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## Collaborative Research: Refining and Testing Methods for Identifying and Quantifying Gaseous Oxidized Mercury in Air

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## Data Management Plan

### Types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project

This project will generate laboratory and field datasets. These datasets will contain concentrations of Hg and various other atmospheric constituents, and many of the datasets will be time series. We will also develop laboratory and field operating procedures that will be applied to measure the forms of mercury in air that may be used by other researchers. We will write facts sheets and peer reviewed manuscripts to distribute the information developed by this work. We will produce LabView software to operate instrumentation developed for this project.

### Standards to be used for data and metadata format and content

We will follow best practices for recording and archiving laboratory data. Standard protocols will be followed for field and laboratory work. For example, we follow EPA protocols for total Hg analyses methods 7473 (Direct Hg analyses) and 1631 (Total water analysis) and the MDN protocol for measurement of atmospheric Hg using the Tekran system. We have standard operating procedure (SOP) documents for all analyses and quality assurance/quality control procedures done at UNR and USU. For analyses where a protocol is not available, as with instrumentation and methods we are developing, we will develop, write, and follow specific protocols. These SOPs will be available to others that would like to adopt our methods. Most digital data will be stored in comma separated values of Microsoft Excel format.

### Policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;

After we have had a reasonable opportunity to publish results (~1 year), we will share any and all data collected for this project.

### Policies and provisions for re-use, re-distribution, and the production of derivatives

We have no current plans for re-use, re-distribution or production of derivatives.

### Plans for archiving data, samples, and other research products, and for preservation of access to them

Dr. Gustin will be responsible for archiving of laboratory and field data at UNR. This data will be archived on the College of Agriculture Biotechnology and Natural Resources network as well as on computers in Dr. Gustin's laboratory. Dr. Gustin will supervise students and a postdoctoral researcher, who will be responsible for maintaining laboratory notebooks that record data for this project and ensure that undergraduate students are following proper procedures. These will be retained at least for 10 years after the project is completed and results published.

Dr. Lyman will be responsible for data archival at USU. Laboratory notebooks will be digitized, and will be stored along with raw, intermediate, and final datasets. These data will be stored on local computers at USU and field sites and backed up to external hard drives (monthly) and at Box.com (daily), a cloud-based data storage company with whom USU has a contract. Laboratory notebooks will contain information about the source, conditions of collection, and location of data, so information about data origin and quality will be available. All data will be retained at least for Dr. Lyman's lifetime.