Quarterly Report January 12, 2016

MUS Research Initiative Project 51060-MUSRI2015-01:
Remediation Technology for Chlorinated Pollutants Based on Natural Product from Soil Bacteria

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This project's objectives address the programmatic goal of growing important research sectors that increase the diversity of Montana's economy and lies within the 'Materials' category. Progress toward specific goals to date are given below.

Objective 1: Have verified, chemically pure PDTC sulfonate, polymer-linked PDTC, and their copper complexes: December 10, 2017

- **Hiring**: A search was conducted to hire an in-house synthetic organic chemist in November 2015. That search was terminated and permission was sought and granted from MUS to contract the work at MSU and hire a laboratory research technician at MSUB. Synthetic work will be done in the laboratory of Dr. Tom Livinghouse, MSU Dept. of Chemistry and Biochemistry. A contract has been drafted to support a graduate student and supplies at MSU and is pending administrative approval. A graduate student presently working in the Livinghouse laboratory has been identified to conduct the work.
- **Equipment:** no major equipment is needed for this objective
- **Progress Towards Objective:** Dr. Livinghouse has devised synthetic routes for molecules specified under this objective.

Objective 2: Have data regarding solubility and dechlorination rates for new derivatives of PDTC: April 1, 2017

- **Hiring:** A search for a laboratory research technician is pending administrative approval.
- **Equipment:** An Agilent 7697A headspace autosampler with associated controlling software has been purchased and will be installed in February 2016.
- **Progress Towards Objective:** This work will begin with tests of the natural dechlorination agent, PDTC, when the new equipment is installed and a technician is hired. Generation of comparable data using synthetic derivatives of PDTC will commence upon receipt of deliverables of Objective 1 above.

Objective 3: Have initial toxicology assessment of simulated remediation mixtures, refined dechlorination data to include other solvents, effects of aquifer solids: July 1, 2017

- **Hiring:** The laboratory research technician described under Objective two will also contribute toward this objective.
- **Equipment:** no major equipment is needed under this objective
- **Progress Towards Objective:** We have made initial contacts with contract toxicology providers but have not received formal quotes at this time. Other components will await deliverables of Objective 1.

Expenditures to Date

Category	Budget Total	As of 01/08/2016
Salaries	148,405	0
Equipment	35,000	35,000
Supplies (MSUB)	5000	0
Subcontracts	71,940	0
Travel, Misc.	1600	0