

UQ STRATEGIC FUNDING

ANNUAL REPORT

Recipients of Strategic Funding are required to provide a short report to the VC and/or DVC(R) on an annual basis.

Notes:

- Payment of any subsequent year's allocation will be subject to VC / DVC(R) approval of the annual report.
- Annual reporting requirements apply to strategic funding allocations of \$100,000 per annum or higher (i.e. after combining both VC & DVC(R) contributions)
- Final reporting requirements apply to total strategic funding allocations of \$50,000 or higher over the duration of the commitment (i.e. after combining both VC & DVC(R) contributions)
- Recipients of funding for Operational Support or UQ Internal Schemes (listed at <http://www.uq.edu.au/research/research-management/grants-uq-internal>) are not required to complete this annual report.

1. ADMINISTRATIVE SUMMARY

Report Year:	2016
Project No:	610608
DVC(R) Commitment ID (if applicable):	
Project Title:	CHILDRENS HEALTH AND ENVIRONMENT PROGRAM (CHEP)
Lead CI / Funding Recipient Name:	PETER D SLY
Administering School/Centre:	CHRC
Faculty/Institute:	MEDICINE
Years of Funding (YYYY - YYYY):	2016-2019
Is this a Progress or Final Report?	PROGRESS
Are you intending on submitting a variation request? (Yes/No)	NO

Note: Dot points are acceptable for the below items

2. SUMMARY OF OBJECTIVES

100 word summary of strategic objectives (as outlined in the original proposal)

The objectives of the Children's Health and Environment Program (CHEP) are to understand mechanisms by which environmental exposures impact adversely on children's health and to develop effective interventions to prevent exposures and improve health outcomes.

CHEP has established effective collaborations with UQ, national and international groups. In 2013 CHEP was designated as the first World Health Organization (WHO) Collaborating Centre at UQ. CHEP now plans to further these aims by establishing a joint Centre of Excellence in CEH with the Public Health Foundation of India and expand collaborations with the National Institute of Public Health, Mexico.

3. STATEMENT ON PROGRESS/OUTCOMES

How have you progressed towards your stated objectives to date?

The Children's Health and Environment Program (CHEP) has made progress in achieving its objectives in 2016, with particular focus on assessment of exposure to environmental toxicants in early life and impacts on disease outcomes, new approaches to education and training in children's environmental health, and the work of the World Health Organization (WHO) Collaborating Centre for Children's Health and the Environment. Research collaborations with the National Research Centre for Environmental Toxicology (ENTOX), Queensland Health, UQ's School of Population Health, Public Health Foundation of India (PHFI), University of Adelaide, WHO, National Institute for Environmental Health Sciences, USA, and the WHO Network in Children's Environmental Health have been strengthened.

Specific areas of progression:

Toxic exposures:

- Prof Peter Sly acted as a Commissioner for the Lancet–Global Alliance on Health and Pollution–Icahn School of Medicine at Mount Sinai Commission on Environmental pollution, health, and development.
- Continuing the strong collaboration with the WHO eWaste network and international partners:
 - Finalising outputs from the eWaste workshop at the 2015 Pacific Basin Consortium Conference.
 - Hosting of the WHO eWaste network.
 - Development of a chapter on eWaste in the WHO children's environmental health atlas.
- Air pollution:
 - A project on particulate air pollution and respiratory health of young children in Hanoi.
- Household chemicals and exposure assessment:
 - Improving assessment of exposure to endocrine-disrupting and lipophilic chemicals in the home. A review of BDE-209 in the Australian environment.
 - A cross-sectional biomonitoring study of pesticide exposures in Queensland using pooled urine samples.
 - An analysis of unintentional insecticide poisoning using Queensland Poisons Information Centre calls.
 - Assessing the body burden of persistent organic pollutants in infants/toddlers through analysis of faeces.

Population health: Strong research collaboration with Dr Paul Jagals and Dr Colleen Lau on the environmental drivers of disease transmission and impacts of environmental exposures.

A review of the WHO Children's Environmental Health Indicators in Australia was published in 2016 and a review of the Sustainable Development Goals and children's environmental health in Australia is in progress (to be submitted in early 2017).

Emerging Infectious Diseases: Dr Colleen Lau has strengthened collaborations with the Fiji Ministry of Health and the WHO Emerging Diseases Surveillance and Response Unit in Fiji. Activities included: operational research project on leptospirosis in collaboration with Massey University; facilitating training workshops on outbreak response for clinical, public health, and environmental health practitioners; and development of two national guidelines – 'Clinical Guidelines for Management of Leptospirosis' and 'Communicable Disease Surveillance and Outbreak Response Guidelines'.

Dr Ricardo J. Soares Magalhaes (UQ Spatial Epidemiology Laboratory) has secured funding from DFAT, Australia to strengthen collaboration in research and research training in spatial mapping of childhood Zika virus with the surveillance and outbreak and response units of the Ministries of Health of Colombia and Brazil.

Neglected Tropical Diseases: In 2016 Dr Colleen Lau led an operational research project on lymphatic filariasis elimination in American Samoa in collaboration with the US Centers for Disease Control and the Taskforce for Global Health (USA). The field project involved testing and treating almost 4000 people in American Samoa, including >1100 school children. She will also provide technical support for lymphatic filariasis elimination in other Pacific Islands as a WHO consultant.

Disease modelling: In 2016 Dr Kurt Long has continued to work on the project that is part of the Healthy Birth Growth and Development knowledge integration (HBGDki) initiative funded by the Bill and Melinda Gates Foundation. This work has involved the further development of structural equation models (SEM) that model potential household pathogen transmission pathways and the impact these infections have on growth faltering among children enrolled in the Global Enteric Multicenter Study (GEMS). The work is part of broader effort to develop a risk assessment framework (RAF) that integrates the causal analysis of pathogen-specific infection risk and impaired growth with spatial modeling techniques using data from GEMS. Dr Long's modeling work has now been prioritized by the HBGDki working group.

Another related project has involved working with the Institute for Disease Modeling in the development of statistical and mathematical simulations that can predict diarrheal disease outcomes in GEMS given different intervention scenarios.

Respiratory health/Asthma/Chronic lung disease: Developed and validated a new technique for measuring airway obstruction in young children which is now being used to test impact of early life environmental stressors on respiratory health in studies in Brisbane, Geelong, South Africa, Brazil and the USA.

Capacity building

- A strong collaboration has been developed with the Public Health Foundation of India (PHFI) in children's environmental health:
 - Dr. Soares Magalhaes has established a research agreement with PHFI funded by the International Development Research Centre (IDRC), Canada to assist in research and research training in zoonotic disease spatial mapping, including Anthrax, Japanese encephalitis and Brucella.
 - CHEP is organising a joint conference between the Pacific Basin Consortium, PHFI, and the East-West Center to be held in New Delhi, in November 2017.
 - A multi-country study in Australia, India, the UK and China on the human health impacts of urban health and biodiversity, including a review of existing evidence.
 - Children's environmental health capacity building in the South Asian region through planned workshops and training.
- Prof Peter Sly is the Chairperson of the Pacific Basin Consortium. CHEP staff worked with the PBC Secretariat to:
 - Organise the 17th International PBC Conference to be held in November 2017. The conference will be hosted by the Public Health Foundation of India.
 - Coordinate and edit a special series in Reviews on Environmental Health of invited Reviews from the 16th International Conference of the Pacific Basin Consortium.
 - Coordinate activities with the Pacific Basin Consortium Secretariat, disseminate research and news.

- Engagement with the Queensland Alliance for Environmental Health Science (QAEHS), which aims to support environmental health research, facilitate collaboration between Queensland Health and environmental health researchers, build environmental health capacity in Queensland and communicate risks to policy makers.

Education and training:

- Involvement in the Children's Environmental Health (PUBH7032) course run by the School of Population Health.
- Initiated an Occupational Trainee program and hosted two trainees.
- Prof Peter Sly provided training in children's environmental health for paediatricians at the International Congress of Paediatric Pulmonology (CIPP) in Naples in June 2016.
- Participation in the WHO Children's Environmental Health Training meeting held in Florence in November 2016.
- Updating WHO children's environmental health training materials.
- Needs assessment of MOOC in children's environmental health to feed into the proposed UQ Environmental Health Masters program.

Public engagement:

- Developed a monthly newsletter on Children's Environmental Health on behalf of WHO and the United Nations Environment Program. During 2016, 12 issues were sent to a network of recipients and published on the WHO website. The newsletter includes recent peer-reviewed original articles, reviews, UN agency press releases, upcoming events and children's environmental health in the news.
- Developed an atlas of children's environmental health with the WHO Department of Public Health, Environmental and Social Determinants of Health (to be published March 2017), targeted at policy makers, the general public and health professionals. The atlas presents an overview of the state of children's environmental health globally, introductions to 26 major threats to children's environmental health, maps and graphics.
- Continued leadership of the WHO eWaste network which aims to foster research and capacity building through a network of experts and international stakeholders in the area of eWaste management.
- Close collaboration with WHO Department of Public Health, Environmental and Social Determinants of Health, WHO collaborating centres and other groups.

WHO activities. CHEP has continued its active collaboration with WHO through:

- Leadership of the WHO Children's Environmental Health Network.
- Participation in and hosting of the WHO eWaste network.
- Developed an atlas of children's environmental health with the WHO Department of Public Health, Environmental and Social Determinants of Health (to be published March 2017).
- Assisted in developing a WHO publication on the burden of disease in children attributable to the environment (to be published March 2017).
- Participated in establishing a multi-year WHO project to develop new training materials on children's environmental health for healthcare professionals.
- Updating WHO children's environmental health training materials.
- Submitted a joint contribution on children's environmental health and human rights to the United Nations Committee on the Rights of the Child Day of General Discussion dedicated to "Children's rights and the environment".

Research Output/Publications 2016:

Book chapters

1. Lau CL. Human Leptospirosis in Oceania. In *Neglected Tropical Diseases of Oceania*. Loukas A, ed. *Neglected Tropical Diseases Book Series*: Springer Nature; 2016.

Original research articles

1. Baturcam E, Snape N, Yeo TH, et al. Human Metapneumovirus Impairs Apoptosis of Nasal Epithelial Cells in Asthma via HSP70. *Journal of innate immunity*. 2017;9(1):52-64.
2. Holt PG, Strickland D, Bosco A, et al. Distinguishing benign from pathologic T2 immunity in atopic children. *J Allergy Clin Immunol*. 2016;137:379-387.
3. Phan JA, Kicic A, Berry LJ, Sly PD, Larcombe AN. Early life rhinovirus infection exacerbates house-dust-mite induced lung disease more severely in female mice. *Experimental lung research*. 2016;42(1):24-36.
4. Lau CL, Streeton CL, David MC, Sly PD, Mills DJ. The tolerability of a combined hepatitis A and typhoid vaccine in children aged 2-16 years: an observational study. *Journal of travel medicine*. 2016;23(2).
5. Sato T, Paquet-Fifield S, Harris NC, et al. Vegf-d promotes pulmonary oedema in hyperoxic acute lung injury. *The Journal of Pathology*. 2016.
6. English K, Jagals P, Ware RS, Wylie C, Sly PD. Unintentional insecticide poisoning by age: an analysis of Queensland Poisons Information Centre calls. *Aust N Z J Public Health*. 2016.
7. Luong LM, Phung D, Sly PD, Morawska L, Thai PK. The association between particulate air pollution and respiratory admissions among young children in Hanoi, Vietnam. *The Science of the total environment*. 2016.
8. Gray DM, Turkovic L, Willemse L, et al. Lung Function in African Infants in the Drakenstein Child Health Study: Impact of Lower Respiratory Tract Illness. *Am J Respir Crit Care Med*. 2016.
9. Holt PG, Snelling T, White OJ, et al. Transiently increased IgE responses in infants and pre-schoolers receiving only acellular Diphtheria-Pertussis-Tetanus (DTaP) vaccines compared to those initially receiving at least one dose of cellular vaccine (DTwP) - Immunological curiosity or canary in the mine? *Vaccine*. 2016;34(35):4257-4262.
10. Heffernan AL, English K, Toms L, et al. Cross-sectional biomonitoring study of pesticide exposures in Queensland, Australia, using pooled urine samples. *Environmental science and pollution research international*. 2016;23(23):23436-23448.
11. Sly JL, Moore SE, Gore F, et al. Children's Environmental Health Indicators in Australia. *Annals of global health*. 2016;82(1):156-168.
12. Lynch JP, Werder RB, Simpson J, et al. Aeroallergen-induced IL-33 predisposes to respiratory virus-induced asthma by dampening antiviral immunity. *J Allergy Clin Immunol*. 2016.
13. Lau C, Watson C, Lowry J, David M, Craig S, Wynwood S, Kama M, Nilles E. Human Leptospirosis Infection in Fiji: An Eco-epidemiological Approach to Identifying Risk Factors and Environmental Drivers for Transmission. *PLoS Neglected Tropical Diseases* 2016; 10(1): e0004405.
14. Lau C, Won K, Lammie P, Graves P. Lymphatic Filariasis Elimination in American Samoa: Evaluation of Molecular Xenomonitoring as a Surveillance Tool in the Endgame. *PLoS Neglected Tropical Diseases* 2016; 10(11):e0005108.
15. Huang X, Lambert S, Lau C, Soares Magalhaes R, Marquess J, Rajmohan M, Milinovich G, Hu W. Assessing the Social and Environmental Determinants of Pertussis Epidemics in Queensland, Australia: A Bayesian Spatio-temporal Analysis. *Epidemiology & Infection* 2016; In press (accepted December 2016).
16. Ortu G, Assoum M, Wittman U, Knowles S, Clements M, Ndayishimiye O, Maria-Gloria Basáñez, Lau C, Clements A, Fenwick A, Soares Magalhaes R. The Impact of an 8-year Mass Drug Administration Programme on Prevalence, Intensity, and Co-infections of Soil-transmitted Helminthiasis in Burundi. *Parasites and Vectors* 2016; 9(1):513.
17. Lau C, Streeton C, David M, Sly P, Mills D. The Tolerability of a Combined Hepatitis A and Typhoid Vaccine in Children Aged 2 to 16 Years. *Journal of Travel Medicine* 2016. doi: 10.1093/jtm/tav023.
18. Gray D, Willemse L, Visagie A, Czovek D, Nduru P, Vanker A, Stein DJ, Koen N, Sly PD, Hantos Z, Hall GL, Zar HJ. Determinants of early-life lung function in African infants. *Thorax*. 2016. doi:10.1136/thoraxjnl-2015-207401.
19. Goldizen FC. From SARS to Avian Influenza: The Role of International Factors in China's Approach to Infectious Disease Control. *Annals of Global Health*. 2016;82(1):180-8.

20. Ahmed AMS, Soares Magalhaes RJ, Ahmed T, Long KZ, Hossain M, Islam MM, Mahfuz M, Gaffar SMA, Sharmeen A, Haque R, Guerrant RL, Petri WA, Mamun AA. Vitamin-D status is not a confounder of the relationship between zinc and diarrhoea: a study in 6-24-month-old underweight and normal-weight children of urban Bangladesh. *European Journal of Clinical Nutrition*. 2016;70(5):620-628. doi:10.1038/ejcn.2016.7
21. Hasan MT, Soares Magalhaes RJ, Williams GM, Mamun AA. Long-term changes in childhood malnutrition are associated with long-term changes in maternal BMI: evidence from Bangladesh, 1996-2011. *American Journal of Clinical Nutrition*. 2016;104(4):1121-1127. doi:10.3945/ajcn.115.111773
22. Ortu G, Assoum M, Wittmann U, Knowles S, Clements M, Ndayishimiye O, Basanez M-G, Lau C, Clements A, Fenwick A, Soares Magalhaes RJ. The impact of an 8-year mass drug administration programme on prevalence, intensity and co-infections of soil-transmitted helminthiasis in Burundi. *Parasites & Vectors*. 2016;9(1):1-17. doi:10.1186/s13071-016-1794-9
23. Ahmed AMS, Ahmed T, Soares Magalhaes RJ, Long KZ, Alam MA, Hossain MI, Islam MM, Mahfuz M, Mondal D, Haque R, Mamun AA. Association between serum vitamin D, retinol and zinc status, and acute respiratory infections in underweight and normal-weight children aged 6–24 months living in an urban slum in Bangladesh. *Epidemiology and Infection*. 2016;144(16):1-13. doi:10.1017/S0950268816001771
24. Ahmed AMS, Soares Magalhaes RJ, Long KZ, Ahmed T, Alam MA, Hossain MI, Islam MM, Mahfuz M, Mondal D, Haque R, Mamun AA. Association of vitamin D status with incidence of enterotoxigenic, enteropathogenic and enteroaggregative *Escherichia coli* diarrhoea in children of urban Bangladesh. *Tropical Medicine and International Health*. 2016;21(8):973-984. doi:10.1111/tmi.12731
25. Caamaño MC, Ronquillo D, Kimoto R, García, OP, Long KZ, Rosado JL. Beliefs and motives related to eating and body size: A comparison between high BMI and normal weight young-adult-women from rural and urban areas in Mexico. *BMC Public Health*. 2016;16:1014.
26. Srinivasan P, Lawa HR, Rosado JL, Al Mamun A, Khatun M, Santos JI, Utzinger J, Long KZ. Household and personal factors are sources of heterogeneity in intestinal parasite clearance among Mexican children 6-15 months of age supplemented with vitamin A and zinc. *Acta Trop*. 2016;156:48-56.
27. Hasan MT, Soares Magalhaes RJ, Williams GM, Mamun AA. The role of maternal education in the 15-year trajectory of malnutrition in children under 5 years of age in Bangladesh. *Matern Child Nutr*. 2016;12(4):929-939.
28. Gyawali P, Beale DJ, Ahmed W, Karpe AV, Soares Magalhaes RJ, Morrison PD, Palombo EA. Determination of *Ancylostoma caninum* ova viability using metabolic profiling. *Parasitol Res*. 2016;15(9):3485-3492.

Reviews/Editorials/Commentaries

1. Sly PD, Bush A. From the Cradle to the Grave: The Early-Life Origins of Chronic Obstructive Pulmonary Disease. *Am J Respir Crit Care Med*. 2016;193(1):1-2.
2. Suk WA, Ahanchian H, Asante KA, et al. Environmental Pollution: An Under-recognized Threat to Children's Health, Especially in Low- and Middle-Income Countries. *Environ Health Perspect*. 2016;124(3):A41-45.
3. Upham JW, Sly PD. Vitamin D in Asthma. Is the Golden Bullet Losing Its Luster? *Am J Respir Crit Care Med*. 2016;193(6):598-600.
4. Heffernan AL, Thompson K, Eaglesham G, et al. Rapid, automated online SPE-LC-QTRAP-MS/MS method for the simultaneous analysis of 14 phthalate metabolites and 5 bisphenol analogues in human urine. *Talanta*. 2016;151:224-233.
5. Sly PD, Carpenter DO. Traditional and emerging environmental hazards in South-East Asia: double-trouble in the 21st century. *Rev Environ Health*. 2016;31(1):1.
6. Heacock M, Kelly CB, Asante KA, et al. E-Waste and Harm to Vulnerable Populations: A Growing Global Problem. *Environ Health Perspect*. 2016;124(5):550-555.
7. Chen Y, McLachlan MS, Kaserzon S, et al. Monthly variation in faeces: blood concentration ratio of persistent organic pollutants over the first year of life: a case study of one infant. *Environmental research*. 2016;147:259-268.
8. Sly PD, Wainwright CE. Diagnosis and early life risk factors for bronchiectasis in cystic fibrosis:

- a review. Expert review of respiratory medicine. 2016;1-8.
9. Knibbs LD, Sly PD. Airborne Transmission of Viral Respiratory Pathogens. Don't Stand So Close to Me? *Am J Respir Crit Care Med*. 2016;194(3):253-254.
 10. Suk W, Ruchirawat M, Stein RT, et al. Health Consequences of Environmental Exposures in Early Life: Coping with a Changing World in the Post-MDG Era. *Annals of global health*. 2016;82(1):20-27.
 11. Cao J, Xu X, Hylkema MN, et al. Early-life Exposure to Widespread Environmental Toxicants and Health Risk: A Focus on the Immune and Respiratory Systems. *Annals of global health*. 2016;82(1):119-131.
 12. Landrigan PJ, Sly JL, Ruchirawat M, et al. Health Consequences of Environmental Exposures: Changing Global Patterns of Exposure and Disease. *Annals of global health*. 2016;82(1):10-19.
 13. Sly PD, Carpenter DO, Van den Berg M, et al. Health Consequences of Environmental Exposures: Causal Thinking in Global Environmental Epidemiology. *Annals of global health*. 2016;82(1):3-9.
 14. Sly PD. Why do we publish review articles on environmental health topics? *Rev Environ Health*. 2016;31(3):295.
 15. Sly Peter D, Zar H. The Spectrum of Lower Respiratory Tract Illness in children post-pneumococcal conjugate vaccination. *Am J Respir Crit Car Med*. 2016:195(1).
 16. Suk WA, Sly PD. Ensuring a Bright Future for Children's Environmental Health. *Annals of global health*. 2016;82(1):1-2.
 17. Sly PD, Sly JL, Moore SE, Jagals P. Children's environmental health indicators in Australia: are we collecting the right information? *Rev Environ Health*. 2016;31(1):163-167.
 18. Sly PD, Varghese J, Noor F, et al. Severe winter asthma exacerbations may be prevented by omalizumab but no carry over effect. *J Allergy Clin Immunol*. 2016.
 19. Ponsonby AL, Symeonides C, Vuillermin P, Mueller J, Sly PD, Saffery R. Epigenetic regulation of neurodevelopmental genes in response to in utero exposure to phthalate plastic chemicals: How can we delineate causal effects? *Neurotoxicology*. 2016;55:92-101.
 20. Lau C, Musso D, Fournier P, Parola P, Raoult D, Weinstein P. Absence of Serological Evidence of Rickettsia spp., Bartonella spp., Ehrlichia spp., and Coxiella burnetii Infections in American Samoa. *Ticks and Tick-borne Diseases* 2016;7(5):703-705.
 21. Lau C, Smith C. Using Bayesian Networks in Infectious Disease Eco-epidemiology. *Reviews in Environmental Health* 2016. doi: 10.1515/reveh-2015-0052.
 22. English K, Toms LL, Gallen C, Mueller JF. BDE-209 in the Australian Environment: Desktop review. *Journal of hazardous materials*. 2016;320:194-203.
 23. Gunanti IR, Al-Mamun A, Schubert ECR, Long KZ. The effect of zinc supplementation on body composition and hormonal levels related to adiposity amongst children: a systematic review. *Public Health Nutrition*. 2016;1-16. doi:10.1017/S1368980016001154
 24. Hoque, Mohammad Enamul, Mannan, Munim, Long, Kurt Z. and Mamun, Abdullah Al (2016) Economic burden of underweight and overweight among adults in the Asia-Pacific region: a systematic review. *Tropical Medicine and International Health*, 21 4: 458-469. doi:10.1111/tmi.12679
 25. Campbell SJ, Nery SV, Doi SA, Gray DJ, Soares Magalhaes RJ, McCarthy JS, Traub RJ, Andrews RM, Clements ACA. Complexities and perplexities: a critical appraisal of the evidence for soil-transmitted helminth infection-related morbidity. *PLoS Neglected Tropical Diseases*. 2016;10(5). doi:10.1371/journal.pntd.0004566
 26. Furuya-Kanamori LL, Shaohong L, Milinovich G, Soares Magalhaes RJ, Clements ACA, Hu W, Brasil P, Frenti FD, Dunning R, Yakob L. Co-distribution and co-infection of chikungunya and dengue viruses. *BMC Infectious Diseases*. 2016;16(84). doi:10.1186/s12879-016-1417-2
 27. Campbell SJ, Nery SV, McCarthy JS, Gray DJ, Soares Magalhaes RJ, Clements ACA. A critical appraisal of control strategies for soil-transmitted helminths. *Trends in Parasitology*. 2016;32(2):97-107. doi:10.1016/j.pt.2015.10.006
 28. Araujo Navas AL, Hamm NAS, Soares Magalhaes RJ, Stein A. Mapping soil transmitted helminths and schistosomiasis under uncertainty: a systematic review and critical appraisal of evidence. *PLoS Neglected Tropical Diseases*. 2016;10(12):e0005208. doi:10.1371/journal.pntd.0005208

Section Editor/Special Journal Editions

Suk WA, Sly PD (Eds). Children's Health in a Changing Global Environment. *Annals of Global Health* 2016;82(1):1-224.

1. Suk WA, Sly PD. Ensuring a Bright Future for Children's Environmental Health. *Annals of Global Health*. 2016;82(1):1-2.
2. Aschengrau A, Janulewicz PA, White RF, Vieira VM, Gallagher LG, Getz KD, et al. Long-term Neurotoxic Effects of Early-life Exposure to Tetrachloroethylene-contaminated Drinking Water. *Annals of Global Health*. 2016;82(1):169-79.
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4. Cao J, Xu X, Hylkema MN, Zeng EY, Sly PD, Suk WA, et al. Early-life Exposure to Widespread Environmental Toxicants and Health Risk: A Focus on the Immune and Respiratory Systems. *Annals of Global Health*. 2016;82(1):119-31.
5. Carignan CC, Punshon T, Karagas MR, Cottingham KL. Potential Exposure to Arsenic from Infant Rice Cereal. *Annals of Global Health*. 2016;82(1):221-4.
6. Froes Asmus CIR, Camara VM, Landrigan PJ, Claudio L. A Systematic Review of Children's Environmental Health in Brazil. *Annals of Global Health*. 2016;82(1):132-48.
7. Goldizen FC. From SARS to Avian Influenza: The Role of International Factors in China's Approach to Infectious Disease Control. *Annals of Global Health*. 2016;82(1):180-8.
8. Hollingworth SA, Kim DD, Jagals P. A Review of Medication Use as an Indicator of Human Health Impact in Environmentally Stressed Areas. *Annals of Global Health*. 2016;82(1):111-8.
9. Idris IB, Ghazi HF, Zhie KH, Khairuman KA, Yahya SK, Abd Zaim FA, et al. Environmental Air Pollutants as Risk Factors for Asthma Among Children Seen in Pediatric Clinics in UKMMC, Kuala Lumpur. *Annals of Global Health*. 2016;82(1):202-8.
10. Laine JE, Fry RC. A Systems Toxicology-based Approach Reveals Biological Pathways Dysregulated by Prenatal Arsenic Exposure. *Annals of Global Health*. 2016;82(1):189-96.
11. Landrigan PJ. Comments on the Causation of Malignant Mesothelioma: Rebutting the False Concept That Recent Exposures to Asbestos Do Not Contribute to Causation of Mesothelioma. *Annals of Global Health*. 2016;82(1):214-6.
12. Landrigan PJ. Comments on the 2014 Helsinki Consensus Report on Asbestos. *Annals of Global Health*. 2016;82(1):217-20.
13. Landrigan PJ, Sly JL, Ruchirawat M, Silva ER, Huo X, Diaz-Barriga F, et al. Health Consequences of Environmental Exposures: Changing Global Patterns of Exposure and Disease. *Annals of Global Health*. 2016;82(1):10-9.
14. Marsillach J, Costa LG, Furlong CE. Paraoxonase-1 and Early-Life Environmental Exposures. *Annals of Global Health*. 2016;82(1):100-10.
15. Pascale A, Sosa A, Bares C, Battocletti A, Moll MJ, Pose D, et al. E-Waste Informal Recycling: An Emerging Source of Lead Exposure in South America. *Annals of Global Health*. 2016;82(1):197-201.
16. Sly JL, Moore SE, Gore F, Brune MN, Neira M, Jagals P, et al. Children's Environmental Health Indicators in Australia. *Annals of Global Health*. 2016;82(1):156-68.
17. Sly PD, Carpenter DO, Van den Berg M, Stein RT, Landrigan PJ, Brune-Drisse M-N, et al. Health Consequences of Environmental Exposures: Causal Thinking in Global Environmental Epidemiology. *Annals of Global Health*. 2016;82(1):3-9.
18. Spann K, Snape N, Baturcam E, Fantino E. The Impact of Early-Life Exposure to Air-borne Environmental Insults on the Function of the Airway Epithelium in Asthma. *Annals of Global Health*. 2016;82(1):28-40.
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Sly PD, Goldizen FC (Eds). Invited Reviews from the 16th International Conference of the Pacific Basin Consortium for Environment and Health. *Reviews on Environmental Health* 2016;31(1):1-190.

1. Sly Peter D, Carpenter David O. Traditional and emerging environmental hazards in South-East Asia: double-trouble in the 21st century. *Reviews on Environmental Health*. 2016; 31(1):1.
2. Suk William A. A quarter century of the Pacific Basin Consortium: looking back to move forward. *Reviews on Environmental Health*. 2016; 31(1):3.
3. Navasumrit P, Chaisatra K, Ruchirawat M. Arsenic projects in SE Asia. *Reviews on Environmental Health*. 2016; 31(1):11.
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5. Chen Celia Y, Driscoll Charles T, Lambert Kathleen F, Mason Robert P, Sunderland Elsie M. Connecting mercury science to policy: from sources to seafood. *Reviews on Environmental Health*. 2016; 31(1):17.
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4. EXPECTATIONS FOR COMING YEAR (not applicable for final reports)

How do you expect to use your funding allocation for the coming year?

Funds will be used according to the original budget allocation to cover staff, equipment and research costs.

Specific activities and research themes that will be undertaken by CHEP and its collaborative network will include:

- The WHO Collaborating Centres Children's Environmental Health Network and WHO eWaste network
- Developing the collaboration with PHFI and researchers in the South Asian region through collaboration and regional training workshops.

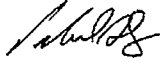
- Improving training and education in children's environmental health.
- Improving assessment of exposure to environmental toxicants in early life.
- Identifying biomarkers of environmental exposures in early life and risk of chronic non-communicable disease.
- Improving assessment of environmental risk factors for chronic non-communicable disease and the impact of early life environmental exposures on the risk for chronic disease.

CERTIFICATIONS

Note: Approvals by email are acceptable.


Annual Report:

Lead CI or Funding Recipient:

Name	Signature	Date
Professor Peter Sly		27/01/2017

Head of School/Centre/Institute:

I have read and endorse the annual report.

Name	Signature	Date
Prof Karen Moritz		27/01/2017

SUBMISSION OF THE REPORT

Please email the completed form to strategicfunding@uq.edu.au

Submission requirements:

- Send a separate email for each annual report submitted
- Attach a single PDF document containing all approvals
- Use descriptive subject lines to help categorise emails
e.g. {Project number} Annual Report