

Gayatri Sankaran

Personal Chemical Exposure Program, Environmental Toxicology Graduate Program

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CURRENT RESEARCH

September 2008 – Present (Expected; October/November 2012)

Graduate Student Researcher for Ph. D. Environmental Toxicology

Advisor: Robert I. Krieger, Ph.D., Department of Entomology and Environmental Toxicology Graduate Program, University of California, Riverside.

Dissertation work

1. Measurement and prediction of harvester pesticide exposures resulting from surface residues in treated strawberry fields.
2. Demonstrating the importance of surface residue transfer and available surface residues than total surface residues for occupational harvester exposure assessment.
3. Development of rubber latex gloves as a potential dermal dosimeter for pesticide residue studies in agricultural and residential settings.
4. Assessment of the contribution of hands to the dermal pesticide exposure to malathion and fenpropathrin in strawberry field harvesters by measuring surface residues in post shift handwashes and urine biomonitoring of biomarkers of parent compounds, malathion and fenpropathrin.
5. Development of a novel experimental hand-model device to study contact transfer of surface residues from treated foliage to gloves on turf.
 - a. To evaluate rubber latex gloves as a potential dosimeter by measuring contact-transfer of residues from foliage to gloves using an original experimental device.

Program projects

1. Transferrable Residue Study of Zinc Borate in Oriented Strand Board (OSB) and Wood Plastic Composites (WPC) (**July 2012**)
 - a. Random wipe sampling of OSB and WPC with different concentrations of Zinc Borate to study transferrable residues.
2. Hydrogen Cyanide Fumigation of Citrus including Cyanide Residue Storage Stability Studies on Valencia Oranges with the California Citrus Quality Council (**Fall 2011**)
 - a. This is a part of a Data Call-in for establishment of pesticide residue tolerance (EPA protocol followed in co-operation with Washburn & Sons, High Grove, CA).
 - b. Sampling fumigated Valencia oranges, studying storage stability of cyanide residues on oranges in -20°C freezer, collection and maintaining cyanide residue data.

3. Ambient sulfuryl fluoride exposure assessment during commercial fumigation of single-family residences for control of drywood termites. (Cooperating with scientists from Dow AgroSciences, **Fall 2010**)
 - a. Implemented exposure assessment of sulfuryl fluoride during commercial fumigation and aeration of single-family residences for control of termites to demonstrate the safe use of SF as a successful structural fumigant.
 - b. Applied interior and exterior air sampling equipment for monitoring of sulfuryl fluoride dissipation following application.
4. Assisted and performed in surface residue sampling techniques, sample collection and statistical analysis of undergraduate projects concerning indoor pesticide use (**January - June 2009**).

These human and environmental studies were performed with the need to clarify and define important chemical exposure issues.

 - a. Influence of Carpet Types to Transferable Residue Following Use of Indoor Insecticide Foggers.
 - b. Availability of Transferable Residue Following Application of para-Nitrophenol on Orange Trees.

EDUCATION

1. September 2008 – present: Environmental Toxicology Graduate Program (Ph.D)

Personal Chemical Exposure Program, Department of Entomology, University of California Riverside, Riverside, CA 92521

Advanced to Candidacy on June 14, 2010

Completed course requirements in March 2010. Core courses included Graduate courses in Principles of toxicology, Mechanisms of toxicity and Fate and transport of chemicals in environment.

Overall GPA – 3.74/4

2. September 2005 - July 2007 : M.Sc. (Medical Biotechnology)

Manipal Academy of Higher Education, Karnataka, India

Gold medalist – Best Outgoing Student in M.Sc. Biotechnology 2005-2007

3. August 2002- July 2005: B.Sc. (Biotechnology)

Manipal Academy of Higher Education, Karnataka, India

Gold medalist - Best Outgoing student in B.Sc. Biotechnology 2002-2005

SKILLS SET

- Immense knowledge in pesticide toxicokinetics (Absorption, Distribution, Metabolism and Excretion) and toxicology of neurotoxins and pharmaceutical drugs.
- Meticulous in organizing field studies for outdoor and indoor environmental monitoring.
- Operating and troubleshooting GC-MS, GC-ECD and GC-FPD for chemical analysis of residues and biomarkers.
- Clear understanding of fate and transport of environmental chemicals.
- Excellent presentation skills and statistical tools (Minitab, SAS)
- In Depth understanding of molecular biology, pharmacology and human anatomy
- Over 2 years of experience in Polymerase Chain reaction (PCR), Mutant allele specific PCR, Agarose gel electrophoresis, Polyacrylamide Gel electrophoresis (PAGE), Restriction Fragment Length Polymorphism (RFLP), Zymography (Gelatin, casein and reverse zymography), Cell biology (Hemocytometer, MTT assay) (Independent work performed during M.S. thesis work)

TEACHING EXPERIENCE

January- March 2012

Teaching assistant, Department of Biology, University of California, Riverside

Course taught - Biology 5LA: introductory laboratory course in Cell and Molecular Biology for undergraduates (Winter 2012)

PROFESSIONAL ASSOCIATION

2009-present: Member, American Chemical Society

2009-present: Member, Society of Toxicology and Member in Dermal Toxicology Specialty Section/ Society of Toxicology

2010-2012: Student Representative, Dermal Toxicology Specialty Section (DTSS)/ Society of Toxicology. Responsibilities included regular networking and conference calls with Senior DTSS officers, experienced people in the field and student representatives @ Specialty Section. Preparation of the DTSS Annual meeting Poster and pamphlets and updating DTSS activities by writing Fall and Spring newsletters.

OTHER ACADEMIC ASSOCIATIONS

2009 – 2011: Chairperson in Environmental Toxicology Mini - Graduate Student Association @ University of California Riverside.

AWARDS RECEIVED

1. **ACS Agrochemicals Division travel grant 2012 for the abstract by G.Sankaran^{1,2}**, T. Ahuja², L.Chen², Z.Chen^{1,2}, A Krieger², W Krieger², Y.Liu², T.Lopez^{1,2}, L Tang², H.Vega², R.I.Krieger^{1,2}. ¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA. During the dissipation of dislodgeable foliar residues a single transfer coefficient does not predict potential dermal exposure of hand harvesters. American Chemical Society, Philadelphia, PA. August 2012.
2. **Regulatory and Safety Evaluation Specialty Section Student Travel Grant Award/ Society of Toxicology 2012** for the abstract “Foliage Residues of Malathion and Fenpropathrin Insecticides as Determinants of Low-level Strawberry Harvester Exposures.” Society of Toxicology, San Francisco, CA March 11-15 2012.
3. The **Carl Strom/Western Exterminator Company Scholarship in Urban Entomology 2011** for the project proposal “Assessment of gloves as a simple dosimeter for estimation of human exposure to surface residues following insecticide use ” UCR Urban Entomology conference University of California, Riverside, March 23 2011.
4. The **Carl Strom/Western Exterminator Company Scholarship in Urban Entomology 2010** for the project proposal “Gloves as a useful human dosimeter for estimating aggregate residential exposure following indoor pesticide use” UCR Urban Entomology conference University of California, Riverside, March 24 2010.
5. **Dermal Toxicology Specialty Section/Society of Toxicology: Battelle Student Research Award 2010** for the project proposal "Dermal Absorption of Pesticides from Strawberry Foliage: Dislodgeable Foliar Residues and Pesticide Glove Residues as a Human Exposure Dosimeter". Society of Toxicology (SOT) meeting – Salt Lake City, UT. March 7-11 2010.
6. **ACS Agrochemicals Division travel grant 2010 for the abstract by G. Sankaran**, Z. Chen, Y. Li, T. Lopez, L. Cui, S Wei-guo, H. Vega, R. I. Krieger titled Rubber Latex Gloves As A Potential Dermal Dosimeter For Measuring Multiple Pesticide Residues In Strawberry Harvesters. American Chemical Society, San Francisco, CA. March 20-25, 2010.
7. **Best First-year Student Presentation 2009**. Annual Student Symposium of Environmental Toxicology Graduate Program. University of California, Riverside, 2009
8. Awarded the **Dean's Distinguished Fellowship Award**: Fall 2008–present. Environmental Toxicology program at University of California at Riverside.
9. Awarded the UGC-NET Scholarship for the University Rank holder (Undergraduate education) for the year 2004-2005 for pursuing postgraduate education from 2005-2007.
10. Secured Rank 308 (out of a total of about 10,000 students) in the All-India Postgraduate Biotechnology Examination for the academic year 2004-2005.

PUBLICATION

1. Yanhong Li, Li Chen, Zhenshan Chen, Joe Coehlo, Li Cui, Terry Lopez, **Gayatri Sankaran**, Helen Vega, and Robert Krieger. Glove Accumulation of Pesticide Residues for Strawberry Harvester Exposure Assessment. (Bulletin of Environmental Contamination and Toxicology, (2011) 86:615–620.
2. Sankaran et al.2012, in preparation “Available Foliar Residues: Surface Pesticide Residues Transferred to Rubber Latex Gloves Using a Novel Mobile Sampling Device”

PLATFORM PRESENTATIONS

1. **Gayatri Sankaran**^{1,2}, Tony Ahuja², Li Chen², Zhenshan Chen^{1,2}, Anasthasia Krieger², William Krieger², Terry Lopez^{1,2}, Loi Tang², Helen Vega², Robert Krieger^{1,2}. ¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA 92521. Rubber latex gloves reduced low-level pesticide exposures of strawberry harvesters. (ENTX Annual Graduate Student Symposium, June 21, 2012 - University of California, Riverside, CA 92521)
2. **Gayatri Sankaran**^{1,2}, Li.Chen², Zhenshan Chen^{1,2}, Yu.Liu², Phuong-Julie Nguyen², Terry Lopez^{1,2}, Loi Tang², Tony Ahuja², Helen Vega², Robert.I.Krieger^{1,2}. ¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA 92521. Assessing the contribution of hands to the pesticide exposure of strawberry harvesters. (ENTX Annual Graduate Student Symposium, June 14, 2011 - University of California, Riverside, CA 92521)
3. **Gayatri Sankaran**, Li Chen, Zhenshan Chen, Terry Lopez, Helen Vega, Robert Krieger. Assessment of hands in dermal exposure of pesticides by measuring of pesticide availability and transferability using rubber latex gloves of strawberry harvesters. (ENTX Annual Graduate Student Symposium, June 16, 2010 - University of California, Riverside, CA 92521)
4. **Gayatri Sankaran**, Yanhong Li, Melinda M. Bigelow Dyk, Zhenshan Chen, Helen Vega, Robert Krieger. Measuring pesticide availability and transferability using rubber latex gloves of strawberry harvesters. (ENTX Annual Graduate Student Symposium, June 23, 2009 - University of California, Riverside, CA 92521)

POSTER PRESENTATIONS

1. **G.Sankaran**^{1,2}, T. Ahuja², L.Chen², Z.Chen^{1,2}, A Krieger², W Krieger², Y.Liu², T.Lopez^{1,2}, L Tang², H.Vega², R.I.Krieger^{1,2}. ¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA 92521 During the dissipation of dislodgeable foliar residues a single transfer coefficient does not predict potential dermal exposure of hand harvesters. American Chemical Society, Philadelphia, PA. August 19-23, 2012.
2. **G. Sankaran**^{1,2}, T.Ahuja², L.Chen², Z. Chen^{1,2}, A. Krieger², W. Krieger², T. Lopez^{1,2}, L. Tang², H. Vega², R.I.Krieger^{1,2}. ¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA 92521.

Foliage Residues of Malathion and Fenprothrin Insecticides as Determinants of Low-level Strawberry Harvester Exposures. Society of Toxicology, San Francisco, CA. March 11-15 2012.

3. **G.Sankaran**^{1,2}, L.Chen², Z.Chen^{1,2}, Y.Liu², T.Lopez^{1,2}, H.Vega², R.I.Krieger^{1,2}.
¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA 92521. Rubber latex gloves as a potential direct dosimeter to estimate pesticide exposure in strawberry harvesters. American Chemical Society, Denver, CO. August 28-31, 2011.
4. L. Chen¹, Z. Chen^{1,2}, Y. Liu¹, T. Lopez^{1,2}, **G. Sankaran**^{1,2}, H. Vega¹, R. Krieger^{1,2}. ¹Personal Chemical Exposure Program; ²Environmental Toxicology Graduate Program, Dept of Entomology, U. California, Riverside, CA 92521. Preformed biomarkers in produce may confound biomonitoring in pesticide exposure and risk assessment. American Chemical Society, Denver, CO. August 28-31, 2011.
5. T. E. Lopez^{1,2}, L. Chen², Z. Chen^{1,2}, L. Cui², Y. Liu², P. J. Nguyen², **G. Sankaran**^{1,2}, L. T. Tang², H. Vega², R. I. Krieger^{1,2}. ¹Environmental Toxicology Graduate Program; ²Personal Chemical Exposure Program, Dept. of Entomology, Univ. of California, Riverside, CA. 92521. Surrogate system using rubber latex gloves to assess contact transfer and accumulation of surface pesticide residues. American Chemical Society, Denver, CO. August 28-31, 2011.
6. **G. Sankaran** and R. I. Krieger. Assessment of gloves as a simple dosimeter for estimation of human exposure to surface residues following insecticide use. Environmental Toxicology Graduate Program; Personal Chemical Exposure Program, Dept of Entomology, U. California, Riverside, CA 92521. (20th Annual UC Riverside Urban Pest Management Conference, Riverside CA, March 23, 2011)
7. **G. Sankaran**, L. Chen, Z. Chen, T. Lopez, H. Vega, R.I. Krieger. The contribution of hands to the dermal pesticide exposure of strawberry harvesters. Society of Toxicology, Washington, D.C. March 6-10 2011.
8. L. Chen, Z. Chen, Y. Liu, T. Lopez, **G. Sankaran**, H. Vega, R.I. Krieger. Insecticide Residues and Their Selected Biomarkers in Produce: Field Studies Using Malathion and Fenprothrin in Strawberries. Society of Toxicology, Washington, D.C. March 6-10 2011.
9. **G. Sankaran**, Y. Li, Z. Chen, T. Lopez, L. Cui, S Wei-guo , H. Vega, R. I. Krieger. Rubber Latex Gloves As A Potential Dermal Dosimeter For Measuring Multiple Pesticide Residues In Strawberry Harvesters. American Chemical Society, San Francisco, CA. March 20-25, 2010.
10. **G. Sankaran**, Y. Li, Z. Chen, T. Lopez, L. Cui, S Wei-guo , H. Vega, R. I. Krieger. Measuring Pesticide Availability And Transferability Using Rubber Latex Gloves Of Strawberry Harvesters As A Potential Dosimeter. American College of Toxicology, Palm Springs, CA. Nov 1-3 2009.
11. **G. Sankaran**, S. Rajesh, S. Nair and S.Nair. Nimesulide: Safety and efficacy as an analgesic and an anti-pyretic. Poster presentation at the Indo-Australian Symposium on Pharmacogenomics held at Manipal University, Manipal, India on March 10, 2006.