e. selenite and selenate. Given the solubility of these forms of selenium they are easily taken up by many organisms which can lead to infertility in fish upon entering waterways and if this water is used for irrigation, then the terrestrial environment is also affected as a result of soil contamination.

My project involves exposing various plants, such as sunflowers known for their successful use in phytoremediation and a selenium hyperaccumulating legume, to determine how effective they are at absorbing selenium and its metabolism on a whole plant basis down to a protein level.

After determining the concentrations, selenite and selenate were most tolerant by the plants, I performed 16 different types of reactive oxygen species enzymes and metabolite assays. After this, using selenium 75 radiotracer, made at ANSTO, I was able to observe where the selenium is accumulating by whole plant autoradiography and perform a cell fractionation procedure based on soluble plant proteins, which demonstrated that

selenium is bound to protein. The information gathered in the above stages will inform my direction in the final stage of my project, which is to determine if the selenium is actually bound to the protein and if not, how it affects various plant proteins. This information will form the basis for the potential use of plants for mine site remediation, particularly selenium.

Where to from here

Right now, the plan is to find my inner author, write, and go for the home run while finishing the last stage of my project. At this point in my PhD, I have realised that there are a lot of areas that I am developing an interest in continually. So far, I have been doing work with plants, but getting to complete part of my work at ANSTO and being involved with SETAC, thanks to my supervisors, has opened my mind up to other areas of environmental research. I am open to applying my biochemistry skills and proteomics knowledge across other areas of environmental science, particularly the impacts of contaminants on a protein basis within plants/animals. I enjoy lab work but I am also keen to get some exposure to field work in whatever comes next. It would be ideal to apply the findings in the lab to real-life environmental concerns to do justice to the research.

Please contact Francesca Gissi (Francesca.Gissi@csiro.au) or Nicole McRae (Nicole.mcrae@pg.canterbury.ac.nz) if you would like to be featured in an upcoming edition

Student Corner

SETAC-AU Hobart 2016

Francesca Gissi (Francesca.Gissi@csiro.au)
Student Representative

Student representation at the SETAC-AU conference in Hobart was fantastic (35% of delegates attending were students), and the quality of the research presented by students was phenomenal. We had lots of great student activities including the buddy program, with thanks to Tom Cresswell, and the student networking evening which featured talks from two plenary speakers Dr Kathy Northcott (Veolia) and Associate Professor Christian Ritz (University of Copenhagen).

At this year's conference we ran our first ever Reddit AMA. During the session we had a total of 35 questions, 80 comments, and 473 people viewed our AMA. Hot topics up for discussion included climate change and the GBR, nanomaterials and pesticides. Our AMA can be viewed here.

Reddit is an online platform which facilitates outreach and encourages discussion between the community and practising scientists. The AMA's have been popular at both SETAC North America and Europe meetings, and SETAC Globe is encouraging AMAs at all SETAC conferences. We hope to run another AMA at our next SETAC AU conference.

Thank you to everyone who came along to help answer questions during the live AMA and a special thank you to Molly Hoak who helped me run the AMA remotely from Melbourne.

Reddit AMA session at Hobart.

Asia Pacific Student Advisory Council

Francesca, Nicole and Rhys Cartlidge (AP Student Representative) are working together to establish a Student Advisory Council in Asia Pacific. We have been working closely with SAC (SETAC Europe Student Advisory Council), NASAC (SETAC North America Student Advisory Council), and the SETAC Board to put together standard operating procedures for the Asia Pacific Student Advisory Council, which will be known as APSAC. The goal of APSAC is to facilitate communication between students within Asia Pacific and around the world, organise student activities (social networking, conferences, and workshops), and provide advice to SETAC councils and boards on student related issues. We are currently working on the structure of APSAC and soon we will be calling on all students in Asia Pacific to nominate for positions on council. Keep an eye out for an email from Rhys. If you have any questions regarding APSAC please contact Francesca Gissi (Francesca.gissi@csiro.au), Nicole McRae (Nicole.mcrae@pg.canterbury.ac.nz), or Rhys Cartlidge (rhys.cartlidge@rmit.edu.au).

Student Corner

SETAC World Council/North America meeting

Nicole McRae (Nicole.mcrae@pg.canterbury.ac.nz)
Student Representative

Rhys Cartlidge and I (along with a number of other AP and AU students) attended the SETAC World Council/North America meeting in Orlando, Florida. I think I can speak for both Rhys and myself in saying the breadth and depth of knowledge in our scientific field is outstanding. We also got to hear Vin Pettigrove, Bryan Brooks and the other Geographic Units wrap up the results from the Horizon Scanning Project that I know so many of us were involved in. We also attended Interest Group meetings, workshops, and of course the many social events.

For Rhys and I, attending SETAC Orlando provided an excellent opportunity to meet up with the other student leaders from around the world. For the first time at a SETAC meeting, student leaders were represented from all five GU's. We both presented at the North American Student Advisory Council annual meeting and at the All Students Assembly. It was a great way to showcase what we do in Asia Pacific, and also Australasia. We are going to increase communication with the other student leaders in the hope that we can increase student engagement with the society.

Student leaders representing the five GU's. From left: Alex McLeod (North America), David Drier (North America), Blair Paulik (North America), Damien Bolinius (Europe), Nicole McRae (Asia/ Pacific), Gustavo Santos (Latin America), Arinze Onwurah (Africa).

New Student Publications

Gagliardi, B. S., Pettigrove, V. J., Long, S. M., & Hoffmann, A. A. (2016). A meta-analysis evaluating the relationship between aquatic contaminants and chironomid larval deformities in laboratory studies. *Environ. Sci. Technol.* In press. *DOI: 10.1021/acs.est.6b04020*

Gissi, F., Stauber, J.L., Binet, M.T., Golding, L.A., Adams, M.S., Schlekat, C., Garman, E., Jolley, D.F. (2016). A review of nickel toxicity to marine and estuarine tropical biota with particular reference to the South East Asian and Melanesian region. *Environ. Pollut.* 218:1308-1323.

Ziajahromi, S., Neale, P.A., Leusch, F.D.L. (2016) Wastewater treatment plant effluent as a source of microplastics: Review of the fate, chemical interactions and potential risks to aquatic organisms, *Water Sci. Technol.* 74: 2253-2269.

If you are a SETAC AU student and have recently published a paper please send the reference to the Student Reps Francesca Gissi or Nicole McRae to have it included in the next edition of Endpoint

Conferences and Workshops

SETAC-AU Hobart 2016

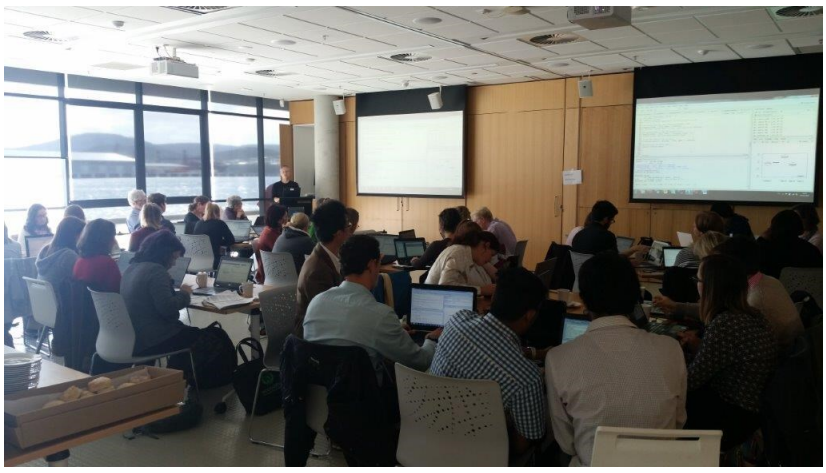
SETAC-AU
HOBART 2016

Industry, Science and Environment – Towards a Sustainable Future

4–7 OCTOBER 2016 – HOTEL GRAND CHANCELLOR, HOBART
WWW.SETACHOBART2016.COM.AU

The SETAC-AU 2016 conference was held in Hobart Tasmania for the very first time from the 4th-7th of October. The conference theme was "Industry, Science, and Environment - Towards a Sustainable Future" and attracted a total of 175 delegates from government, academia and business. While representation was greatest from Australia, a number of delegates made the long journey to our southern state from around the world, including from New Zealand, USA, Canada, Europe, UK, Japan, South Korea and South America. The conference was held at the Hotel Grand Chancellor on Hobart's waterfront, a great location in the middle of Hobart's historical city amongst numerous heritage buildings and museums.

Three pre-conference workshops covered an array of topics and provided applied skills and experience to delegates. The sold-out 'R' workshop was led by Dr Christian Ritz from the University of Copenhagen, and detailed statistical methods in ecotoxicology using R and covered basic programming skills for beginners. A scientific writing workshop, led by Dr Simon Wright, offered practical strategies for writing a scientific paper clearly and efficiently for publication and citation, and was particularly popular amongst postgrad students in the final stages of writing up their theses. The Oil Spill Response Monitoring workshop was led by Dr Sharon Hook and Paul Irving and provided practical and up to date guidance on appropriate, timely and accurate planning and implementation of spill responses and subsequent monitoring. The information covered in all three workshops remained hot topics of discussion throughout the conference.



Pre-conference R workshop led by Dr Christian Ritz.

The conference had a strong focus on encouraging and creating opportunities for our student membership and 30% of all attending delegates were students. Many students participated in the mentor buddy-system, which paired students with established members of our SETAC AU community. This included a buddy-breakfast and an evening drinks event at a local pub to meet and greet buddy partners, as well as addresses by invited speakers. We received very positive feedback from these events and the mentor buddy-system as always was a great chance for students to get to know more members and make new contacts within the society that will help foster their professional futures.

Conference Opening by Dr Nick Gales, Director, Australian Antarctic Division.

The conference was officially opened by Dr Nick Gales, Director of the Australian Antarctic Division, who set the scene well for the local flavour of the conference, and particularly the special session on "Risk assessment, ecotoxicology, and remediation in extreme

environments". The conference program offered three concurrent sessions packed with stimulating presentations. Other special sessions included 'Perfluorinated and brominated chemicals - Fate and consequences', 'Natural resource industries – impacts and remediation', and 'Toxicity of pharmaceuticals and micro pollutants'.

We had a great series of thought-provoking plenary presentations by Associate Professor Christian Ritz (University of Copenhagen), Dr Kathy Northcott (Research & Technical Manager, Veolia Australia-New Zealand), and this year's Tony Roach Memorial Address was given by Associate Professor Amy Ringwood (The University of North Carolina). Keynote presenters included Associate Professor Erica Donner (University of South Australia), Dr Vance Trudeau (University of Ottawa) and Dr John Gorrie (EPA Tasmania). These speakers did an excellent job of highlighting the conference theme - bringing together industry and science and looking towards sustainable applications of their work in the environment.

Keynote presenter Dr John Gorrie (EPA Tasmania) and Tony Roach Memorial Address by Assoc Prof Amy Ringwood (The University of North Carolina).

Di Jolley with keynote speaker Assoc Prof Erica Donner (University of South Australia).

The highlight of the conferences' social events was the conference dinner, held at the stunning Peppermint Bay, and included spectacular a ferry ride down the Derwent River from Hobart to the beautiful seaside venue at Woodbridge. The dinner was a great success with delicious local produce, wines and beers, and loads of dancing to the local band Detour (who were blown away by the groups' enthusiasm!). Grant Hose did a wonderful job as MC (and was superbly dressed for the occasion), ably accompanied for the presentation of awards by conference Chair Cath King and SETAC AU President Anthony Chariton. These included the

Ferry to Conference dinner at Peppermint Bay.

Dr Anne Taylor receiving the SETAC AU Early-Career Medal.

Conference dinner at Peppermint Bay.

conference "funny awards" as well as the more serious SETAC AU Early-Career Medal, which was presented to Dr Anne Taylor, and the SETAC AU Mid-Career Medal, which was presented to Associate Prof Grant Hose (both of who eventually got the correct trophies!).

Amongst fierce competition with truly excellent presentations from all our students, congratulations must go to this year's student prize winners, Divya Vinod for the Best Student Oral Presentation Award and Brett Knowles for the Best Student Poster Presentation Award. Special mention also to Ingrid Errington who won the Inaugural Science Communication Award with her Dr Seuss inspired oral presentation, said entirely in verse.

Assoc Prof Grant Hose receiving the SETAC AU Mid-Career Medal.

Tom Cresswell & best student oral presentation award winner Divya Vinod.

Ingrid Errington receiving the Inaugural Best Science Communication Award.

This was the first year a SETAC AU Conference really reached out to the world of social media and public engagement through a Reddit 'Ask me Anything (AMA)' session. Enthusiastically organised by Student Representative Francesca Gissi, this event provided delegates with an opportunity to answer questions from the general public about environmental science topics such as pollution issues, risk assessment and environmental management. The questions presented were challenging but were met with knowledgeable and engaging answers by all who participated.

Finally, I'd really like to take this opportunity to say a most heartfelt thank you to everyone on the organising committee for their hard work in putting such a successful conference together. Thanks especially to Kate Kiefer who worked tirelessly with the PCO team at Leishman Associates and really put in big hours and a big effort to ensure the conference went off without a hitch.

Thanks also to our sponsors and supporters including CAPIM, NIWA, AINSE, the University of Newcastle and the AAD, and to our exhibitors Banksia Scientific, Envirolab, EPA Tasmania, RACI, and TECO medical group. And of course thank you to all who attended. It was a big ask having three different SETAC conferences within such a short period of time and I really thank those who managed to come to support our conference in Hobart.

Registration desk with Conference Chair Cath King, and the two ladies without which the conference would not have been the success it was, Kate Keifer with Angela Cooper from Leishman Associates.

Conferences and Workshops

SETAC-AU Hobart 2016

On behalf of the organising committee, we hope that everyone who attended found the conference to be a stimulating and enjoyable experience. For those who were visitors to our southern state, we hope you had a great stay in idyllic Hobart and visit us again soon!

Dr Catherine King

SETAC-AU Hobart 2016

Conference Chair

SETAC-AU Hobart 2016 organising committee.

Organising Committee at closing ceremony.

Poster session with snapshot presentations.

Visit http://www.setachobart2016.com.au/conference-photos/ for more photos

Conferences and Workshops

EmCon2016 and WiOW2016

5th INTERNATIONAL CONFERENCE ON EMERGING CONTAMINANTS (EmCon2016) AND MICROPOLLUTANTS (WiOW2016) IN THE ENVIRONMENT

The 5th International Conference on Emerging Contaminants (EmCon2016) and the 5th Symposium on What's in Our Water (WiOW2016), a joint conference held in Sydney, Australia from 20th to 23rd September, was hailed as a great success. Some 160 delegates from 23 countries of the Asia-Pacific, Europe, North America, South American regions, travelled long distances to make this event a great success.

Following the welcome reception, the conference opened on Tuesday with three keynote presentations on Microplastics by Dr Sherri Mason (USA), Illicit Drugs by Dr Kevin Thomas (Norway) and on Water Industry's perspectives by Dr Judy Blackbeard (Melbourne Water). This was followed by a BBQ dinner at the conference venue (Aerial Function Centre, UTS Sydney).

During Wednesday to Friday some 68 platform and 49 poster presentations were made on emerging contaminants including on microplastics, PFAS, hydraulic fracking chemicals, nanomaterials, antibiotics, pharmaceuticals and personal care products, to name a few. Only a single track of presentations was used (no parallel sessions) hence offering a great networking opportunity. Poster remained displayed throughout the conference and got a good exposure.

The conference had a strong participation by students, thanks to 8 travel grants by SETAC AU. Four students were given awards on the final day for platform and poster presentations.

On the social side of the event, a highlight was the Conference Banquet on the Harbour Cruise, included in the conference registration fee. This was appreciated not only by the international delegates but also by the locals. More than 80% of the delegates gave a score of 8/10 or above to the conference. This was also reflected in the following comments by the delegates.

"The conference was really great, nice to have no parallel sessions and really relevant talks. The conference dinner was really great! It's a long way to travel but well worth it and I sincerely hope to come back."

"It was nearly perfect!!"

The hard work by the conference organising committee clearly paid off.

We take this opportunity to thank the organising committee, SETAC AU and our financial sponsors, namely Agilent Technologies, CAPIM, South Australian Water Corporation, Royal Society of Chemistry, Abraxis, AsureQuality, TRAJAN Scientific and Medical and TECOmedical Group.

Anu Kumar and Rai Kookana (Conference Co-convenors)

Conferences and Workshops

EmCon2016 and WiOW2016




Photos from the conference banquet on Sydney Harbour.

Science Meets Business

Delegates' Report

Dr Julia Jasonsmith

Director and Earth Scientist

Murrang Earth Sciences

Dr Rick van Dam

Director Environmental Research Institute of the Supervising Scientist

Department of the Environment and Energy

Science Meets Business is a forum where corporate and research leaders are brought together to discuss how science and innovation can be better used by Australian businesses. Held on Monday 24 October in Melbourne, we attended this year's meeting on behalf of SETAC AU.

The day consisted of four panel sessions where leaders in their field were presented questions on a specific topic by moderators who also took questions from the audience. The topics discussed were: beyond the boom—government, research and industry working together; entrepreneurs—start-up to sustainable growth; the spec on tech; and idea hunting for the next big thing.

In addition, a keynote address was presented by Dr Joanna Batstone, the Vice President and Lab Director of IBM Research – Australia, while two addresses were presented by Craig Laundy, the Assistant Minister for Industry, Innovation and Science, and Kim Carr, the Shadow Minister for Industry, Innovation and Science. With only one day and four panel sessions, the scope of the meeting was necessarily limited.

The meeting highlighted that in many ways we are at a turning point with regards to science in Australia.

We have had six ministers with the science portfolio in the last five years. Many small to large financial investments are made for scientific research in a variety of different scientific fields. There are about 150 R&D support programs across 14 government portfolios, which is too dispersed and inefficient. And, related to this, there is a serious deficiency of enduring funding programs for scientific research that operate outside of political cycles. The lack of sustained investment in key research areas and consistent political leadership means that there is a serious risk that Australia will not be able to take advantage of the scientific advances which are made both here and overseas. Already most successful and innovative Australian start-ups move internationally.

Professor Ian Chubb, Australia's former Chief Scientist, held the view that while we in Australia are good at our science and research, there is danger in being complacent—we need to continue to improve to stay competitive and rather than trying to do everything well, we need to focus on the areas of science where there is either a pressing national/international need or where Australia has a comparative advantage over others. Later in the day, an example was given where two traditional rival universities combined their formidable biomedical capabilities to now be ranked 5th in the world in biomedical research. Such a model may be worth contemplating in certain sub-disciplines of environmental toxicology and chemistry (e.g. on globally-relevant research issues such as POPs).

Poor scientific skills amongst the general populace was highlighted at the meeting. The need to better support and educate teachers of primary and high school students was presented as a key means of solving this problem, with improved two-way outreach between universities and industry a way of allowing research findings and developments to be used in the private sector. Emphasis was placed on the need for science and research needs to be driven by the problems being experienced by business/industry, rather than scientists trying to sell their products amongst business/industry (i.e. "a solution searching for a problem").

There was a strong focus on biotech and software development as areas for research investment and on profit, money, and returns as the basis for undertaking such investment—in other words, how can investors use their money to make more money by investing in research? Discussions centred around products rather than services, the latter being what many SETAC researchers offer. A greater focus on research/scientific services available to business/industry would be valuable at

future SmB conferences.

The issues of generational inequality and access to jobs for graduates were raised but only briefly and without any meaningful discussion or solutions.

And, apart from one comment from the audience, there was no discussion on the cost of not investing and acting on the critical crises of our time such as the problems of environmental health, which are the focus of SETAC's members, or other problems including inadequate infrastructure maintenance and of course climate change. This can be tempered, perhaps, by the comments of a couple of panel members that scientific research should also be egalitarian.

If there are to be fewer areas of scientific research funded by the Australian government, as was encouraged by key panel members at the forum (i.e. focusing on where there is the most need or we have comparative advantage), it appears we at SETAC need to be vocal and articulate regarding the importance of the research and work we do, to ensure ours is one of the key areas funded by government. Funding from other sources, either wholly from the private sector or through public-private partnerships, appears less viable for the type of research we SETAC members do — venture capital is invested only after an idea is proven to be profitable and usually not beforehand, for example, and not unless profits can be made on these initial investments. Our research is therefore not particularly attractive for funding by private or public-private investors. Although applied science has been strongly favoured over pure science in Australia for many years, there still appear to be big gaps in effective engagement across business/industry and the scientific community. Although SETAC scientists are typically applied by nature, and we certainly see evidence of numerous science-industry research projects and partnerships at SETAC conferences, maybe SETAC can consider how it more actively brings scientists and industry together.

Many audience and panel members expressed a desire to better equip our university graduates with entrepreneurial and business skills, and to better expose them to industry throughout their undergraduate and postgraduate studies, thereby better integrating research and industry. As alluded to above, we at SETAC are and have for decades been addressing significant environmental problems, many of us graduated university with highly applied skills, and we work within organisations with a strong focus on using university research to solve real environmental problems for large public and private organisations. As such, it's reasonable to consider us well placed for investment by the Australian government, if the funding changes proposed at the meeting come to pass.

Many of the forums' attendees used Twitter to present news and views from Science Meets Business. These can be found by searching twitter under the hashtag #SmB2016. Footage of all sessions is available on Science & Technology Australia's YouTube channel, with their story of the event available here.

Finally, we would like to thank SETAC AU for the opportunity to represent them and Science & Technology Australia for organising this valuable and important meeting.

Awards and Prizes

SETAC AU Ambassador Award - Science Meets Parliament 2017

What is SmP?

Science meets Parliament (SmP) is the major event hosted by Science & Technology Australia (STA). This event was first hosted in 1999 and takes place in Canberra in mid-March during non-election years. Science meets Parliament (SmP) brings together about 200 of Australia's top scientists and puts them face to face with the decision makers in Canberra. Participants include parliamentarians, staffers, lobbyists and journalists plus scientists from all disciplines.

This setting provides scientists with the opportunity to interact with politicians, policy makers and the media and gives you an opportunity to look at your science from a different perspective. A range of topics are available including science in the media, the influence of science on policy making, the impact of science on Australia's economy and environment and its understanding in the broader community. For more information about SmP 2017, visit the STA website.

What to expect at SmP

Firstly we will need confirmation from Science & Technology Australia (STA) that the event will proceed, as this is dependent on Parliamentary schedules. On day one, expect to get tips on how to successfully engage politicians and expand your professional development. Scientists get a feel for government policymaking by discussing policy material with lobbyists, parliamentary staffers, politicians and journalists, and become equipped with the knowledge, skills and networks that continue to serve them well into the future. In the evening, guests attend a formal dinner at the Great Hall in Parliament House. On the second day of the event more than 100 formal meetings between small groups of scientists and individual parliamentarians occur.

What's on offer

As a member society of STA, SETAC AU is able to nominate (up to) two delegates to attend. Typically one delegate will be a senior member and one will be early career, within 5 years of graduating the last degree (current PhD students are eligible).

The nominated delegates will be awarded with complementary event registration (including the gala dinner), return economy airfares from the nearest capital city and accommodation.

Who should apply?

One of the main goals of the event is for the scientists to keep our parliamentarians informed on what we view as the big issues in our field. We encourage nominations from dynamic and motivated members who would like to fly the banner (no, not literally!) on behalf of our society and our disciplines, ecotoxicology and environmental chemistry. Nominees may be from government, industry or academia, and with all levels of experience are welcome to apply. Previously successful applicants will not be considered.

How should you apply?

Nominees should have been a SETAC member for a minimum of 2 years. Please submit a 1 page CV and a cover letter briefly stating:

- How attending the event will benefit you
- Why you want to attend SmP as a SETAC AU representative
- Any previous contributions that you may have made to SETAC AU

All applications must be electronic, and sent to australasia@setac.org. The Council will establish a selection panel after all entries are submitted and conflicts of interest will be managed appropriately.

Key dates:

Applications due: 31st December, 2016

Notification of successful applications: 30th January, 2017

Science meets Parliament event: 21st-22nd March, 2017

Social Media

For those of you that are savvy with social media, SETAC AU has both a Facebook page and Twitter handle. We encourage all members to use these media tools for communication and research dissemination through your networks.

Facebook Page - Society of Environmental Toxicology and Chemistry Australasia - SETAC AU

Search for @SETACAu

 # People who like this page: 97

Twitter Handle - @SETAC Australasia

 # Following: 779
 # Followers: 396

Profile visits (Sep- Nov): 783
Mentions (Sep- Nov): 50

SETAC AU Mentor Programme

SETAC AU Mentor Programme

SETAC Australasia Mentor Programme Overview and Responsibilities

Scope

This document describes the aims of the SETAC Australasia (AU) Mentor Programme and outlines the eligibilities and responsibilities of programme participants. The programme is coordinated by a SETAC AU Vice President.

Background

Feedback from the SETAC AU membership in 2013 indicated that there was a strong desire for mentoring systems in the Society. This resulted in the establishment of the Buddy System mentor programmes at the 2014 and 2015 annual SETAC AU conferences, which proved successful (26 and 27 participants in each year respectively) with 85% of surveyed participants feeling the program benefited their experience at the conference. Some partners have remained in contact after the conference and the continuation of these partnerships is encouraged and the SETAC AU Council will assist where possible. The vast majority of surveyed participants in the Buddy System indicated they would be interested in being involved in a longer-term mentoring scheme.

Programme aims

The SETAC AU Mentor Programme aims to foster a collegiate society by improving the technical and career development by establishing mentoring activities for SETAC members at all stages in their careers, including early-, mid-, late- or even post-career tracks. It is expected that mentees will benefit from the technical and professional experience of their mentors while mentors are expected to gain valuable insights into new research areas. It is also expected that this programme will benefit members in remote locations or where SETAC AU membership numbers are low, therefore increasing membership participation in the society.

Benefits to the mentee

- Assist in the transition from study to work by discussing with your mentor how the expectations may differ between employers and industries
- Provide guidance with regards to career direction by discussing with your mentor their experience in these areas
- Learn from your mentor's professional and personal experience and knowledge
- Grow your professional network
- Gain advice from the mentor to enhance your resume and job search knowledge
- Gain insights into employment within the environmental toxicology and chemistry industry sector
- Gain technical advice from your mentor's professional experience.

Benefits to the mentor

- Share your passion for your profession with a motivated student/early career researcher
- Gain exposure to students as potential future employees and collaborators
- Improve your skills in coaching and mentoring
- Give back to your professional community by sharing your insights and experience
- Stay on top of emerging fields of research through engaging in research-based discussions with your mentee
- Provides an opportunity for you to reflect on your own knowledge and work practices before advising others
- Learn fresh perspectives from the next generation of environmental toxicologists and chemists.

SETAC AU Mentor Programme

Eligibility and pairing

Any financial member of SETAC AU may take part in the Mentor Programme. Members wishing to be paired will be asked to complete a registration questionnaire, which will aim to gather information to enable pairing between mentees and mentors. The pairings will be conducted by at least two members of the SETAC AU Council. Participants will be contacted with information about their prospective mentor/mentee and the decision to engage in a mentoring partnership will be at the discretion of the participants.

To be eligible to become a programme mentee, participants are required to have the following:

- a willingness to communicate in a professional manner with their mentor
- a commitment to invest time into the mentoring relationship (see participant responsibilities)
- a willingness to be open and frank with their mentor regarding their expectations of the programme; and
- an understanding that their mentor will not be taking on a supervisory role of their studies/ employment. A mentor in this program is not a research collaborator.

To be eligible to become a programme mentor, participants are required to have the following:

- at least three or more years' professional workforce experience in a supervisory, management or leadership capacity
- a willingness to act as a resource by sharing expertise, experience and networking opportunities
- the ability to recognise and encourage the mentee's strengths and areas for development
- a commitment to invest time into the mentoring relationship (see participant responsibilities); and
- a willingness to provide constructive and honest feedback.

Participant responsibility

It is expected that participants in the Mentor Programme contact their mentor/mentees at least once a month either in person or remotely (e.g.telephone, video conference) for at least one hour. If either participant is unable to attend a pre-organised meeting, they are to give their mentor/ mentee at least 24 hours notice and re-schedule as soon as is acceptable for both partners.

If the mentor or mentee feel that the relationship is not progressing (due to diary clashes, or perhaps a mismatch of expected goals between mentor and mentee), and that an alternative partnership may be better they should contact the programme coordinator.

Timing and duration of programme

The Mentor Programme can be commenced at any time and is expected to continue for 12 months. Participants may extend their partnerships for longer than 12 months if both parties agree to the extension and inform the programme coordinator. It is natural for mentors to change over the course of the career of the mentee, as the mentees experience and directions will often change over time. A continuation of previous or future parings resulting from the SETAC AU conference Buddy System is welcomed.

For more information on the Mentor Programme including the programme outline and participant responsibilities document and/or programme registration form, please contact Tom Cresswell (tom.cresswell@ansto.gov.au)

What's Happening?

Conferences and Workshops

If you are aware of conferences or workshops that would be of interest to other members of SETAC AU please send the details to the Communication Officer p.neale@griffith.edu.au

Please include a link to the Webpage for the event and the critical dates that SETAC AU members should be aware of.

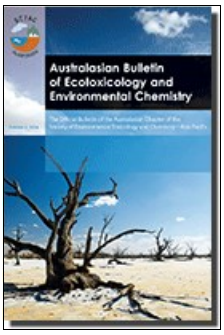
SETAC Europe 27th Annual Meeting
"Environmental quality through transdisciplinary collaboration"
Brussels, Belgium, 7-11th May 2017.
brussels.setac.org

3rd International Conference on Environmental Pollution, Restoration, and Management"
Quy Nhon, Vietnam, 6-10th March 2017.

The goals of the conference are to gather scientists from around the world in Quy Nhon to share research results and management experiences, discuss environmental issues, and continue to strengthen collaborations for research and education between scientists in developed and developing countries.

Early bird registration deadline: **15 December 2016**

Australasian Bulletin of Ecotoxicology and Environmental Chemistry (ABEEC)



Volume 3 of ABEEC has recently been published and is available here.

Considering background ionic proportions in the development of sulfate guidelines for the Fitzroy River basin
ABEEC Volume 3, 2016, Pages 1-10
Jason E. Dunlop, Reinier M. Mann, Dustin Hobbs, Ross E.W. Smith, Vinitha Nanjappa, Suzanne Vardy and Sue Vink

Call for papers

We invite all SETAC AU members to submit new manuscripts to the *Australasian Bulletin of Ecotoxicology and Environmental Chemistry.* The *Bulletin* is a publication of the Australasian Chapter of the Society for Environmental Toxicology and Chemistry (SETAC AU), and is a regional publication dedicated to publishing original, scientifically-sound research dealing with all aspects of ecotoxicology and environmental chemistry relevant to Australasia. Papers published may be research reports, review papers, short communications, descriptions of new techniques and equipment, thesis abstracts, thesis literature reviews and comments on previously published papers.

All papers published in ABEEC will be made freely available through the website for SETAC AU. It will be an online publication only.

This is how the submission process works. Contributions should be submitted to the editor as a manuscript in the same manner as you would for any other journal. You also need to provide the name(s) of at least one reviewer to assess the manuscript. All manuscripts will be sent out for review by at least two experts in the field. After the review process, manuscripts will be sent back to authors for final revisions prior to online publication.

If you wish to submit a manuscript to *ABEEC* or would like to discuss publication of a manuscript, then please contact the editor. A copy of *Instructions to authors* is also available from the editor.

We look forward to receiving you manuscripts.

Reinier M Mann (reinier.mann@dsiti.qld.gov.au)
Editor – *ABEEC*

SETAC Journal Highlights

Selected abstracts from the December 2016 issue of Environmental Toxicology and Chemistry

Adams JV, Slaght KS, Boogaard MA. 2016. An automated approach to Litchfield and Wilcoxon's evaluation of dose-effect experiments using the R package LW1949, 35(12): 3058–3061 *DOI: 10.1002/etc.3490*

Abstract: We developed a package, LW1949, for use with the statistical software R to automatically carry out the manual steps of Litchfield and Wilcoxon's method of evaluating dose-effect experiments. LW1949 consistently finds the best fitting dose-effect relation by minimizing the chi-squared statistic of the observed and expected number of affected individuals and substantially speeds up the line-fitting process and other calculations that Litchfield and Wilcoxon originally carried out by hand.

Jacobs R, Meesters JA, Ter Braak CJ, van de Meent D, van der Voet H. 2016 Combining exposure and effect modeling into an integrated probabilistic environmental risk assessment for nanoparticles, 35(12): 2958–2967 *DOI: 10.1002/etc.3476*

Abstract: There is a growing need for good environmental risk assessment of engineered nanoparticles (ENPs). Environmental risk assessment of ENPs has been hampered by lack of data and knowledge about ENPs, their environmental fate and their toxicity. This leads to uncertainty in the risk assessment. To effectively deal with uncertainty in the risk assessment, probabilistic methods are advantageous. In the present study, we develop a method to model both the variability and uncertainty in environmental risk assessment of ENPs. This method is based on the concentration ratio (CR), the ratio of the exposure concentration to the critical effect concentration, both considered to be random. In our method, variability and uncertainty are modeled separately, so as to allow the user to see which part of the total variation in the (CR) is due to uncertainty and which part is due to variability. We illustrate the use of our method using a simplified aquatic risk assessment of nanoTiO_2. Our method allows a more transparent risk assessment and can also direct further environmental and toxicological research to the areas in which it is most needed.

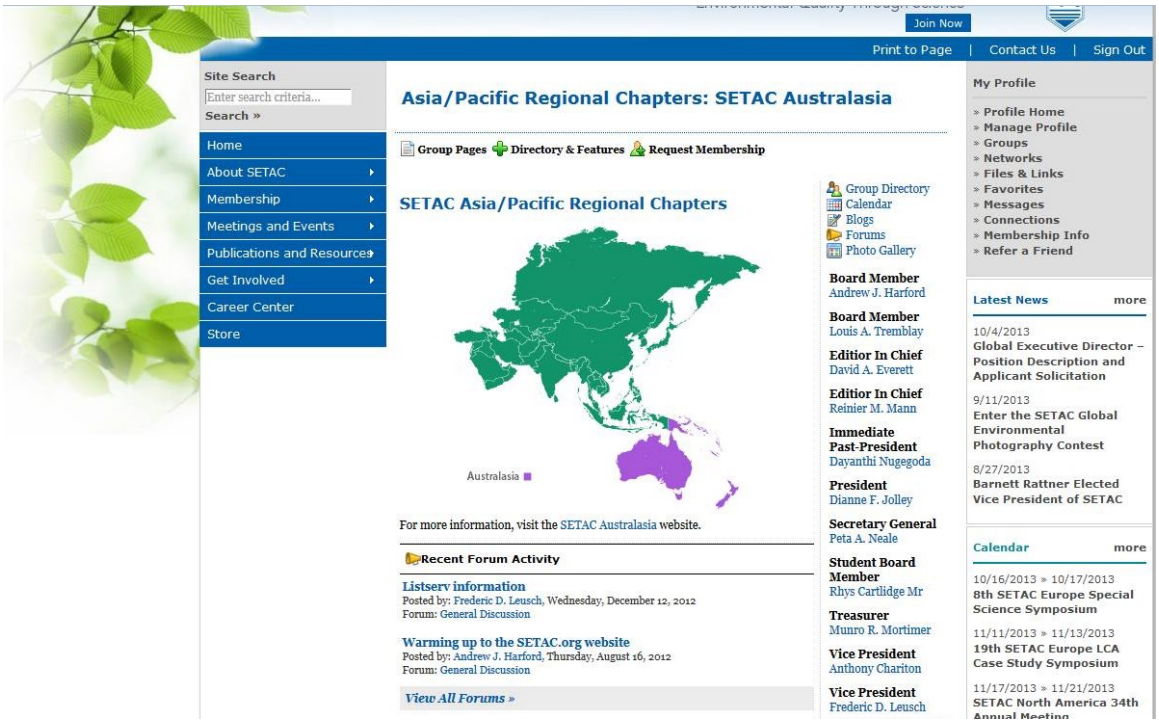
Fang S, Zhang Y, Zhao S, Qiang L, Chen M, Zhu L. Bioaccumulation of perfluoroalkyl acids including the isomers of perfluorooctane sulfonate in carp (*Cyprinus carpio*) in a sediment/water microcosm, 35(12): 3005–3013 *DOI: 10.1002/etc.3483*

Carp (*Cyprinu carpio*) were exposed to perfluoroalkyl acids (PFAAs) including perfluorooctane sulfonate (PFOS) isomers in an artificially contaminated sediment/water microcosm. The uptake constant of PFAAs increased with increasing carbon chain length, while the elimination coefficient displayed the opposite trend, suggesting carbon chain length played an important role in the bioaccumulation of PFAAs. If contribution of suspended particulate matter (SPM) was taken into account, the bioaccumulation factors (BAFs) became lower (3.61-600 L/kg) compared to those only considering the absorption from free PFAAs in water (3.85-97000 L/kg). The results indicated that SPM in water constituted an important source of exposure for aquatic organisms to long chain PFAAs. Linear (n-) PFOS was preferentially accumulated compared to branched isomers in carp. Among the branched isomers, 1m-PFOS displayed the greatest while m2-PFOS showed the lowest bioaccumulation ability. Linear PFOS displayed greater partitioning ability from blood to other tissues over branched PFOS (br-PFOS) isomers, leading to relatively lower n-PFOS proportion in blood.

Membership Details

How to join SETAC Australasia

Even if you are a SETAC member based in Australia, New Zealand or PNG, you may not be a member of SETAC Australasia. You can join SETAC Australasia by going to http://www.setac.org/. After logging in, go to the SETAC Australasia page and click 'Request Membership' (see below). You can find this page by either searching 'Australasia' or going to the 'Get Involved' tab on the left of the page, then 'Regional Branches and Chapters', then 'Asia Pacific Chapters'. There are no additional fees attached to the SETAC Australasia chapter.



Current SETAC Australasia Members

To make sure you don't miss out on attending SETAC get-togethers in your state or territory or contributing your latest research to Endpoint, please update your SETAC profile to include your location so your regional rep can get in touch with you. You can do this by logging into http://www.setac.org/ and selecting 'Manage Profile', then 'Edit Bio'.

Kathryn Hassell (khassell@unimelb.edu.au)
SETAC AU Secretary

Advertise in Endpoint

Do you or your organisation have a product, service or upcoming event that might be of interest to SETAC members? For example: technical services, vacant positions, meetings and workshops or student opportunities?

If so, you should consider advertising in Endpoint and on the SETAC AU webpage. The Endpoint newsletter goes out to a readership of >300 SETAC members across academia, industry and government, providing a great way to reach your target audiences.

Details

- Advertising charges for Endpoint AND the webpage are $100 half page, $200 per full page.
- A Standing Committee with membership determined by Council will vet (by majority vote) all adverts on the basis of appropriateness of material relative to the aims & objectives of SETAC AU.
- Sustaining Members are entitled to two pages of free advertising per annum.

For further information please contact the SETAC AU Secretary **Kathryn Hassell** (khassell@unimelb.edu.au)

Affiliate and Sustaining Memberships

Have you considered affiliate or sustaining membership or do you know an organisation that should? Affiliate memberships are suitable for not-for-profit organisations or academic institutions and sustaining memberships are suitable for for-profit organisations, government agencies, or individuals. They are cost effective means of covering membership and conference registrations as well as other benefits. Here are the details below:

1. **SETAC Global Partner** (see http://www.setac.org/?page=SETACPartners)

   Annual fee US$10,000

   Benefits:

   - Annually –

     Two complimentary full registrations at two SETAC meetings or conferences, OR

     A free booth at one SETAC meeting or conference.

   - Free listing as a Global Partner on SETAC meeting/conference signage and programs.
   - Free attendance at reception functions for SETAC meetings/conferences.
   - Free access to the SETAC Membership Directory.
   - Free hard and online versions of the SETAC Journals – *Environmental Toxicology and Chemistry (ET&C)* and *Integrated Environmental Assessment and Management (IEAM).*
   - Annual acknowledgement as a SETAC Global Partner in journals.
   - Listing as a SETAC Global Partner on SETAC website.
   - Free advertising (1/8 page annually in one journal).
   - Discount (25%) on-line job advertisements.
   - Access to online newsletters.
   - Members discount on publications.
   - SETAC Global Member Wall plaque.
   - Can help organise special sessions on global issues at annual meetings.
   - Acknowledgement for other assistance such as student grants, etc.

2. SETAC Asia-Pacific Sustaining Member

Annual fee AU$2000

- Annually –
- Two complimentary full registrations at one SETAC Asia-Pacific meeting or conference,

OR

Four complimentary student registrations at one SETAC Asia-Pacific meeting or conference,

OR

One complementary full registration and two student registrations at one SETAC Asia-Pacific meeting or conference.

- Free listing as a SETAC Asia-Pacific Sustaining Member on SETAC Asia-Pacific meeting/conference signage and programs.
- Free attendance at reception functions for SETAC Asia-Pacific meetings/ conferences.
- Free hard and online versions of the SETAC Journals – *Environmental Toxicology and Chemistry (ET&C)* and *Integrated Environmental Assessment and Management (IEAM).*
- Annual acknowledgement as a SETAC Asia-Pacific Sustaining Member in journals (subject to SETAC World Council approval).
- Listing as a SETAC Asia-Pacific Sustaining Member on the SETAC Asia-Pacific web pages.
- Free advertising (1/8 page annually in one journal, subject to SETAC World Council approval).
- SETAC Asia-Pacific Sustaining Member Wall plaque.
- Can help organise special sessions on regional/global issues at annual meetings.

Affiliate and Sustaining Memberships

3. SETAC Australasia Sustaining Member (only available to companies operating in Australasia)

Annual fee AU$1500

- Annually –
- Two complimentary full registrations at one SETAC Australasia meeting or conference,

OR

Four complimentary student registrations at one SETAC Australasia meeting or conference,

OR

One complementary full registration and two student registrations at one SETAC Australasia meeting or conference.

- Free listing as a SETAC Australasia Sustaining Member on SETAC Australasia meeting/conference signage and programs.
- Free attendance at reception functions for SETAC Australasia meetings/conferences.
- Free access to the SETAC Australasia Membership Directory.
- Free hard and online versions of the SETAC Australasia publications.
- Annual acknowledgement as a SETAC Australasia Sustaining Member in SETAC Australasia publications.
- Listing as a SETAC Australasia Sustaining Member on the SETAC Australasia web pages.
- Free advertising in SETAC Australasia publications (subject to SETAC Australasia Council approval).
- SETAC Australasia Sustaining Member Certificate.
- Acknowledgment for other assistance such as student grants etc.

To follow up with these membership options please email me at khassell@unimelb.edu.au and also pass this information on to anyone or any organisation you think might be interested. Remember we now represent ecotoxicology and environmental chemistry.

Kathryn Hassell (khassell@unimelb.edu.au)
SETAC AU Secretary

SETAC AU

Council Members

Position	Elected Member
President	Anthony Chariton (anthony.chariton@csiro.au)
Vice Presidents	Andrew Harford (andrew.harford@environment.gov.au) Tom Creswell (tom.cresswell@ansto.gov.au)
Secretary	Kathryn Hassell (khassell@unimelb.edu.au)
Treasurer	Munro Mortimer (ase@hydrobiology.biz)
Membership Officer	Chantal Lanctôt (chantal.lanctot@gmail.com)
Bulletin Editor	Reinier Mann (reinier.mann@dsiti.qld.gov.au)
Communications Officer	Peta Neale (p.neale@griffith.edu.au)
Strategic Directions Officer	Katelyn Edge (katelyn.edge@environment.nsw.gov.au)
Associate Newsletter Editor	Erik Prochazka (e.prochazka@griffith.edu.au)
Student Representative	Aus: Francesca Gissi (Francesca.Gissi@csiro.au) NZ: Nicole McRae (nicole.mcrae@pg.canterbury.ac.nz)

Regional Representatives

Region	Elected Member
Australian Capital Territory	Ben Kefford (ben.kefford@canberra.edu.au)
New South Wales	Lisa Golding (lisa.golding@csiro.au)
Northern Territory	Melanie Trenfield (melanie.trenfield@environment.gov.au)
Queensland	Steven Melvin (s.melvin@griffith.edu.au)
South Australia	Peter Bain (peter.bain@csiro.au)
Tasmania	Cath King (cath.king@aad.gov.au)
Victoria	Minna Saaristo (minna.saaristo@monash.edu)
Western Australia	Tristan Stringer (tristan.stringer@intertek.com)
Papua New Guinea	Kundo Hundang (guba.hundang@gmail.com)
New Zealand (North Island)	Trudy Geoghegan (trudy.geoghegan@epa.govt.nz)
New Zealand (South Island)	Sally Gaw (sally.gaw@canterbury.ac.nz)