

# Improvements in Chemical Speciation Network Audit Results Handling

*2009 National Ambient Air Monitoring Conference*

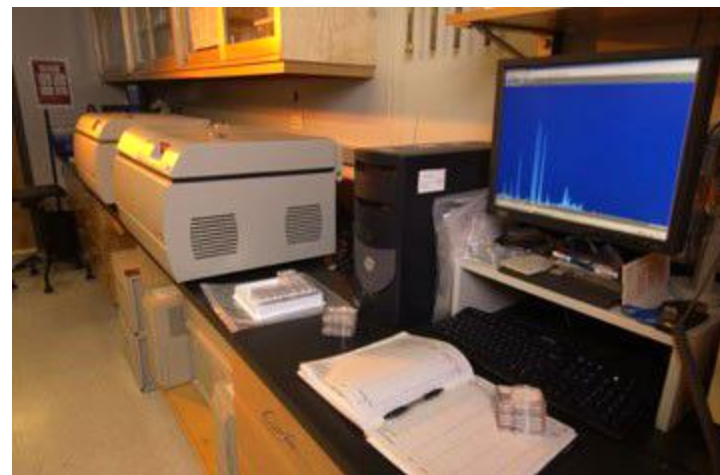
Edward E Rickman, Jr.

Global Climate Change and Environmental Sciences

[eer@rti.org](mailto:eer@rti.org)

# Chemical Speciation Network (CSN)

- Originally called Speciation Trends Network (STN)
- Over 170 sites currently operating – over 1,000 samples per month
- PM<sub>2.5</sub> species including:
  - Anions (SO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>-</sup>)
  - Cations (Na<sup>+</sup>, K<sup>+</sup>)
  - Organic and elemental carbon
  - 33 elements by XRF



# CSN Audit Needs

- Consistent set of questions and procedures to permit a network-wide view of data quality
- Easier and faster way for remote auditors and site operators to provide information to CSN program
- Spend less time compiling QA data and more time reviewing and analyzing QA results

# Overview of Improvements

- Excel workbooks for audits and monthly flow checks
- Website for auditors and operators to upload data
- Processing program to extract and compile data from workbooks
- Summary reports
- Posting flow and audit results to AQS

# Audit and Flow Check Workbook

- Technical Systems Audits and Sampler Audits
- Monthly flow checks
- Based on spreadsheets previously used in Speciation and other programs
- May be printed for use when laptop is not available

Chemical Speciation Network		Version	17			
<b>General Information - Used by all Spreadsheets</b>						
<i>Items identified with an orange label may be completed by the monitoring staff in advance of the audit.</i>						
<b>Monitoring Site Name:</b>						
<b>AQS Site ID:</b>						
Latitude/Longitude from AQS (deg.decdegrees)		Latitude	0	Longitude	0	
Latitude/Longitude from GPS (deg.decdegrees)		Latitude	0	Longitude	0	
Distance in meters between AQS and GPS locations:		0.0				
<b>Assessor (Auditor) Name:</b>						
<b>Affiliation:</b>						
<b>Observer(s) Name and Affiliation:</b>						
<b>Auditing Agency Type</b>		Flow Verification by Site Operator				
<b>Assessment Date:</b>						
<b>Section 1. Organization and Responsibilities</b>						
<b>1. Field Operations Manager</b>						
<b>Name:</b>	Test Operator	<b>Affiliation:</b>	Super Sampling Agency			
<b>Address:</b>						
<b>City:</b>		<b>State:</b>		<b>ZIP:</b>		
<b>Phone:</b>						
<b>E-mail:</b>						
<i>Field Operations Managers responsibilities include</i>						
- Management of monitoring network;		- Coordination of field operations;				
- Logistical support of field operations;		- Training on routine sampler operation, data validation and quality control data.				
<b>2. Monitoring Site Operator(s)</b>						
<b>Primary Operator Information</b>						
<b>Name:</b>					<b>Affiliation:</b>	
<b>Address:</b>						
<b>City:</b>		<b>State:</b>		<b>ZIP:</b>		
<b>Phone:</b>						
<b>E-mail:</b>						

# Workbook Features

- Formula and label cells protected from entry
- Color coded
  - Yellow cells for data entry
  - Orange labels indicate items that may be filled in advance
- Dropdown boxes for selections

							RESPONSE
							(Select from List)
11.	Does the location for the samplers and collocated sampler(s) conform to the siting requirements of 40 CFR 58, Appendices A and E? <i>See below for most significant requirements.</i>						Yes
12.	Has permission been given for violations of the siting criteria? If yes, please explain.						No

# Workbook Features (continued)

- Pass/Fail and Ranges shown automatically
- Flows compared to both audit device and design flows

Flow Test		Calibration						
For the reference standard, enter "UR" for under range and "OR" for over range flow readings.								
		L/min					Less than 10%?	
	Lower Limit	Ref Std	Upper Limit	URG	% Difference		Pass	Fail
Channel 1	16.2	18.0	19.8	17.0	5.56		X	
<b>Retest after Calibration</b>								
		L/min					Less than 10%?	
	Lower Limit	Ref Std	Upper Limit	URG	% Difference		Pass	Fail
Channel 1	NA		NA					
Reference Standard vs Design Flow								
		L/min					Less than 10%?	
	Lower Limit	URG	Upper Limit	Ref Std	% Difference		Pass	Fail
Channel 1	19.8	22.0	24.2	18.0	22.22			X
<b>Retest after Calibration</b>								
		L/min					Less than 10%?	
	Lower Limit	URG	Upper Limit	Ref Std	% Difference		Pass	Fail
Channel 1	19.8	22.0	24.2					

# Website

- Currently in testing phase
- Facilitates transfer of audit and monthly workbooks from the field
- Used for short-term communications





# Website Registration

- Users register at site
- Registered user's accounts are activated by program staff
- E-mail messages sent to confirm registration and account activation

## Preferred User Information

### Preferred User Information

\*Note: Membership to this Website is private. Once your account information has been submitted, the Website Administrator will be notified and your registration will be subject to verification. If your application is authorized, you will receive an email notification of your access to the site. All fields marked with a red arrow are required.

User Name:  


First Name:  


Last Name:  

Display Name:  

Email Address:  

Enter a password.

Password:  

Confirm Password:  

### Contact Info

Agency:  

Telephone:  

Cell/Mobile:

 [Register](#)

# Website File Transfers

- Upload audit workbooks to their account's directory
- Download workbook templates and other files from the QA Essentials directory



The screenshot displays the CSN Audit Repository website. The header includes the title "CSN Audit Repository" and two small images of air monitoring equipment. A navigation menu on the left contains links for Home, Upload Files, Help, and Contact Us. The main content area is titled "Upload Files" and shows a folder named "QA Essentials". Below the folder name is a table listing files:

Name	Author	Created	Size
CSN Audit Repository Files			
CSN Audit Spreadsheet version 18	Ed Rickman	10/12/2009	353.0 KB

Below the table, there is a link labeled "View Folder Details".

# Future Website Plans

- Create a single portal for RTI's ambient monitoring QA programs
  - audit workbooks
  - flow audit uploads
  - monthly CSN review reports
  - shipping schedules, etc.

# Workbook Processing Program

- Extract data from workbooks
- Save results in Access Database for later use
- Prepare QA summary reports from Database
- Prepare files for AQS posting

*Spend less time on compiling tables and more time reviewing and understanding them*

# Reports for QA Reviewers

- Technical Systems Audit Summaries
- Pass/Fail Sampler Audit Summaries
- Results will be summarized in yearly CSN QA reports

	A	B	C	D	E	F	G	H	I	J	K	L
1	AQS_Site_C	Location_Name	Audit_Date	000-Annue	000-Annue	000-Annue	000-Annue	000-Annue	000-Annue	000-Annue	000-Annue	000-Clean
2	010730023	Birmingham, AL	5/14/2008	Yes	1/22/2008	02/07/07	Yes	02/07/07	Yes	1/22/2008	02/07/07	4/28/2008
3	010732003	Birmingham, AL	5/14/2008	Yes	1/22/2008	02/07/07	Yes	02/07/09	Yes	1/22/2008	02/07/08	4/28/2008
4	120111002	Daive, FL	2/7/2008	Yes	3/5/2007		No	Weather ?	Yes	8/29/2007		1/8/2008
5	130210007	Macon, Allied Chemical	6/18/2008	Yes	3/3/2008	8/14/2008	Yes	3/3/2008	Yes	3/3/2008	8/14/2008	5/27/2008
6	130590002	Athens, GA	2/14/2008	Not_Evaluated		2/26/2007	Not_Evalu	2/26/2007	Not_Evaluated		2/26/2007	monthly
7	130590002	Athens: Fire Station #7	1/14/2008	Yes	2/23/2007	2/26/2007	Yes	2/26/2007	Yes	2/23/2007	2/26/2007	8/14/2007
8	130590002	Athens: Fire Station #7	5/7/2008	Yes	3/3/2008	5/1/2008	Yes	5/1/2008	Yes	3/3/2008	5/1/2008	4/7/2008
9	130690002	Douglas, GA	5/7/2008	No		Tri Cal 293 2/26/07	No	Tri Cal 293	No		Tri Cal 293 2/26/07	4/20/2008
10	130690002	Douglas: General Coffee State Park	6/24/2008	Yes	3/3/2008	3/18/2008	Yes	3/3/2008	Yes	3/3/2008	3/18/2008	6/24/2008
11	130890002	Atlanta: South Dekalb	2/28/2008	Yes	2/23/2007	5/1/2007	Yes	2/23/2007	Yes	2/23/2007	4/25/2007	1/11/2008
12	130890002	Atlanta: South Dekalb	5/6/2008	Yes	3/3/2008	5/1/2007	Yes	3/3/2008	Yes	3/3/2008	4/25/2007	3/18/2008
13	131150005	Rome: Coosa High School	1/31/2008	Yes	2/23/2007	5/1/2007	Yes	2/23/2007	Yes	2/23/2007	4/23/2007	1/8/2008
14	131150005	Rome: Coosa High School	5/21/2008	Yes	2/23/2007	4/8/2008	Yes	2/23/2007	Yes	2/23/2007	2/12/2008	5/15/2008
15	132150011	Columbus: Cusseta Elementary School	6/10/2008	Yes	3/3/2008	5/27/2008	Yes	3/3/2008	Yes	3/3/2008	2/12/2008	6/9/2008
16	132450091	Augusta: Bungelow Rd.	12/5/2007	Yes	9/26/2006	1/16/2007	Yes	1/16/2007	Yes	9/26/2006	1/19/2007	11/28/2007
17	132450091	Augusta: Bungelow Rd.	1/15/2008	Yes	2/23/2007	2/16/2008	Yes	2/16/2008	Yes	2/23/2007	1/19/2007	12/6/2007
18	132450091	Augusta: Bungelow Rd.	4/17/2008	Yes	2/23/2008	5/1/2008	Yes	5/1/2008	Yes	2/23/2008	9/11/2007	4/6/2008
19	132950002	Rossville: Maple Street	6/19/2008	Not_Appli	3/3/2008	5/27/2008	Not_Appli	3/3/2008	Not_Appli	3/3/2008	5/28/2008	6/18/2008
20	210670012	Lexington, KY	10/14/2008	Not_Evalu	12/20/2007	12/20/2007	Not_Evalu	7/28/2007	Not_Evalu	12/11/2007	7/28/2008	9/8/2008
21	211930003	Hazard, KY	5/21/2008	Yes	12/20/2007	8/28/2007	Yes		Yes			not kept trc February
22	240330030	Beltsville, Maryland	12/3/2008	Not_Evalu	due 8/2008	due 2/09	Not_Evalu	due 8/2008	Not_Evalu	due 8/2008	due 1/09	
23	261630001	14700 Goddard Allen Park Site	7/28/2008	Yes	6/24/2008	Feb. 2008	Yes	Feb. 2008	Yes	Feb. 2008	Feb. 2008	
24	270530963	Philips HC Anderson School, 2727 10th Av	8/26/2008	Yes	2/21/2008	2/21/2008	Yes	2/21/2008	Yes	2/21/2008	2/21/2008	8/15/2008
25	300530018	Libby, Montana (Libby Courthouse Annex)	3/20/2008	Yes	12/14/2007	5/16/2007	Yes	3/10/2008	Yes	8/1/2007	8/1/2007	NA
26	300530031	Missoula, Montana (Missoula Health Dept	3/14/2008	Yes	12/14/2007	5/16/2007	Yes	3/10/2008	Yes	8/1/2007	8/1/2007	NA
27	360010005	Albany County Health Dept. (roof-top site.)	2/19/2008	Yes	Jan. 2008	Nov. 2007	Yes	Nov. 2007	Yes	Jan. 2008	Nov. 2007	NEW
28	360010005	Albany County Health Dept. (roof-top site.)	4/25/2008	Yes	7/8/2008	7/8/2008	Yes	7/8/2008	Yes	7/8/2008	7/8/2008	4/14/2008
29	360050110	IS 52	3/18/2008	Yes	3/8/2008	3/8/2008	Yes	3/8/2008	Yes	3/8/2008	3/8/2008	9/7/2007

*CSN audit results are discussed by Dennis Crumpler and Solomon Ricks in their poster.*

# QA postings for AQS Data Users

- Data users are not always aware of sampling details
- Sampler audits and flow checks are by channel – AQS results are by parameter.
- Channel flow audits/checks are mapped to AQS parameters (e.g.)
  - SASS Channel 1 (Teflon) – mass and elemental parameters
  - SASS Channel 2 (Nylon) – anion and cation parameters
  - URG Channel 1 (Quartz) – carbon parameters



# Conclusions

- New audit/flowcheck workbooks will
  - Provide more consistent information across CSN
  - Prevent accidental formula changes
  - Help field operators spot problems while at the site
- New website
  - Makes it easier to upload results
- Processing software (result database)
  - Makes network reviews easier and more uniform

# Acknowledgements

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# Questions

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