

## Journal Articles

- Brown S.G., McCarthy M., DeWinter J., Landreneau J.V., Vaughn D.L., and Roberts P.T. (2010) Mobile source air toxics levels at near-road schools in Las Vegas before and after expansion of the US 95 freeway. (to be submitted).
- McCarthy M.C., Brown S.G., Landreneau J.V., Vaughn D.L., Roberts P.T., and Ludwig J.F. (2010) Filtration efficiency of HVAC systems at near-roadway schools in Las Vegas, Nevada. (to be submitted) (STI-906034-3629).
- McCarthy MC, O'Brien TE, Charrier JG, Hafner HR 2009. Characterization of the Chronic Risk and Hazard of Hazardous Air Pollutants in the United States Using Ambient Monitoring Data. *Environ Health Perspect* 117:790-796. doi:10.1289/ehp.11861
- Notholt, J., Toon, G. C., Fueglistaler, S., Wennberg, P. O., Irion, F. W., McCarthy, M., Scharringhausen, M., Rhee, T. S., Kleinböhl, A., and Velazco, V. (2009) Trend in ice moistening the stratosphere – constraints from isotope data of water and methane, *Atmos. Chem. Phys. Discuss.* **9**, 16973-16991.
- McCarthy M.C., Hafner H.R., Chinkin L.R., and Charrier J.G. (2007) Temporal variability of selected air toxics in the United States. *Atmos. Environ.*, doi:10.1016/j.atmosenv.2007.1005.1037 (STI-2894).
- Mar K.A., McCarthy M.C., Connell P., and Boering K.A., (2007) Modeling the photochemical origins of the deuterium enrichment of stratospheric H<sub>2</sub>. *J. Geophys. Res. –Atmos.* **112** D19302, doi:10.1029/2006JD007403
- Lurmann F.W., Brown S.G., McCarthy M.C., and Roberts P.T. (2006) Processes influencing secondary aerosol formation in the San Joaquin Valley during winter. *J. Air & Waste Manag. Assoc.* **56**, 1679-1693 (STI-902331-2661).
- Brown S.G., Roberts P.T., McCarthy M.C., Lurmann F.W., and Hyslop N.P. (2006) Wintertime vertical variations in particulate matter (PM) and precursor concentrations in the San Joaquin Valley during the California Regional Coarse PM/Fine PM Air Quality Study. *J. Air & Waste Manag. Assoc.* **56** (9), 1267-1277 (STI-902326-2659).
- MacDonald C.P., McCarthy M.C., Dye T.S., Wheeler N.J.M., Hafner H.R., and Roberts P.T. (2006) Transport and dispersion during wintertime particulate matter episodes in the San Joaquin Valley, California. *J. Air & Waste Manag. Assoc.* **56**, 961-976 (STI-902329-2660).
- McCarthy M.C., Eisinger D.S., Hafner H.R., Chinkin L.R., Roberts P.T., Black K.N., Clark N.N., McMurry P.H., and Winer A.M. (2006) Particulate matter: a strategic vision for transportation-related research. *Environ. Sci. Technol.* **40** (18), 5593-5599 (STI-904750-2843). Available on the Internet at <<http://pubs.acs.org/doi/abs/10.1021/es062767i>>.
- McCarthy M.C., Hafner H.R., and Montzka S.A. (2006) Background concentrations of 18 air toxics for North America. *J. Air & Waste Manage. Assoc.* **56**, 3-11 (STI-903550-2589).
- Kenski D., Koerber M., Hafner H.R., McCarthy M.C., and Wheeler N. (2005) Lessons learned from air toxics data: a national perspective. *Environ. Man. J.*, 19-22.
- McCarthy M.C., Boering K.A., Rahn T., Eiler J.M., Rice A.L., Tyler S.C., and Atlas E. (2003) The hydrogen isotopic composition of water vapor entering the stratosphere inferred from high precision measurements of  $\delta$  D-CH<sub>4</sub> and  $\delta$  D-H<sub>2</sub>. *J. Geophys. Res.-Atmos.* **109** (D7) D07034, 10.1029/2003JD004003.
- Rahn T., Eiler J.M., Wennberg P.O., McCarthy M.C., Boering K.A., Tyler S.C., and Atlas E. (2003) Extreme deuterium enrichment in stratospheric molecular hydrogen and its significance for the global atmospheric budget of H<sub>2</sub>. *Nature*, **424**, 918-921.

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- McCarthy M.C., Connell P., and Boering K.A. (2001) Isotopic fractionation of methane in the stratosphere and its effect on free tropospheric isotopic compositions. *Geophys. Res. Lett.* **28** (19), 3657-3660.
- McCarthy M.C., Allington J.W.R., and Sullivan K.O. (1998) A quadratic configuration interaction study of N<sub>2</sub>O and N<sub>2</sub>O. *Molecular Physics*, **96** (12), 1735-1737.
- McCarthy M.C., Allington J.W.R., and Griffith K.S. (1998) An accurate ab initio calculation of the electron affinity of NO. *Chem. Phys. Lett.* **289** (1-2), 156-159.

### Meeting Presentations and Conference Proceedings

- McCarthy M. and Hafner H. (2009) Lessons learned from U.S. air toxics data analysis. Presented at the *ZoneVolution Conference, Edmonton, Alberta, Canada, October 20* (STI-620000-3735).
- McCarthy M.C., O'Brien T.E., Stone J.M., and Hafner H. (2009) Nez Perce air toxics data analysis. Presented to Nez Perce Tribe's Environmental Restoration and Waste Management Division Air Quality Program, Lapwai, ID, STI 909027-3646, June.
- Hafner H.R. and McCarthy M.C. (2009) Summary of national air toxics data analyses - 2007. Online webinar presented on behalf of the U.S. Environmental Protection Agency, Research Triangle Park, NC, on November 6, 2008 (STI-908302-3485). Also presented to the Wyoming Dept. of Environmental Quality on March 18, 2009, by Sonoma Technology, Petaluma, CA.
- McCarthy M.C. and Hafner H.R. (2008) Relating changes in ambient concentrations to mobile source air toxics controls. Presented at the *CRC Mobile Source Air Toxics Workshop, Phoenix, AZ, December 2* by Sonoma Technology, Inc., Petaluma, CA (STI-3407).
- Hafner H.R., McCarthy M.C., and Funk T.H. (2008) Network assessment for the photochemical assessment monitoring stations (PAMS) program: A national overview. Presented at the *Air & Waste Management Association Symposium on Air Quality Measurement Methods and Technology, Chapel Hill, NC, November 3-6*, by Sonoma Technology, Inc., Petaluma, CA (STI-3409).
- McCarthy M.C. and Hafner H.R. (2008) National picture of risk-weighted concentrations of ambient air toxics. Presented at the *Air & Waste Management Association Symposium on Air Quality Measurement Methods and Technology, Chapel Hill, NC, November 3-6, 2008* by Sonoma Technology, Inc., Petaluma, CA (STI-3410).
- Roberts P.T., McCarthy M.C., and Brown S.G. (2008) Characteristics of mobile-source air toxics (MSATs) at three schools next to U.S. 95 in Las Vegas, Nevada. Presented at the *Air & Waste Management Association's 101st Annual Conference & Exhibition, Portland, OR, June 25* (STI-906034.14-3272).
- McCarthy M.C., Hafner H.R., and Charrier J.G. (2007) National trends in trace metals concentrations in ambient particulate matter. Presented at the *Fall 2007 American Geophysical Union Conference, San Francisco, CA, December 14*, by Sonoma Technology, Inc., Petaluma, CA (STI-3221).
- McCarthy M.C., O'Brien T.E., and Hafner H.R. (2007) Risk and hazard characterization summary. Presented at the *Air Toxics Data Analysis Workshop, Rosemont, IL, October 4*, by Sonoma Technology, Inc., Petaluma, CA (STI-905306-3236).

- McCarthy M.C., Charrier J.C., and Hafner H.R. (2007) Trends and accountability. Presented at the *Air Toxics Data Analysis Workshop, Rosemont, IL, October 4*, by Sonoma Technology, Inc., Petaluma, CA (STI-905306-3236).
- McCarthy M.C., Wade K.S., and Hafner H.R. (2007) Analysis of ambient air quality after Hurricane Katrina. Presented at the *Symposium on Air Quality Measurement Methods and Technology, Air and Waste Management Association, San Francisco, CA, May 2*, by Sonoma Technology, Inc., Petaluma, CA (STI-3111).
- McCarthy M.C., Hafner H.R., and Charrier J.G. (2007) Southeastern air toxics data collection and analysis. Presented at the *EPA Region 4, SESARM, and Metro 4 Air Toxics Summit, Atlanta, GA, February 27-28*, by Sonoma Technology, Inc., Petaluma, CA (STI-906021-3134).
- Hafner H.R., McCarthy M.C., and Chinkin L.R. (2006) Temporal trends in air toxics. Presented at the *AWMA Symposium on Air Quality Measurement Methods and Technology, Durham, NC, May 9*, by Sonoma Technology, Inc., Petaluma, CA (STI-2885).
- Hafner H.R., O'Brien T.E., Frankel A.P., McCarthy M.C., and Brown S.G. (2006) 2005 JATAP monitoring project gaseous air toxics data validation and analysis. Presented at the *JATAP Workshop Meeting, Phoenix, AZ, March 6* by Sonoma Technology, Inc., Petaluma, CA (905039.02-2921).
- McCarthy M.C., Hafner H.R., Chinkin L.R., Cozzo E.M., Raffuse S.M., and Gray E.A. (2005) Air toxics monitoring data analysis workshop. Presentation prepared for the U.S. Environmental Protection Agency, Raleigh, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-905102-2799, September.
- McCarthy M.C. and Hafner H.R. (2004) Background concentrations of mobile source air toxics. Poster presented at *The Coordinating Research Council (CRC) Mobile Source Air Toxics Workshop, Scottsdale, AZ, December 1-2* (STI-2643).
- Hafner H.R., McCarthy M.C., Brown S.G., Raffuse S.M., Shields E., Stiefer P.S., and Wheeler N.J. (2004) Workshop on air toxics data analysis. *Prepared for Lake Michigan Air Directors Consortium; presented in Rosemont, IL, June 2-3* (STI-903555).
- McCarthy M.C., Hafner H.R., and Roberts P.T. (2004) Task 2.4: boundary and background conditions. Presented to *California Regional PM<sub>10</sub>/PM<sub>2.5</sub> Air Quality Study (CRPAQS) Data Analysis Workshop, Sacramento, CA, March 9-10* by Sonoma Technology, Inc., Petaluma, CA (STI-902325-2500).
- McCarthy M.C., Connell P.A., and Boering K.A. (2003) Modeling the extreme deuterium enrichment in stratospheric hydrogen. Poster prepared for the *American Geophysical Union Fall Meeting, San Francisco, CA, December 8-12*.
- McCarthy M.C., Boering K.A., Rahn T., Eiler J.M., Rice A.L., Tyler S.C., Schauffler S., Donnelly S., and Atlas E. (2003) The hydrogen isotopic composition of water vapor inferred from high precision CH<sub>4</sub> and H<sub>2</sub> measurements. Poster prepared for the *European Geophysical Society-American Geophysical Union Joint Assembly, April 6-11, Nice, France*.
- McCarthy M.C., Boering K.A., Rahn T., Eiler J.M., Rice A.L., Tyler S.C., Schauffler S., Donnelly S., and Atlas E. (2002) The hydrogen isotopic composition of water vapor inferred from high precision CH<sub>4</sub> and H<sub>2</sub> measurements. Poster prepared for the *American Geophysical Union Fall Meeting, December 6-10, San Francisco, CA*.
- McCarthy M.C., Boering K.A., Rice A.L., Tyler S.C., Connell P., and Atlas E. (2001) Modeling  $\delta^{13}\text{C}$  and  $\delta\text{D}$  of stratospheric methane: Implications for kinetic isotope effects and the isotopic composition of tropospheric methane. Poster prepared for the *American Geophysical Union Fall Meeting, December 10-14, San Francisco, CA*.

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### **Formal Reports**

Roberts P.T., Brown S.G., McCarthy M.C., DeWinter J.L., Landreneau J.V., and Vaughn D.L. (2009) Mobile source air toxics (MSATs) at three schools next to U.S. 95 in Las Vegas, Nevada. Draft final report prepared for the Nevada Department of Transportation, Las Vegas, NV, by Sonoma Technology, Inc., Petaluma, CA, STI-906034-3509-DFR, November.

DeWinter J.L., McCarthy M.C., Brown S.G., Shiffrin J.P., and Hafner H.R. (2009) Atmospheric nitrogen deposition on Wampanoag tribal lands. Draft final report prepared for the Wampanoag Tribe of Gay Head (Aquinnah), Aquinnah, MA, prepared by Sonoma Technology, Inc., Petaluma, CA, STI-909015-3706-DFR, September.

McCarthy M.C., Stone J.M., O'Brien T.E., and Hafner H.R. (2009) Lewiston area air toxics data analysis. Final report prepared for the Nez Perce Tribe, Environmental Restoration and Waste Management Division, Lapwai, ID, by Sonoma Technology, Inc., Petaluma, CA, STI-909027-3654, June.

McCarthy M.C., Huang S.M., DeWinter J.L., and Hafner H.R. (2009) Measuring progress in air toxics using ambient data. Final report prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-908303.02-3450-FR, January.

McCarthy M.C., Funk T.H., and Hafner H.R. (2008) Network assessment for the national photochemical assessment monitoring stations (PAMS) program. Draft final report prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-905410.06-3438-DFR, September.

Hafner H.R., Charrier J.G., and McCarthy M.C. (2008) Air toxics data analysis workbook. Prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-908302.03-3224, August.

McCarthy M.C., Charrier J.G., O'Brien T.E., and Hafner H.R. (2007) Phase V national air toxics data analysis. Compilation of work products prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-905306-3234, October.

Wade K.S., McCarthy M.C., and Hafner H.R. (2007) Analysis of ambient air quality after Hurricane Katrina. Final report prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-905312.03-3159-FR, April.

McCarthy M.C., Charrier J.G., Rubin J.I., O'Brien T.E., and Hafner H.R. (2007) Southeastern air toxics data analysis. Final report prepared for the Southeastern States Air Resource Managers, Inc., Forest Park, GA, by Sonoma Technology, Inc., Petaluma, CA, STI-906021.07-3122-FR, March.

McCarthy M.C., Roberts P.T., and Hafner H.R. (2007) Measurement reporting and process performance characteristics guidance. Final report prepared for NARSTO Quality Systems Science Center, by Sonoma Technology, Inc., Petaluma, CA, STI-906042-3119-FR2, March.

- Raffuse S.M., Sullivan D.C., McCarthy M.C., Penfold B.M., and Hafner H.R. (2007) Ambient air monitoring network assessment guidance: Analytical techniques for technical assessments of ambient air monitoring networks. Guidance document prepared for the U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, EPA-454/D-07-001 (STI-905212.02-2805-GD), February.
- McCarthy M.C. and Hafner H.R. (2006) Quality assurance project plan (QAPP) for SESARM toxics data analysis. Prepared for the Southeastern States Air Resource Managers, Inc. Forest Park, GA, and the U.S. Environmental Protection Agency, Region 4, Atlanta, GA, and Nashville, TN, by Sonoma Technology, Inc., Petaluma, CA, STI-906021.03-2975-QAPP, June.
- McCarthy M.C., Wade K.S., and Hafner H.R. (2006) Analysis of ambient air quality before and after Hurricane Katrina. Final quarterly report prepared for the U.S. Environmental Protection Agency, Research Triangle Park, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-905207.07-2935-FQR, April.
- McCarthy M.C., Eisinger D.S., Hafner H.R., Tamura T.M., Chinkin L.R., Roberts P.T., Clark N., McMurry P.H., and Winer A. (2005) Strategic plan for particulate matter research: 2005-2010. Final report prepared for the Federal Highway Administration, Office of Natural Environment, Washington, DC, by Sonoma Technology, Inc., Petaluma, CA; West Virginia University, Department of Mechanical and Aerospace Engineering, Morgantown, WV; University of Minnesota, Particle Technology Lab, Minneapolis, MN; and University of California, Los Angeles, School of Public Health, Environmental Science & Engineering, Los Angeles, CA, STI-904750.06-2770-FR, November.
- McCarthy M.C., Hafner H.R., Chinkin L.R., Cozzo E.M., Raffuse S.M., and Gray E.A. (2005) Air toxics monitoring data analysis workshop. Presentation prepared for the U.S. Environmental Protection Agency, Raleigh, NC, by Sonoma Technology, Inc., Petaluma, CA, STI-905102-2799, September.
- McCarthy M.C., Hafner H.R., Brown S.G., Lurmann F.W., and Roberts P.T. (2005) Background and boundary conditions for particulate matter and precursors in the San Joaquin Valley in winter. Technical memorandum prepared for the California Air Resources Board, Sacramento, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-902325-2779-TM, July.
- McCarthy M.C., O'Brien T.E., and Hafner H.R. (2005) Prescribed analyses of San Joaquin Valley hydrocarbon data collected from 1998 to 2003 version 2. Final report prepared for the San Joaquin Valley Unified Air Pollution Control District, Fresno, CA, by Sonoma Technology, Inc., Petaluma, CA, STI-904442-2718-FR2, June.
- McCarthy M.C., Eisinger D.S., and Hafner H.R. (2005) FHWA PM research plan: workshop summary. Summary of the FHWA Strategic Workplan for Particulate Matter Research Workshop prepared for the U.S. Federal Highway Administration, Washington, DC, by Sonoma Technology, Inc., Petaluma, CA, STI-904755-2746, May.
- Tamura T.M., McCarthy M.C., Hafner H.R., Eisinger D.S., Roberts P.T., Lurmann F.W., Clark N., McMurry P.H., and Winer A. (2005) Transportation and particulate matter: assessment of recent literature and ongoing research. Final report prepared for the U.S. Federal Highway Administration, Washington, DC, by Sonoma Technology, Inc., Petaluma, CA; West Virginia University, Morgantown, WV; University of Minnesota, Minneapolis, MN; and University of California, Los Angeles, Los Angeles, CA, STI-904751-2669-FR, March.
- McCarthy M.C., Brown S.G., Hafner H.R., Frankel A., and Broaders K.E. (2004) Data analyses for Phoenix, Arizona, air toxics data collected from 2001 to 2004. Final report prepared for Arizona Department of Environmental Quality, Phoenix, AZ, by Sonoma Technology, Inc., Petaluma, CA, STI-904236-2666-FR, December.

McCarthy M.C., Brown S.G., Hafner H.R., and Shields E. (2004) Prescribed data analysis for Phoenix, Arizona, hydrocarbon data collected in 2002 and 2003. Final report prepared for Arizona Department of Environmental Quality, Phoenix, AZ, by Sonoma Technology, Inc., Petaluma, CA, STI-903701-2600-FR, September.

Hafner H.R. and McCarthy M.C. (2004) Phase III air toxics data analysis workbook. Workbook prepared for the Lake Michigan Air Directors Consortium, Des Plaines, IL, by Sonoma Technology, Inc., Petaluma, CA, STI-903553-2592-WB, August.

McCarthy M.C., Brown S.G., Hafner H.R., and Shields E. (2004) Prescribed data analysis for Phoenix, Arizona, hydrocarbon data collected in 2002 and 2003. Final report prepared for Arizona Department of Environmental Quality, Phoenix, AZ, by Sonoma Technology, Inc., Petaluma, CA, STI-903701-2600-FR, September.

Hafner H.R., McCarthy M.C., Brown S.G., Roberts P.T., and Koerber M. (2004) Policy-relevant lessons learned from Phase I/II air toxics analyses. White paper prepared for the Lake Michigan Air Directors Consortium, Des Plaines, IL, by Sonoma Technology, Inc., Petaluma, CA and Lake Michigan Air Directors Consortium, Des Plaines, IL, STI-903553-2479-WP2, April.

### **Dissertation**

McCarthy M.C. (2003) Measurements and modeling of the stable isotopic compositions of trace stratospheric gases, Ph.D. Dissertation, University of California at Berkeley.