STATE OF CALIFORNIA
STANDARD AGREEMENT
STD 213 (Rev 06/03)

AGREEMENT NUMBER
10-C0121
REGISTRATION NUMBER

1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME
Department of Pesticide Regulation (DPR)

CONTRACTOR'S NAME
The Regents of the University of California

2. The term of this Agreement is: May 16, 2011 or upon final approval by the State, whichever occurs later, through December 31, 2013

3. The maximum amount of this Agreement is: **$ 185,650.00**
One hundred eighty-five thousand six hundred fifty dollars and no cents

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement.

Exhibit A – Scope of Work	6 Pages
Exhibit B – Budget Detail and Payment Provisions	3 Pages
Exhibit C* – General Terms and Conditions (GIA 610)	
Exhibit D - Special Terms and Conditions	2 Pages
Exhibit E – Additional Terms and Conditions	1 Page
Exhibit F – Curriculum Vitae	12 Pages

Items shown with an Asterisk (*), are hereby incorporated by reference and made part of this agreement as if attached hereto. *These documents can be viewed at* http://www.ols.dgs.ca.gov/Standard+Language/default.htm

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR

CONTRACTOR'S NAME *(if other than an individual, state whether a corporation, partnership, etc.)*
The Regents of the University of California

BY *(Authorized Signature)* Kathleen P Nolan — DATE SIGNED *(Do not type)* 6-2-11

PRINTED NAME AND TITLE OF PERSON SIGNING
Kathleen P. Nolan, J.D. KTR
Associate Director, Sponsored Programs

ADDRESS
1850 Research Park Drive
Davis, CA 95618

STATE OF CALIFORNIA

AGENCY NAME
Department of Pesticide Regulation

BY *(Authorized Signature)* Anise Severns — DATE SIGNED *(Do not type)* 6/10/11

PRINTED NAME AND TITLE OF PERSON SIGNING
Anise Severns, Fiscal Services and Business Operations Branch Chief

ADDRESS
1001 I Street, Sacramento, CA 95814

California Department of General Services Use Only

APPROVED
JUL - 8 2011
DEPT OF GENERAL SERVICES

☒ Exempt per: Delegation Letter 74.4

EXHIBIT A
STANDARD AGREEMENT

SCOPE OF WORK

1. The Regents of the University of California is hereinafter referred to as UC Davis or Contractor

2. This Agreement will commence on the start date May 16, 2011 as presented herein or upon final approval by the State, whichever is later and no work shall begin before that time. This Agreement is of no effect unless approved by the State. Contractor shall not receive payment for work performed prior to approval of the Agreement and before receipt of notice to proceed by the Contract Manager. This Agreement shall expire on December 31, 2013. The services shall be provided during normal working hours, Monday through Friday, except State holidays.

3. The Project Representatives during the term of this Agreement will be:

   A. All official communications, except invoices, from the Contractor to DPR shall be directed to the attention of the DPR Contract Manager, Sheryl Gill, at:

   Department of Pesticide Regulation
   Environmental Monitoring Branch, MS-3B
   1001 I Street
   P.O. Box 4015
   Sacramento, CA 95812-4015

   Phone (916) 324-5144; Fax (916) 324-4088

   Email address: sgill@cdpr.ca.gov

   B. All invoices from the Contractor to DPR shall be directed to:

   Department of Pesticide Regulation
   Attn: Accounts Payable
   P.O. Box 4015, MS 4A
   Sacramento, CA 95812-4015

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C. All programmatic and non-fiscal administrative communications from DPR to the Contractor shall be directed to the attention of Dr. Thomas Young at:

Dr. Thomas Young
Department of Civil and Environmental Engineering
One Shields Ave
UC Davis, CA 95616

Phone: 530-754-9399; Fax: 530-752-7872

Email: tyoung@ucdavis.edu

D. All fiscal communications and payments from DPR to the Contractor shall be directed to:

Assistant Vice Chancellor - Finance
Accounting & Financial Services
One Shields Avenue
University of California, Davis
Davis, CA 95616

Phone: (530) 757-8501; FAX: (530) 757-8510

F. The Project Representatives during the term of this Agreement may be changed by mutual written agreement without the necessity of formal amendment to this Agreement.

4. UC Davis agrees to provide the following services:

A. Background and Goals

Previous work under DPR contract #06-0086c revealed that the extent of washoff of pyrethroid insecticides from concrete, soil and turf surfaces was highly dependent on the nature of the formulation during small scale testing with rainfall simulators. These findings offer the possibility that reformulation of pesticide products might reduce the washoff risk from non-agricultural applications. Two key knowledge gaps remain, however. First, because the previous study only tested the washoff of four non-granular commercial products containing four active ingredients, the ability to generalize the findings to statements about preferred formulations is limited. Second, the small scale nature of the testing meant that only washoff from the source zone was considered. Attenuation of the active ingredients and the associated surfactants as they moved away from the zone of application was not considered. This proposal seeks to fill those knowledge gaps.

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B. Work to Be Performed

Task 1. Understanding the role of formulation in pesticide washoff from concrete

The previous research (Jorgenson, B.C., Young, T.M. "Formulation Effects and the Off-target Transport of Pyrethroid Insecticides from Urban Hard Surfaces," *Environmental Science & Technology*, 2010, 44(13), 4951-7) suggested that the key elements of product formulation determining off-target movement from urban surfaces were (1) amount, and possibly type, of surfactants included in the formulation and (2) presence and size of particulates contained in the formulation (e.g., granular products or particles in suspension concentrates). This work considered a limited number of formulations, all of which are available for retail sale. In the proposed work, the scope of products tested will be broadened to include multiple formulations for each active ingredient of water quality concern, including several restricted use formulations. Table 1 includes a list of products that could be used in these tests, with the goal of testing four formulations for each of the five active ingredients and including multiple examples of the key formulation types: emulsifiable concentrate (EC), suspension concentrate (SC), wettable powder (WP), and microcapsule suspension (MS). Each of these products will be tested for washoff from concrete surfaces under conditions used most commonly in the previous testing (24 h set time, simulated storm with intensity of 25 mm/hr and duration of 1 hour). In parallel we will seek a batch testing or smaller scale runoff simulation that correlates well with the field scale washoff results. If such a method is developed and validated, it will replace subsequent washoff experiments at the ~1 m^2 scale for the remaining products in the experimental matrix.

Each of the products tested for washoff will also be characterized for their surfactant content using information available on the label and MSDS (to obtain information about bulk adjuvant concentrations), using our liquid chromatography-evaporative light scattering detector system (LC-ELSD; to obtain approximate division between nonionic and anionic surfactant concentrations), and by fast atom bombardment-mass spectrometry (FAB-MS; to obtain more detailed information about the chemical structure of the surfactants). Correlations of product washoff from the treated area with surfactant concentration, surfactant structure, and physical form of the active ingredient will then be sought using a variety of statistical approaches. The aim of this task is to 1) develop generalizable information about how product formulation affects washoff from urban hard surfaces, 2)assist in identifying product characteristics that are most desirable for such applications and 3) help DPR generate protective labeling requirements or other use restrictions for the products that pose higher risks to surface water and sediment quality.

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Table 1. Tentative list of products for expanded washoff testing

Active Ingredient	Product, formulation type, general/restricted
Bifenthrin	Bifen XTS 25.1%, EC, restricted
	Talstar P 7.9%, SC, restricted
	Ortho Home Defense 0.05%, CE, general
	Ortho Home and Lanscape 0.3%, EC, general
Cypermethrin	Demon Max 25.3%, EC, restricted
	Demon WP 40%, WP, restricted
	Cynoff EC 24.8%, EC, restricted
	Cynof WP 40%, WP, restricted
Cyfluthrin	Cy-Kick CS 6%, MS, restricted
	Tempo SC 11.8%, SC, restricted
	Tempo Ultra WP 10%, WP, restricted
	Bayer Ultra Max Termite 2.5%, SC, general
Esfenvalerate	Conquer 3.48%, EC, restricted
	Onslaught 6%, MS, restricted
	Ortho Max Garden and Landscape 0.033%, EC, general
L Cyhalothrin	Demand CS 9.7%, MS, restricted
	Demand EZ 2.43%, MS, restricted
	Scimitar 9.7%, MS, restricted
	Spectracide Lawn and Landscape 0.5%, EC, general

Task 2. Coupled measurement and modeling of active ingredient and adjuvant transport

In the treated area, such as the perimeter of a residential structure, rain may initially mobilize both active ingredient and surfactant from the formulation and the surfactant may promote solubilization of the pyrethroid at that location. As the product moves away from the treated zone to adjacent untreated surfaces, both surfactants and active ingredients will be subject to attenuation processes such as sorption to untreated surfaces. Because the active ingredient and surfactant have very different physical/chemical properties they are likely to experience different levels of attenuation, possibly separating the "pulse" of insecticide from the "pulse" of surfactant. Loss of surfactant from solution containing active ingredient may lead to decreased mobility of the active ingredient compared with washoff estimates derived solely from the source zone experiments. The purpose of this task is to measure and develop a numerical model of the attenuation of both surfactant and active ingredient as they move away from the treated concrete area across adjacent untreated concrete surfaces.

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Replicate rainfall simulations will be conducted in parallel following the same procedures used in the previous study except that the treated area will be hydraulically connected to untreated concrete. Concentrations of active ingredient and surfactant(s) will be measured over the course of a simulated storm at the edge of the treated area and at intervals as the water is transported across the untreated area. Changes in attenuation of the components will be investigated with changes in formulation and rainfall intensity and duration. Experiments will be conducted, at a minimum, for formulations that do and do not have active ingredient in particulate form (e.g., EC and MS formulations), for two different rainfall intensities (25 and 50 mm/hr) and at varied time intervals over a 1 hr total storm duration. The experimental results will be used to develop and calibrate a 1-dimensional, coupled surfactant and pyrethroid transport model.

Task 3. Management, coordination, and reporting

All aspects of the experimental and modeling program will be managed by Professor Thomas Young, who will oversee the activities of a graduate student who will perform day-to-day experimental work on the project. Professor Young will maintain regular contact with the assigned DPR project officer and will meet with DPR representatives as needed to provide updates on project findings and to discuss any concerns that arise. The work will be conducted in coordination with ongoing, related efforts at the University of California, Riverside (Professor Jay Gan). The formulation work will be conducted with input from the Pyrethroid Working Group (PWG) and the PWG will be used to help disseminate findings regarding the relative mobility of different formulations to pesticide manufacturers to support voluntary changes in formulation or restrictions on use. All aspects of the experimental and modeling program will be summarized in a final report submitted to DPR and revised, as deemed appropriate by Dr. Young, based on comments from DPR technical staff or other reviewers suggested by DPR. At the request of DPR's Contract Manager and with 30 days advance written notice, Professor Young will provide a presentation to DPR summarizing the findings of the work performed under this Agreement. Findings will also be broadly disseminated to pest control operators, stormwater agencies, and other interested parties.

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C. Project Timeline

Date:		2011								2012											
		M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Task	Product																				
1	Acute and Chronic Effects of Pesticides																				
	Copepod culture	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Acute & chronic testing	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
2	Abiotic Interactions																				
	Physio-chemical testing								X	X	X	X	X	X	X	X	X	X	X	X	X
3	Modeling																				
	Data analysis and modeling								X	X	X	X	X	X	X	X	X	X	X	X	X
1-3	Scientific publication and review																				
	Semi-annual reports to DPR								X						X						X
	Submission to Scientific publication																				X
	State conferences and meetings	As appropriate (TBD)																			

5. DPR Responsibilities

Provide review and approval of study protocol and report within 30 days of submission.

EXHIBIT B
Standard Agreement

BUDGET DETAIL AND PAYMENT PROVISIONS

1. Invoicing

A. For services rendered in accordance with Exhibit A, paragraph 4.B of this Agreement and upon receipt and approval of invoices by the Contract Manager, DPR agrees to compensate Contractor, in arrears, for actual allowable costs incurred as specified herein and in accordance with the rates specified herein or attached hereto. Incomplete or disputed invoices shall be returned to Contractor, unpaid, for correction.

B. Invoices shall include the Agreement Number, itemized costs in accordance with the rates specified herein of attached hereto, and shall be submitted in triplicate, not more frequently than monthly or less than quarterly in arrears, to:

Department of Pesticide Regulation
Attn: Accounts Payable
P.O. Box 4015, MS-4A
Sacramento, CA 95812-4015

2. Budget Contingency Clause

A. It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, DPR shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.

B. If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, DPR shall have the option to either cancel this Agreement with no liability occurring to DPR, or offer an Agreement Amendment to Contractor to reflect the reduced amount.

3. Payment

A. Costs for this Agreement shall be computed in accordance with State Administrative Manual (SAM) Sections 8752 and 8752.1.

B. Nothing herein contained shall preclude advance payments pursuant to Article 1, Chapter 3, Part 1, Division 3, Title 2 of the California Government Code, Sections 11256 and 11257.

EXHIBIT B
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C. Transportation and subsistence costs shall not exceed rates authorized to be paid UC system employees traveling within California.

D. Contractor will be reimbursed for direct costs, other than salary costs, that are identified in the Contractor's rates.

E. Contractor will bill in arrears for costs incurred during the billing period. If applicable, salary costs will be itemized and billed by position. Documentation supporting specific salary costs will be presented if requested by DPR. Non-wage costs will be billed, in summary, according to general expense categories. A detailed report of transactions will support the billing. Individual expenditures exceeding $500.00 will be supported by a photocopy of the original documentation. Documentation in support of expenditures less than $500.00 will be presented if requested by DPR.

F. Contractor shall not commence performance of work or services until this contract has been approved by the State. No payment will be made prior to approval nor for any work performed prior to approval of this Agreement.

G. Ten percent (10%) of the total amount of this Agreement shall be withheld by DPR until ~~the satisfactory completion of this Agreement~~ completion of the services performed according to the Scope of work and the terms of this Agreement.

4. Rates

Table I - Details Budget

	FY 10-11	FY 11-12	FY 12-13	FY 13-14	Total
1. Salaries & Wages	$ 11,811	$ 50,917	$ 41,462	$11,174	$115,364
2. Benefits ①	$ 3,930	$ 3,159	$ 1,504	$1,768	$ 10,361
3. Travel ②	$200	$ 600	$ 500	$200	$ 1,500
4. Supplies③	$ 13,762	$ 8,600	$ 3,757	$1,000	$ 27,119
5. Contractual	$ 0	$ 0	$ 0	$0	$ 0
6. Equipment④	$ 0	$ 0	$ 0	$0	$ 0
7. Indirect Cost⑤ 25%	$ 7,426	$ 12,268	$ 8,077	$3,535	$ 31,306
Total Amount	$37,129	$ 75,544	$ 55,300	$17,677	**Grand Total $ 185,650**

①Benefits include: Worker's Compensation and other benefits appropriate for title and in-state student fee compensation.
(NOTE: Student Interns are non-personnel employees with no benefits and shall be excluded from the percentage calculation of this line item.)
②Travel includes: Invoice for payments on travel shall be based on current University of California rates and guidelines
③Supplies include: Copying services, field sampling supplies, lab supplies, reagents
④Minor Equipment: line item does not include any equipment with a unit acquisition of $5,000 or more. If over 5,000 then line item must be identified as "Equipment" line time and Exhibit E will require special language.
⑤Indirect Cost: 25% indirect cost rate

EXHIBIT B
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Table II - Details Personnel

SALARIES	FY10-11 05/10-06/11	FY11-12 07/11-06/12	2-13 07/12-06/13	3-14 07/13-12/13
Thomas Young, Principal Investigator ($11,261/mo x 1 mo/yr @ 50% Y1,80% Y2, 33% Y3 & 46.2% Y4)	$5,631	$9,279	$3,942	$5,523
Hyun-Min Hwang, Project Scientist ($6180/mo x 1 mo/yr @ 100% in Y1 only)	$6,180	$0	$0	$0
Graduate SR IV ($3,448 @ 55% academic @ 100% summer Y1, 52% acad. & 50% summer Y2, and 50% summer only during Y3)	$0	$27,435	$22,606	$5,651
In-state student fee compensation for GSR III **include 5% increase per year*		$14,203	$14,914	$0
Salary total	***$11,811***	***$50,917***	***$41,462***	***$11,174***
BENEFITS				
Principal Investigator @ 27%, 30.2%, 30.7% and 30.7% years 1 through 4 respectively	$1,520	$2,802	$1,210	$1,695
Project Scientist @ 39%	$2,410	$0	$0	$0
GSR III @ 1.3%	$0	$357	$294	$73
Benefits total	***$3,930***	***$3,159***	***$1,504***	***$1,768***

Note: All project salaries include a 3% increase per each fiscal year.

5. Cost Limitation

A. The total amount of this Agreement shall not exceed $ 185,650.00.

B. It is understood and agreed that this total is an estimate and that DPR will pay for only those services actually rendered as authorized by the DPR Contract Manager or his/her designee.

EXHIBIT D
Standard Agreement

SPECIAL TERMS AND CONDITIONS

1. Termination

A. Either Party reserves the right to terminate this agreement without cause upon thirty (30) days written notice to the other Party, or immediately in the event of a material breach. In the event of termination, Contractor shall be paid for all allowable costs incurred up to the date of termination, including any non-cancelable obligations.

B. In the event that the total Agreement amount is expended prior to the expiration date, DPR may, at its sole discretion, terminate this Agreement with 30 days notice to contractor.

2. Subcontracting

A. Contractor shall perform the work contemplated with resources available within its own organization and no portion of the work shall be subcontracted unless the subcontract(s) is identified in this Agreement.

B. Any subcontract in excess of $25,000, entered into as a result of this Agreement, shall contain all the provisions stipulated in this Agreement to be applicable to Subcontractors.

C. Any substitution of subcontractors must be approved in writing by the DPR Contract Manager in advance of assigning work to a substitute subcontractor.

5. Dispute Resolution

A. DPR reserves the right to issue an order to stop work in the event that a dispute should arise, or in the event that the DPR gives the performing agency a notice that this Agreement will be terminated. If DPR exercises this right, the stop-work order will be in effect until the dispute has been resolved or this Agreement has been terminated.

B. Any dispute concerning a question of fact arising under the terms of this Agreement which is not disposed of within a reasonable period of time by agency employees normally responsible for the administration of this agreement, shall be brought to the attention of the Executive Officer or designated representative of each agency for joint resolution.

C. The Contractor shall continue to perform all its responsibilities under this agreement during any dispute until notified to stop work or expiration of this Agreement.

EXHIBIT D
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6. Harassment Free Workplace

The Department of Pesticide Regulation (DPR) is committed to providing a safe, secure environment, free from sexual misconduct. It is policy of the Department that employees have the right to work in an environment that is free from all forms of discrimination, including sexual harassment. This policy specifically speaks to freedom from a sexually harassing act that results in the creation of an intimidating, hostile or offensive work environment or that otherwise interferes with an individual's employment or work performance. As a Contractor with DPR, you and your staff are expected to comply with a standard of conduct that is respectful and courteous to DPR employees and all other persons contacted during the performance of this Agreement. Sexual harassment is unacceptable, will not be tolerated; and may be cause for prohibiting some or all of the Contractor's staff from performing work under this Agreement.

EXHIBIT E
Standard Agreement

ADDITIONAL PROVISIONS

1. Disposition of Work Product

The Department retains use and non-commercial governmental distribution rights to all deliverables identified in this Agreement in Exhibit A, Item 4.B. Work to Be Performed.

2. Contractor Evaluation

The Contractor is hereby notified that its performance under this Agreement may be evaluated within thirty (30) calendar days following the Expiration of this Agreement. The evaluation may include statements on the adequacy of the service or the product, whether the service was satisfactory, whether the service or the product was provided or completed within the time limitations, reasons for time or cost overruns, whether the product is operational or being utilized by the State, and/or the State plans for implementation, and the State's general impression as to the competency of the Contractor and its staff. The evaluation shall be filed in the State's official Contractor Evaluation File.

3. Consulting Services

A. The Contractor is hereby advised of its duties, obligations and rights under Public Contract Code § 10335.5.

B. The Contractor's key personnel assigned to perform work under this Agreement and their level of responsibility shall be mutually acceptable to the State and the Contractor.

EXHIBIT F
Standard Agreement

Thomas M. Young

Department of Civil & Environmental Engineering
University of California
Davis, CA 95616

ph: 530-754-9399
fax: 530-752-7872
email: tyoung@ucdavis.edu

Education

University of Michigan, Ph.D., Environmental Engineering, 1996
University of California, Berkeley, M.P.P., Graduate School of Public Policy, 1987
Michigan State University, B.S. with Honors, Chemical Engineering, 1985

Professional Experience

University of California, Davis, Professor (7/06-present)
University of California, Davis, Associate Professor (7/01-6/06)
University of California, Davis, Assistant Professor (11/95-6/01)
University of Michigan, Research and Teaching Assistant (9/91-9/95)
US Environmental Protection Agency, Environmental Protection Specialist (8/87-8/90)

Awards

Distinguished Service Award, Association of Environmental Engineering and Science Professors, 2004
NSF Career Award Recipient, 1998
Graduate Student Award, American Chemical Society, Environmental Chemistry Division, 1996
Outstanding Environmental Engineering Graduate Student, University of Michigan, 1995
Certificate of Merit for First Presentation, American Chemical Society, 1994
Benton Fellowship, University of Michigan, 1990
Berkeley Policy Fellowship, University of California, Berkeley, 1985-1987
Harry S. Truman Scholarship, Truman Scholarship Foundation, 1983-1987
Alumni Distinguished Scholarship, Michigan State University, 1981-1985

Affiliations

American Society of Civil Engineers
American Chemical Society
Association of Environmental Engineering and Science Professors
Society of Environmental Toxicology and Chemistry

Peer-Reviewed Journal Publications

Giudice, B.D., Massoudieh, A., Young, T.M. "Evaluating Management Decisions to Reduce Environmental Risk of Roadside Applied Herbicides" *Transportation Research Record*, in press.

Hwang, H.-M., Green, P.G., Higashi, R.M., Young, T.M. "Tidal salt marsh sediment in California, USA: 2. Occurrence and anthropogenic input of trace metals," *Chemosphere*, 2006, 64: 1899-1909.

Hwang, H.-M., Green, P.G., Young, T.M. "Tidal salt marsh sediment in California, USA: 1. Occurrence and sources of organic contaminants," *Chemosphere*, 2006, 64: 1383-1392.

Green, P.G., Young, T.M. "Loading of the Herbicide Diuron into the California Water System" *Environmental Engineering Science*, 2006, 23(3): 545-551.

Huang, X., Massoudieh, A., Young, T.M. "Measured and Predicted Herbicide Removal by Mulch" *Journal of Environmental Engineering*, 2006, 132(8): 918-925.

Ju, D., Young, T.M. "The Influence of Natural Organic Matter Rigidity on the Sorption, Desorption, and Competitive Displacement Rates of 1,2-Dichlorobenzene" *Environmental Science & Technology*, 2005, 39: 7956-7963.

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Ju, D., Young, T.M. "The Influence of the Rigidity of Geosorbent Organic Matter on Nonideal Sorption Behaviors of Chlorinated Benzenes," *Water Research*, 2005, 39, 2599-2610.

Watanabe, N., Schwartz, E., Scow, K.M., Young, T.M. "Relating Desorption and Biodegradation of Phenanthrene to Soil Organic Matter Structure Characterized by Quantitative Pyrolysis GC-MS," *Environmental Science & Technology*, 2005, 39, 6170-6181.

Huang, X., Fong, S., Deanovic, L., Young, T.M. "Toxicity of Herbicides in Highway Runoff" *Environmental Toxicology and Chemistry*, 2005, 24, 214-218.

Massoudieh, A., Huang, X., Young, T.M., Mariño, M.A. "Modeling Fate and Transport of Roadside-Applied Herbicides" *Journal of Environmental Engineering*, 2005, 131, 1057-1067.

Moore, A.M., Young, T.M. "Chloride Interactions with Iron Surfaces: Implications for Perchlorate and Nitrate Remediation" *Journal of Environmental Engineering*, 2005, 131(6): 924-933.

Lu, X.Q., Werner, I., Young, T.M. "Geochemistry and Bioavailability of Metals in Sediments from Northern San Francisco Bay" *Environment International*, 2005, 31, 593-602.

Ju, D., Young, T.M. "Effects of competitor and natural organic matter characteristics on the equilibrium sorption of 1,2-dichlorobenzene in soil and shale" *Environmental Science & Technology*, 2004, 38, 5863-5870.

Huang, X., Pedersen, T., Fischer, M., White, R., Young, T. M. "Herbicide Runoff Along Highways: II. Sorption Control" *Environmental Science & Technology*, 2004, 38, 3272-3278.

Huang, X., Pedersen, T., Fischer, M., White, R., Young, T. M. "Herbicide Runoff Along Highways: I. Field Observations" *Environmental Science & Technology*, 2004, 38, 3263-3271.

Datta, S., Do, L.V., Young, T.M. "A Simplified Method for Sampling and Analysis of High Volume Surface Water for Organic Contaminants Using XAD-2" *Journal of Environmental Science and Health Part B*, 2004, B39(2): 225–234.

Werner, I., Teh, S.J., Datta, S., Lu, X.Q., Young, T.M. "Biomarker responses in *Macoma Nasuta* exposed to sediments from northern San Francisco Bay" *Marine Environmental Research*, 2004, 58: 299-304.

Dong, Q. and T.M. Young, "Synthesis and rapid expansion in supercritical CO_2 through porous sintered metal plate of poly(1,1,2,2-tetrahydroperfluorodecyl acrylate)" *Journal of Applied Polymer Science*, 2003, 88, 2763-2768.

Moore, A.M., Deleon, C. and T.M. Young, "Rate and Extent of Aqueous Perchlorate Removal by Iron Surfaces," *Environmental Science & Technology*, 2003, 37: 3189-3198.

Young, T.M., D.A. Heeraman, G. Sirin and L.L., Ashbaugh,. "Resuspension of Contaminated Soils as a Source of Airborne Lead Near Industrial Facilities and Highways," *Environmental Science & Technology*, 2002, 36: 2484-2490.

Weber, W.J., Jr., E.J. LeBoeuf, T.M. Young, and W. Huang, "Contaminant Interactions with Geosorbent Organic Matter: Insights from Polymer Sciences," *Water Research*, 2001, 35:853-868.

Taylor, M.K., T.M. Young, C.E. Butzke and S.E. Ebeler, "Supercritical Fluid Extraction of 2,4,6-trichloroanisole from Cork Stoppers," *Journal of Agricultural and Food Chemistry*, 2000, 48:2208-2211.

Ohlinger, K.N., T.M. Young and E.D. Schroeder. "Postdigestion Struvite Precipitation Using a Fluidized Bed Reactor," *Journal of Environmental Engineering*, 2000, 126:361-368.

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Chang, P.B.L. and T.M. Young, "Kinetics of Methyl tert-butyl Ether Degradation and By-product Formation During UV/Hydrogen Peroxide Water Treatment," *Water Research*, 2000, 34:2233-2240.

Harkey, G.H. and T.M. Young, "Effect of Soil Contaminant Extraction Method in Determining Toxicity Using the Microtox® Assay," *Environmental Toxicology and Chemistry*, 2000, 19: 276-282.

Ohlinger, K.N., T.M. Young and E.D. Schroeder, "Kinetics Effects on Preferential Struvite Accumulation in Wastewater," *Journal of Environmental Engineering*, 1999, 125: 730-737.

Ohlinger, K.N., T.M. Young and E.D. Schroeder. "Predicting Struvite Formation in Digestion," *Water Research*, 1998, 32: 3607-3614.

Schultz. L.F., T.M. Young and R.M. Higashi, "Sorption-Desorption Behavior of Phenanthrene Elucidated by Pyrolysis GCMS Studies of Soil Organic Matter," *Environmental Toxicology and Chemistry*, 1999, 18: 1710-1719.

Young, T.M. and W.J. Weber, Jr. "Equilibrium and Rate Study of Analyte-Matrix Interactions in Supercritical Fluid Extraction," *Analytical Chemistry*, 1997, 69: 1612-1619.

Huang, W., T.M. Young, M.A. Schlautman, H. Yu and W.J. Weber, Jr. "A Distributed Reactivity Model for Sorption by Soils and Sediments. 9. General Isotherm Nonlinearity and Applicability of the Dual Reactive Domain Model," *Environmental Science and Technology*, 1997, 31: 1703-1710.

Young, T.M. and W.J. Weber, Jr. "A Distributed Reactivity Model for Sorption by Soils and Sediments 7. Enthalpy and Polarity Effects on Desorption under Supercritical Fluid Conditions," *Environmental Science & Technology*, 1997, 31: 1692-1696.

Weber, W.J., Jr. and T.M. Young. "A Distributed Reactivity Model for Sorption by Soils and Sediments. 6. Mechanistic Implications of Desorption under Supercritical Fluid Conditions," *Environmental Science & Technology*, 1997, 31: 1686-1691.

Young, T.M. and W.J. Weber, Jr. "A Distributed Reactivity Model for Sorption by Soils and Sediments. 3. Effects of Diagenetic Processes on Sorption Energetics," *Environmental Science and Technology*, 1995, 29, 92-97.

Book Chapters

Miller, J.L., Miller, M.J., Larsen, K.L., deVlaming, V., Green, P.G., Young, T.M. Identification of causes of algal toxicity in Sacramento-San Joaquin Watershed (California, USA)," in: Norborg-King, T.J., Ausley, L.W., Burton, D.T., Goodfellow, W.J., Miller, J.L., Waller, W.T., eds. *Toxicity reduction and toxicity identifications for effluents, ambient waters and other aqueous media*. Society of Environmental Toxicology and Chemistry: Pensacola Beach, FL, 2005.

Young, T.M. and W.J. Weber, Jr. "Sorption and Desorption Rates for Neutral Organic Compounds in Soils," in *Chemical Processes in Soils*, M.A. Tabatabai and D.L. Sparks, eds., 2005.

Apodaca, D.L., E.R. Birnbaum, T.M. McCleskey, and T.M. Young, "Extraction of Metals Using Fluoro-Supported Ligands in CO_2" in *Nuclear Site Remediation : First Accomplishments of the Environmental Management Science Program*, P.G. Eller and W.R. Heineman, eds., ACS Symposium Series No. 778, 2001.

W.J. Weber, Jr., T.M. Young and A. Hillers. "Microscale Heterogeneities in Soil Properties and Their Effects on Sorption and Bioavailability" Bioremediation: Principles and Practice, S.K. Sikdar and R.L. Irvine, Eds., Technomic Publishing Co., Inc., Lancaster, PA, 1997.

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Young, T.M. "How Well do Leak Detection Methods Work?: Preliminary Results from the EPA Test Procedures,:" in *Leak Detection Monitoring for Underground Storage Tanks, ASTM STP 1161*, P. B. Durgin and T.M. Young, Eds., American Society for Testing and Materials, Philadelphia, 1993.

Other Publications

M. Kayhanian, T.M. Young, M.K. Stenstrom, "Limitation of Current Solids Measurements in Stormwater Runoff," *Stormwater*, Vol. 6, pp. 40-58, 2005

Reports

H.M. Hwang, P.G. Green, T.M. Young, "Monitoring of Priority Toxic Pollutants in Stormwater Runoff Collected at Caltrans Facilities," California Department of Transportation, Report CTSW-RT-05-73-05.1, Sacramento, CA, August 2005

M. Kayhanian, T.M. Young, M.K. Stenstrom, "Methodology to Measure Small Particles and Associated Constituents in Highway Runoff," California Department of Transportation, Sacramento, CA, May 2005

X. Huang, T.M. Young, "Evaluation of factors controlling herbicide runoff to surface water" California Department of Transportation, Report CTSW-RT-03-084.73.04, Sacramento, CA, May 2005

T.M. Young and R.D. Golding, "Underground Storage Tank System Field-Based Research Project Report" California State Water Resources Control Board, Sacramento, CA, May 2002.

J. Nakayama-Curry and T.M. Young, "Field Verification of the Performance of Release Detection Methods for Underground Storage Tank Systems," U.S. Environmental Protection Agency, Washington, DC, June 2000.

T.M. Young, "The Effects of Electromagnetic Fields Produced by High Voltage Transmission Lines" Final Report, Legislative Science Office, Lansing, MI, June, 1984.

Presentations and Invited Lectures

"Implications of Competitive Desorption Processes for Environmental Risk Assessment," Gordon Research Conference, Environmental Sciences: Water, Plymouth, NH, June 2006.

"Implications of Competitive Desorption Processes for Risk Assessment and Engineered Immobilization of Organic Contaminants," Society of Environmental Toxicology and Chemistry, Europe, Annual Meeting, The Hague, Netherlands, May 2006.

"Selecting chemicals to minimize environmental damage: A case study of highway applied herbicides," invited seminar, University of Notre Dame, February 2006.

"Diuron in Surface Water: Transport, Transformation, Toxicity," invited seminar, University of Nevada, Reno, September 2005.

"Impacts of Diuron transport and transformation on aquatic ecosystems and drinking water," Association of Environmental Engineering and Science Professors, Biannual meeting, Clarkson University, Potsdam, NY, July 2005.

"Herbicide Runoff Along Highways: Mechanisms, Models, Toxicity, and Control," invited seminar, UCLA, April 2005.

"Contaminants on fine particles in highway storm water runoff," Society of Environmental Toxicology and Chemistry, Annual Meeting, Portland, OR, November 2004.

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"The Role of Soil Organic Matter Structure in Controlling the Desorption and Bioavailability of Organic Compounds," invited talk, 2004 Bioavailability and Bioaccessibility Workshop, Berkeley, CA, September 2004.

"Dynamics of dissolved and particle-bound organic contaminants in San Pablo Bay," invited seminar, UC Riverside, May 2003.

"Dynamics of dissolved and particle-bound organic contaminants in northern San Pablo Bay," CALFED Science Conference, Sacramento, CA, January 2003.

"Assessment of contaminant fate and transport in a complex surface water system," Association of Environmental Engineering and Science Professors Research and Teaching Conference, Toronto, August 2002.

"Role of natural organic matter structure in controlling the sorption and bioavailability of nonpolar organic compounds," Gordon Research Conference, Environmental Sciences: Water, Plymouth, NH, June 2002.

"Role of Natural Organic Matter Structure in Controlling the Sorption Behavior of Nonpolar Organic Contaminants" Department of Civil & Environmental Engineering, invited seminar, University of Wisconsin, Madison, Wisconsin, October 2001.

"Relating Desorption Rates to Soil Organic Matter Structure Determined by Pyrolysis GC-MS and Solid State NMR" ACS Fall Meeting, Chicago, IL, August 2001

"Resuspension of Contaminated Soil as a Source of Airborne Lead," invited seminar, Department of Civil Engineering, Northwestern University, Evanston, Illinois, May 2001.

"Organic Chemical Fate in the Subsurface: The Role of Soil Organic Matter Composition," invited seminar, University of California, Berkeley, March 2000.

"Assessing UST Performance: Past, Present and Future Studies," invited presentation, California State Water Resources Board UST/LUST Annual Meeting, February 2000.

"Influence of Soil Organic Matter Composition on Desorption and Biodegradation of Aromatic Pollutants," Bioremediation Research Program Review, Chicago, IL, November, 1999.

"Relationship among Organic Matter Structure, Sorption and Bioavailability," Association of Environmental Engineering and Science Professors, Biannual Conference, Pennsylvania State University, August 1999.

"Effect of Soil Organic Matter Characteristics on the Transport and Risk Assessment of Organic Contaminants in the Subsurface," Universities Council on Water Research, Honolulu, HI, June 1999.

"Relationship Between Phenanthrene Sorption-Desorption Behavior in Soils and Natural Organic Matter Structural Fragments Evolved During Pyrolysis-GCMS" 1998 AGU Fall Meeting, San Francisco, CA, December 6 - 10, 1998.

"Extracting PCBs, PAHs and Metals from Soils with Supercritical CO_2: What Can It Tell Us About Environmental Risk?" Invited presentation, 34th ACS Western Regional Meeting, San Francisco, CA, October 28-31, 1998.

"Influence of Soil Organic Matter Composition on Desorption and Biodegradation of Aromatic Pollutants" 1996-1998 Bioremediation Research Program Review, Washington, DC, September 23-24, 1998.

"Anticipating Organic Chemical Bioavailability in Soils Using Supercritical Fluid Extraction," Gordon Conference, Environmental Sciences: Water, Henniker, NH, June 14-19, 1998.

EXHIBIT F
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"Field Verification of Leak Detection Performance: Studies in California and Nationwide"invited presentation, 10th Annual UST/LUST National Conference, Long Beach, CA, March 30 – April 1, 1998.

"Supercritical Fluid Extraction as a Tunable Medium for Bioavailability Estimation," 18th Annual SETAC Meeting, San Francisco, CA, November 16-20, 1997.

"Quantifying the Desorption Resistant Fraction using Supercritical CO_2 Extraction," 1997 ACS Fall Meeting, Las Vegas, NV, September 7-11, 1997.

"Investigating Pollutant-Natural Organic Matter Interactions Using Supercritical Fluids," 1996 AGU Fall Meeting, San Francisco, CA, December 15-19, 1996.

"Understanding the Effects of Modifier, Soil Type and System Conditions on Extraction Efficiency Using SC-CO_2 Desorption Isotherms," 7th International Symposium on Supercritical Fluid Chromatography and Extraction, Indianapolis, IN, March 31-April 4, 1996.

"Probing the Binding Interactions between Hydrophobic Organic Compounds and Natural Organic Matter using Supercritical Fluid Extraction," American Chemical Society Symposium on Colloidal and Interfacial Phenomena in Aquatic Environments, Anaheim, CA, April 2-7, 1995.

"Measuring Bioavailability of Hydrophobic Organic Compounds Using Supercritical Fluid Extraction," Department of Defense Tri-Service Workshop, Monterey, CA, April 9-12, 1995.

"Measuring Binding Energies of Hydrophobic Compounds on Soils using Supercritical Fluid Extraction," 67th Conference and Exposition of the Water Environment Federation, Chicago, IL, October 1994.

"Estimating Aqueous Desorption of Hydrophobic Organic Compounds Using Supercritical Fluid Extraction," 17th Midwest Environmental Chemistry Workshop, East Lansing, MI, October 1994.

"Effect of Soil Characteristics on Sorption Energetics of Hydrophobic Organic Compounds," American Chemical Society Symposium on Physical-Chemical Processes Controlling Contaminant Mobility in Aquatic Environments, San Diego, CA, March 1994.

"Relationship between Heats of Sorption on Soils and Supercritical Fluid Extraction Efficiencies," The 5th International Symposium on Supercritical Fluid Chromatography and Extraction, Baltimore, MD, January 1994.

"Supercritical Extraction for Characterization of the Binding of Organic Contaminants by Soil and Sediment," The Eighteenth Annual Risk Reduction Engineering Laboratory Research Symposium, Cincinnati, OH, April 1992.

Abstracts

T.A. Ogunyoku, T.M. Young, M. Carr, K. Gies, C. Malone, J. Pelz., "Advanced Wastewater Treatment Capabilities For California Toxics Rule Constituents And Other Trace Toxics: Evaluation of Research Needs," Environmental Sciences: Water, Gordon Research Conference, Plymouth, NH, June 22-30, 2006

E. McKenzie, T.M. Young, C. Wong, "Contaminant Source Identification Based on Elemental Composition," Environmental Sciences: Water, Gordon Research Conference, Plymouth, NH, June 25-30, 2006

T.L. Fojut, T.M. Young, "Sediment-Bound Pyrethroid Pesticide Analysis and Isomerization," NorCal SETAC meeting, May 2006

T.L. Fojut, T.M. Young, "Isomerization and Partitioning of the Pyrethroid Insecticide lambda-Cyhalothrin in Aqueous-Sediment Systems," SETAC Europe 16th Annual Meeting, May 2006

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I.R. Faria, T.M. Young, "Effect of Physical-Chemical Properties of Chlorobenzenes and PAHs in Competitive Displacement Processes", SETAC Europe 16th Annual Meeting, May 2006

I.R. Faria, T.M. Young, "Physical-Chemical Properties of Chlorobenzenes and PAHs in Competitive Displacement Processes", 5th International Conference on Remediation of Chlorinated and Recalcitrant Compounds, May 2006

T.L. Fojut, T.M. Young, "Pyrethroid Pesticides in River Sediment," TSR&TP Symposium, April 2006

W.H. Chen, P.G. Green, T.M. Young, "Diuron in California's Water Supply: Transformation and Associated Risks," UC-ANR Water Resources Coordinating Conference, Woodland, CA, April 2006

T.L. Fojut, T.M. Young, "Sediment-bound Pyrethroid Pesticide Analysis," UC-ANR Water Resources Coordinating Conference, Woodland, CA, April 2006

N. Watanabe, T.M. Young, "Relating Sorption/Desorption to Soil Organic Matter Structure Characterized by Quantitative Pyrolysis GC-MS," Soil Science Society of America Meeting, Salt Lake City, UT, November 2005

W.H. Chen, P.G. Green, T.M. Young, "Diuron in California's Water Supply: Transformation and Associated Risks," AWWA CA/NV Section Annual Meeting, Reno, NV, October 2005

H.M. Hwang, P.G. Green, T.M. Young, "Historical trends of organic contaminants and trace metals in salt marsh, San Francisco Bay, CA," 230th American Chemical Society National Meeting, Washington, DC, August 2005

D. Kim, T.M. Young, "Effects of colloids on dissolved PAH concentrations in surface water," 230th American Chemical Society National Meeting, Washington, DC August 2005

P.G. Green, T.M. Young, "The Herbicide Diuron and its Degradation Products in the Waters of California," 39th ACS Western Regional Meeting, Sacramento, CA, October 2004

H.M. Hwang, T.M. Young, "Volatile organic compounds in highway stormwater runoff," Abstracts of Papers of The American Chemical Society 228: U625-U625 212-ENVR Part 1 August 22 2004

X. Huang, T.M. Young, "Herbicide runoff along the Roadside," StormCon, Palm Desert, CA, June 2004

H.M. Hwang, T.M. Young, P.G. Green, "Input of organic contaminants from highway stormwater runoff," StormCon, Palm Desert, CA, June 2004

P.G. Green, T.M. Young, "Diuron: a top California herbicide which runs off, causes algal toxicity, and may be a human health concern," NIEHS Superfund Quad-University/EPA Region 9 Conference, Berkeley, CA, October 2003

D.Y. Ju, T.M. Young, "Mechanistic perspective on the competitive sorption behavior of chlorinated benzenes in natural geosorbents." Abstracts of Papers of the American Chemical Society 226: U505-U505 228-ENVR Part 1 September 2003

H.M. Hwang, T.M. Young, "Polycyclic aromatic hydrocarbons, (PAHs) in urban and highway runoff and precipitation," Abstracts of Papers of the American Chemical Society 226: U508-U508 244-ENVR Part 1 September 2003

T.M. Young, S. Datta, X.Q. Lu, P.G. Green, "Storm Water Monitoring for Priority Toxic Pollutants in California," Society of Environmental Toxicology and Chemistry Annual Meeting, Salt Lake City, UT, November 2002

I. Werner, S. Datta, S.J. Teh, J.J. Baum and T.M. Young, "Bioaccumulation and Toxic Effects of Sediment Bound Organic Chemicals in the Clam *Macoma nasuta* and the Amphipod *Ampelisca*

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abdita," Society of Environmental Toxicology and Chemistry Annual Meeting, Salt Lake City, UT, November 2002.

S. Datta, L.V. Do, R.R. Busalpa and T.M. Young, "Spatial and Temporal Trends in the Environmental Fate of Pesticides and PAHs in the San Francisco Bay, California," Abstracts of Papers of the American Chemical Society 223: 173-ENVR Part 1 April 7 2002

S. Datta, I. Werner, T.M. Young, J.J. Baum and T. Patterson, "Environmental Fate of Organic Pollutants and Toxicity to Clams (*Macoma nasuta)* and Amphipods *(Ampelisca abdita)*," Society of Environmental Toxicology and Chemistry Annual Meeting, November 2001

X.Q. Lu, I. Werner, O. Tuli and T.M. Young, "Sediment Bioaccumulation and Toxicity Evaluation Using the Clam *Macoma* Nasuta," Society of Environmental Toxicology and Chemistry Annual Meeting, November 2001O. Tuli, P.G. Green, T.M. Young and X.Q. Lu, "Mobility of Metals in San Pablo Bay Sediments," Society of Environmental Toxicology and Chemistry, November 2001

J.J. Baum, S. Datta, T.M. Young, "Trace Organic Contaminants in San Pablo Bay Sediments And Their Bioavailability," American Chemical Society National Meeting, Chicago, IL, August 2001

N. Watanabe and T.M. Young, "Relating Desorption Rates to Soil Organic Matter Structure Determined by Pyrolysis GC-MS and Solid State NMR," Abstracts of Papers of the American Chemical Society 222: 21-ENVR Part 1 August 2001

S. Datta, J.J. Baum and T.M. Young, "Trends in monitoring trace contaminants in the San Francisco Bay, California," Abstracts of Papers of the American Chemical Society 221: 89-AGRO Part 1 April 1 2001

N. Watanabe and T.M. Young, "Aqueous Phase Desorption Rates of a Hydrophobic Compound from California Soils," Abstracts of Papers of The American Chemical Society 220: 82-ENVR Part 1 August 20 2000

V. Uddameri and T.M. Young, "Application of Artificial Neural Networks in Remediation and Risk Assessment," Abstracts of Papers of the American Chemical Society 219: 206-ENVR Part 1 March 26 2000

X.J. Huang S. Given, T. Pedersen, T.M. Young, "Evaluation of Factors Controlling Herbicide Runoff to Surface Water" Abstracts of Papers of the American Chemical Society 219: 189-ENVR Part 1 March 26 2000

V. Uddameri, T.M. Young, "A Process Oriented Approach to Derive Soil Cleanup Levels," AGU Fall Meeting, San Francisco, CA, December, 1999.

L.F. Schultz, R.M. Higashi, T.W.M. Fan, T.M. Young, "Soil organic matter structural considerations in the sorption and bioavailability of phenanthrene," Abstracts of Papers of the American Chemical Society 217: 030-GEOC Part 1 March 21 1999

T.M. Young, C.J. Hinrichs, L.F. Schultz, R.M. Higashi, "Relationship between Phenanthrene Sorption-Desorption Behavior in Soils and Natural Organic Matter Structural Fragments Evolved During Pyrolysis-GCMS," AGU Fall Meeting, San Francisco, CA, December 6-10, 1998

D.L. Apodaca, T.M. Young, T.M. McCleskey, N. Sauer, "Extraction of Metals from Soils Using Supercritical Carbon Dioxide," AGU Fall Meeting, San Francisco, CA, December 6-10, 1998

G.A. Harkey, A.M. Cepuritis, T.M. Young, "Effect of Extraction Method in Determining Toxicity in PAH-Contaminated Soils," SETAC Annual Meeting, Charlotte, NC, November, 1998

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T.M. Young, D.L. Apodaca, S.M. Caswell, A. Sayers-Fay, G. Sirin, "Extracting PCBs, PAHs and Metals from Soils with Supercritical CO_2: What Can It Tell Us About Environmental Risk?" 34th ACS Western Regional Meeting, San Francisco, CA, October 28-31, 1998

T.M. Young, K.M. Scow, R.M. Higashi, T.W-M. Fan, E. Schwartz, L.F. Schultz, S.M. Caswell, "Influence of Soil Organic Matter Composition on Desorption and Biodegradation of Aromatic Pollutants," 1996-1998 Bioremediation Research Program Review, Washington, DC, September 23-24, 1998

T.M. Young, S.M. Caswell, E. Schwartz, K.M. Scow, L.F. Schultz, R.M. Higashi, "Anticipating Organic Chemical Bioavailability in Soils Using Supercritical Fluid Extraction," Environmental Sciences: Water, Gordon Conference, Henniker, NH, June 14-19, 1998

T.M. Young, "Field Verification of Leak Detection Performance: Studies in California and Nationwide," 10th Annual UST/LUST National Conference, Long Beach, CA, March 30 - April 1, 1998

T.M. Young, S.M. Caswell, G. Leong, "Supercritical Fluid Extraction as a Tunable Medium for Bioavailability Estimation," 18th Annual SETAC Meeting, San Francisco, CA, November 16-20, 1997

T.M. Young, G. Leong, "Quantifying the Desorption Resistant Fraction using Supercritical CO_2 Extraction," Abstracts of Papers of the American Chemical Society 214: 53-ENVR Part 1 September 7 1997

M.D. Johnson, E.J. LeBoeuf, T.M. Young, W.J. Weber, Jr., "Dynamic SFE Extraction of Phenanthrene from Synthetic Polymers," 7th International Symposium on Supercritical Fluid Chromatography and Extraction, pp. D-17, March 31-April 4, 1996

T.M. Young, W.J. Weber, Jr., "Understanding the Effects of Modifier, Soil Type and System Conditions on Extraction Efficiency Using SC-CO_2 Desorption Isotherms," 7th International Symposium on Supercritical Fluid Chromatography and Extraction, pp. D-15, March 31-April 4, 1996

T.M. Young, W.J. Weber, Jr., "Probing the Binding Interactions between Hydrophobic Organic Compounds and Natural Organic Matter using Supercritical Fluid Extraction," Abstracts of Papers of the American Chemical Society 209: 258-ENVR Part 1 April 2 1995

W. Huang, T.M. Young, W.J. Weber, Jr., "Sorption of Phenanthrene on Soil and Sediment: Effects of Heterogeneity of Humic Materials on Isotherm Nonlinearity," 17th Midwest Environmental Chemistry Workshop, East Lansing, MI, October, 1994

T.M. Young, M.A. Schlautman, W.J. Weber, Jr., "Effect of Soil Characteristics on Sorption Energetics of Hydrophobic Organic Compounds," Abstracts of Papers of the American Chemical Society 207: 82-ENVR Part 1 March 13 1994

W.J. Weber, Jr. and T.M. Young "Assessment of Binding Energies between Organic Contaminants and Soils and Sediments," Eighteenth Annual Risk Reduction Engineering Laboratory Research Symposium, U.S. EPA, Office of Research and Development, EPA/600/R-92/028, pp. 160-162, April, 1992

Research Funding

Source Identification for Major Runoff Constituents, California Department of Transportation 9/05-12/06, $260,000

Low Cost Adsorbent Materials for Dissolved Metals Removal, California Department of Transportation, 9/05-12/06, $120,000

BMP Performance Assessment based on Particle and Toxicity Removal, California Department of Transportation, 9/05-5/08, $460,000

Applying the Herbicide Transport Model to Support Management Decisions," California Department of Transportation, 8/05-9/06, $150,000

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Diuron in California's Water Supply: Transformations and Associated Risks, Water Resources Center, 7/05-6/07, $60,000

Technical Assistance, California Department of Transportation, 5/05-6/-06, $196,382

Transport, Transformation and Bioremediation of Contaminants in the Environment: Exposure Assessment in Heterogeneous Environmental Media, NIH, NIEHS Superfund Basic Research Program, 4/05-3/10, $1,449,461

Pacific Estuarine Ecosystem Indicator Research: Toxic Substances in Marshes, UC Toxic Substances Teaching and Research Program/US EPA, 7/03-6/05, $50,000

Methodology to Measure Small Particles and the Associated Contaminants in Highway Runoff, California Department of Transportation, 5/04-5/05, $449,814

Investigation of water quality in agricultural drains of the Central Valley, California State Water Resources Control Board 8/02-3/04, $450,000

The Catalysis of Perchlorate Ion Electroreduction at Transition Metal Electrodes, Water Resources Center, 7/02-6/04, $60,000

Field Testing of Underground Storage Tank Systems to Determine Probability of Leakage and to Identify the Release Source in Systems Complying with Current California Regulations, California State Water Resources Control Board, 2/00-6/03, $944,802

Evaluation of factors controlling herbicide runoff to surface water, California Department of Transportation, 6/01-05/05, $1,381,652

Method Development, Pilot Testing and Treatment Strategies for Responding to the California Toxics Rule, California Department of Transportation, 6/01-5/05, $2,475,952

Transport, Transformation, and Remediation of Perchlorate and VOCs in the Vadose Zone and Groundwater, NIH, NIEHS Superfund Basic Research Program, 4/00-3/05, $1,347,890

Generation, Transport and Transformation of Pesticide Residues on Airborne Fine Particulate Matter Derived from Managed Soils, US Department of Agriculture, 7/99-6/02, $317,919

The Physical and Chemical Characterization of Ultrafine and Nanoparticle Particulate Matter Emissions from Gasoline and Diesel On-Road Motor Vehicles, California Air Resources Board, 7/99-12/00, $461,874

CISNet San Pablo Bay Network of Environmental Stress Indicators, US Environmental Protection Agency, 1/99-12/01, $599,764

Multimedia Risk Assessment Project: Identification, Review, Selection and Integration of Media Specific Models, California Environmental Protection Agency, 10/98-12/00, $148,643

CAREER: Education and Research in Support of Risk-based Decision-making, National Science Foundation, 7/98-6/02, $260,000

Resuspension of Contaminated Soil as a Source of Airborne Lead, California Air Resources Board, 7/98-6/00, $99,591

Impacts of Seasonal Terminal Electron Accepting Processes on Natural Attenuation of Chlorinated Compounds in Groundwater, UC Water Resources Center, 7/98-6/00, $59,887

Field Verification of Leak Detection Performance, US Environmental Protection Agency, 2/98-3/00, $76,452

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Preparing Microelectronic Thin Films without Organic Solvents: Proof-of-Concept, UC Toxic Substances Research and Teaching Program, 7/97-6/99, $50,000

Impact of bioavailability on biodegradation kinetics of aromatic pollutants in soil, US Department of Energy 1/97-12/99, $454,000

Book and Literature Reviews

T.M. Young, review of Yong, R.N. and Mulligan, C.N. *Natural Attenuation of Contaminants in Soils* reviewed in *Vadose Zone Journal*, in press.

Schroeder, E.D. and T.M. Young review of Stumm, W. and J.J. Morgan, *Aquatic Chemistry, 3rd Ed.* reviewed in *EOS*, 1996, 77: 284.

A.S. Mayer, P.P.E. Carriere, M.L. Green, R.J. Mitchell, K.D. Pennell, A.J., Rabideau, K.T. Russell, T.M. Sandman, and T.M. Young, "Groundwater Quality" *Water Environment Research*, Vol. 68, No. 4, pp. 662-720, 1996.

Professional Service

Reviewer for Environmental Science and Technology, Environmental Toxicology and Chemistry, Water Research, Journal of Environmental Engineering, Environmental Engineering Science, Water Resources Research, Journal of Environmental Quality, AIChE Journal, Vadose Zone Journal, Environmental Pollution.

Proposal Review for National Science Foundation

Department representative, Representative Assembly of Academic Senate, 2005-2006

College of Engineering Student Recruitment, Development and Welfare Committee member (2003-2004) and chair (2004-present)

Member of Association of Environmental Engineering and Science Professors Mission Statement Committee, 2004

Departmental Awards Committee, 2004-2005

Technical Steering Committee, Sacramento Valley Water Quality Coalition, 2003

Chancellor's Committee on Work Life Balance, W/S 2003

Department Computer Committee member (1997-98, Wtr/Spr 2002) and Chair (2003-2004)

Modeling Workgroup, Aquatic Pesticides Monitoring Program, W 2002-2003

Department Curriculum Committee, Wtr/Spr 2002

Member (2001-2003) and Chair (2003-2004), Association of Environmental Engineering and Science Professors Best Dissertation Committee

Organizer of special symposium "Physicochemical Processes in Environmental Systems,"

American Chemical Society Fall Meeting, New York, NY, September 2003.

Department Office Organization Task Force, Wtr/Spr 2002

Assistant Director, Lead Campus Program in Ecotoxicology, University of California Toxic Substances Research and Teaching Program, 2000-2005

Graduate Adviser, Agricultural and Environmental Chemistry, 1999-present

Department Safety committee, 1999-00 (chair), Fall 2000 (chair)

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Environmental Engineering Area Adviser, 1999-00, Fall 2000