U.S. EPA, Office of Air Quality Planning and Standards (OAQPS), Ambient Air Monitoring Group (AAMG)

March 2022

$PM_{2.5}$ Chemical Speciation Network (CSN)

Met One Super SASS

URG 3000N

CSN Newsletter

This is the third issue of the CSN newsletter. You can find previous issues of the newsletter here. We use the newsletter to communicate information on CSN that is useful to the State, Local, and Tribal (SLT) monitoring agencies and data validators, as well as users of CSN data. The EPA AMTIC page for CSN is here.

Questions Regarding CSN

If you have any questions regarding CSN, contact us using the CSNsupport@sonomatech.com email address. This email address puts you in touch with EPA, the sample handling/shipping and gravimetric laboratory (Wood Environment & Infrastructure Solutions, Inc. or Wood), the sample analysis laboratory (University of California at Davis or UC Davis), and the CSN Data Analysis and Reporting Tool (DART) support team (Sonoma Technology).

Wood has also created an email address for site operators to contact them regarding shipping and handling requests. Please use csnfield@woodplc.com for any questions specifically related to late shipments, stopping and starting sample collection, and any other issues related to the logistics of shipping and handling.

Reminder about Freezing Ice Packs for Shipping

The Filter Handling Lab (Wood) continues to receive a large percentage of shipments above the target criterion of 4°C. When shipments arrive above 4°C, the transport temperature or "TT" qualifier is applied. Upon receipt from Wood, please remove the freezer packs and freeze them at ≤ -18°C (0°F) for a minimum of 3 days (≥72 hours) if possible to help ensure that samples arrive at temperatures ≤ 4°C. See page 2 of the 2021 newsletter for more information.

Inside this issue

Special points of interest

- 2022 National Ambient Air Monitoring Conference, August 22-25 in Pittsburgh, PA
- The 2022 Shipping and Sampling Calendars for CSN are now available
- New DART Page for Agencies to Manage Users
- CSN National Contract Status

2022 Shipping and Sampling Schedules Available

The 2022 CSN shipping and sampling schedules for 1-in-3 and 1-in-6 sampling are now available. Copies of the schedules were sent to site operators in a December 2021 shipment and also emailed to site operators and EPA CSN Region representatives.

The schedules have also been posted on EPA's CSN AMTIC web site here.

DART Page for Agencies to Manage Users

There is a "Manage Users" feature in DART that allows monitoring agencies to configure CSN validator's roles. Select your agency at the top left of the Manage Users page to see a list of users with a DART account. Individuals can be assigned "CSN Admin", "CSN Validator", and/or "CSN Emails" roles.

Please confirm your Agency's Administrators, Validators, and those wishing to get DART emails using this page (uncheck or check the box as needed in the corresponding columns). Note, the "Manage Users" page is only visible to users with the CSN Admin role.

To add a new validator, users must first sign up for a DART account here.

Data Analysis and Reporting Tool (DART) Training

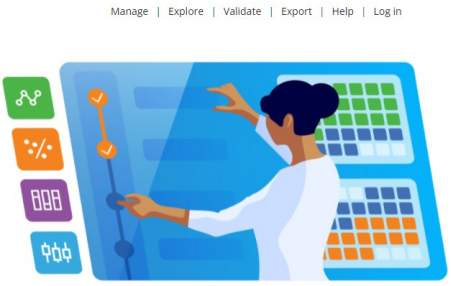
Our last DART webinar training was held in August 26, 2021. The slides and recording of the training are located here under Data Validation Resources along with the CSN data validation guide and quick reference guide.

The DART web address is https://dart.sonomatech.com.

Agency users can request access to DART by setting up an account using the Log In tab at the top of the DART home page or requesting DART access through: CSNsupport@sonomatech.com.

New features in DART include:

- Capabilities for adding comments to indicate that sample dates are incorrect and need to be changed
- New options for bulk editing data
- Changes to editing functions (removed the "Request Exclusion" qualifiers, prevent 'MD' and 'TT' qualifiers from being removed, and edits to composite/contributing parameters)
- An Administration page for Agency admins to configure CSN Validators for their Agency (see the side bar for more on this feature). Check boxes for adding access or uncheck them for removing access.



Spare EPROM Kits Available for URG3000N

In 2014, EPA upgraded the software for the URG 3000N sampler. The new software allowed more flexibility in sampling and sequential sampling. All of the existing CSN sites received a copy of the new software on an EPROM along with installation instructions. Instructions for the installation is also available here. EPROM kits are available for both Phase I and Phase II/III samplers. Phase I samplers have the isolation valve at the top of the pump box and 2 power cords. Phase II/III samplers have the isolation shown in the figure and one power cord. The kit includes an IC puller and straightener and chip lifter. One EPROM is needed and the kit includes 2 EPROMs in case one is damaged during installation.

We still have EPROM kits available for those that did not receive a kit, misplaced the original kit, or have a damaged EPROM kit.

If you would like a kit, please contact Melinda Beaver; beaver.melinda@epa.gov.

Phase I Sampler

Phase II/III Sampler

Annual Data Quality Reports

The filter handling laboratory (Wood) and the sample analysis laboratory (UC Davis) prepare annual data quality reports. Reports for the period of the current CSN contract period (2015-2020) are available here. Each report contains information on:

- Laboratory and field operation issues
- Quality issues and corrective actions
- Laboratory QC summaries
- Data management and reporting
- QA and data validation activities

CSN Data Advisories

When issues are identified that affect CSN data, we summarize the impacts in data advisories that let the CSN community and data users know about potential issues. Since the last newsletter in 2021, three data advisories have been issued for CSN. The current CSN data advisories are located here. A short description of the three most recent advisories are provided below. More details can be found in each advisory.

X-Ray Fluorescence (XRF) Protocol Change
Data affected: elements; Period: October 2018 and later
In November 2015, the contractor performing the EDXRF analysis changed from Research Triangle Institute (RTI) to UC Davis. The EDXRF instruments used by these two laboratories use different techniques for sample analysis. Detection limits for several elements, particularly heavier elements (e.g., Lead), increased when the laboratory changed. To obtain lower detection limits, the XRF protocol was modified and the overall analysis time increased.

Carbon Analyzer Change
Data affected: carbon parameters; Period: October 2018 and later
Thermal-optical carbon analysis for CSN has gone through a number of changes in the sampling, analytical protocol, and instrumentation during the last 15 years. This advisory addresses the most recent analytical laboratory transition, which included a change in the model of carbon analyzers. An inter-laboratory study was conducted to compare the measurements reported from these two analyzer models using 4000+ CSN quartz filter samples. The largest impact is on subfractions of organic and elemental, as well as pyrolized carbon. We are exploring the cause of the differences and how to improve the continuity of the times series for these species.

Contract Laboratory Transition
Data affected: all parameters; Period: November 2015 and later
This data advisory covers all of the data processing and analytical procedure changes corresponding with the change in CSN contractors in 2015. This data advisory covers:

- Laboratory measurements
- Filter blank correction
- Method detection limit calculations
- Reporting of negative values
- Updating the Teflon filter deposit area
- Reporting chloride data

2020 Site Summaries Available Soon

Starting in 2017, our analysis laboratory contractor has compiled individual CSN site summaries.

These summaries include information on the site AQS ID, site latitude/longitude, completeness, daily reconstructed fine mass (RCFM), long-term trends in RCFM, chemical composition, and a map of RCFM as compared to both nearby CSN and Interagency Monitoring of PROtected Visual Environments (IMPROVE) monitoring sites.

To view all CSN site summaries for 2017—2020, please visit: https://aqrc.ucdavis.edu/csn-field-sites-maps.

CSN National Contract Status

EPA's current national contracts to support CSN filter shipping, handling, and gravimetric analysis, as well as analysis laboratory support for ions, elements, and carbon have been in place since 2015 and are expiring soon. EPA is working on awarding a follow-on contract. We will communicate more as we can. Stay tuned!

Coming Soon: Filter-based Light Absorption Measurements

Since June 2018, UC Davis has been measuring filter light absorption using the PTFE filters from CSN. A Hybrid Integrating Plate/Sphere (HIPS) system is used for this analysis. The HIPS system uses a 632.8 nm laser to illuminate the backside of a sampled filter. Both reflected and transmitted light are collected and used to calculate the filter absorption coefficient, Fabs. Fabs is comparable to EC measured on quartz filters and used as a quality check for EC. The IMPROVE network already measures and reports the Fabs value to AQS.

Now that we have a few years of Fabs data from CSN, we are working on a plan to use the data in the CSN validation review procedures in DART and also to submit the data to AQS. We will provide more information on the measurement, results, and how to use the data for validation purposes as we get closer to submitting the data to DART and AQS.

CSN Sampler Flow Verifications/Audits and AQS

Last year EPA began inspecting the CSN metadata residing in EPA's Air Quality System (AQS). Review of the sampler metadata found that many flowrate verifications and audit results could not be loaded to AQS due to Sampler IDs not consistently being entered into the database. To facilitate these metadata corrections and additions, EPA queried the database to isolate the records for samplers in AQS that needed updates and created AQS AD-Transaction files for those records.

EPA is using a phased approached for updating these metadata records with its CSN partners. The goal is to have phase 1 completed by April 2022. In phase 1 the 'Sampler ID' and 'channel count' AQS fields are updated. In phase 2, the CSN program begins updating the 'channels' and 'filter types' for those samplers in AQS that need edits. EPA found that the metadata for the SuperSASS samplers are the most in need of updates. Lastly, phase 3 will focus on defining the Sampler IDs for each of the CSN parameters, in addition to the samplers, so that flowrate verifications and audit results performed on the samplers can be associated with the routine ambient measurements.

We are hoping that this will assist in improving the submission of CSN flowrate results into AQS. The flow rate data completeness by sampler type and year is provided below.

Flowrate Data Completeness

Year	CSN Network Size		Flow Checks in AQS (%)
	Sampler	Count	
2017	SASS	139	39.7
2017	URG	132	48.1
2018	SASS	141	42.0
2018	URG	135	49.2
2019	SASS	144	44.5
2019	URG	136	53.6
2020	SASS	141	42.3
2020	URG	135	48.5
2021	SASS	141	38.3
2021	URG	136	45.6

We would like to thank the state and local monitoring agencies that have assisted EPA during phase 1 of this metadata house cleaning and we look forward to working with you as we complete phases 2 and 3 during this calendar year. Please contact Doug Jager (jager.doug@epa.gov) if you have questions about this effort.

Update on the 25-mm Teflon® Filter Pilot Study

In order to reduce the frequency of non-detectable results from XRF analysis, we have been investigating concentrating the sampled $PM_{2.5}$ onto a smaller filter. Specifically, we have been exploring the use of a 25-mm Teflon® filter (and insert) instead of a 47-mm filter. This filter diameter change will increase the density of $PM_{2.5}$ per cm^2 of filter area by a factor of about 3. This should reduce the number of non-detectable samples, especially for elements with ambient concentrations near the method detection limit (MDL).

We have been evaluating the 25-mm filter and insert at six collocated CSN sampling sites on the 1-in-6 day schedule: Bakersfield, CA; Riverside (Rubidoux), CA, G.T. Craig, OH; Rutgers, NJ; Roxbury, MA; and Deer Park, TX.

The study started in January 2019 and XRF and mass data show that results from the inserts were approximately 20% lower than expected. After several months of troubleshooting, UC Davis determined the current design was leaking and that a new filter insert design was the best option. UC Davis designed a new insert, and we plan to begin testing the new 25-mm filter design at the 6 collocated sites later in 2022.

Thanks to the state and local monitoring agency operators at the six collocated CSN sites for continuing to collect the extra modules for this special study.

2022 National Air Monitoring Conference (NAAMC) Call for Papers and Posters

The National Ambient Air Monitoring Conference, will be held **August 22-25 in Pittsburgh, Pennsylvania.** The 2022 National Ambient Air Monitoring Conference, sponsored by EPA in conjunction with the Association of Air Pollution Control Agencies (AAPCA) and the National Association of Clean Air Agencies (NACAA) is a must for federal, state, local and tribal air pollution organizations involved with operating, planning, or managing air monitoring networks and reporting data to AQS, and/or AIRNOW. Essential training on air monitoring topics will help prepare you for future challenges of air monitoring.

The conference is intended to provide a national and international forum for EPA, State, local, tribal, international, and other agencies who are involved in implementing air monitoring programs.

Paper and poster submissions are due March 18, 2022.

For more information and instructions on submitting abstracts, the conference website is located here.

If you have questions about the conference, you can send them to: Nealson Watkins watkins.nealson@epa.gov and Erin Pittorino erin.pittorino@erg.com.

Ambient Air Monitoring Group (AAMG)

We plan, implement, and assess the nation's ambient air quality networks.

We collaborate with states, locals, tribes, instrument companies, researchers and colleagues at EPA and other Federal agencies to optimize the ambient air monitoring networks.

We provide oversight, guidance, and tools to ensure quality data for clean air decisions across the country.

CSN Contacts

Wondering who the right people are to contact regarding CSN? **Please note that a few of the Regional contacts have changed.** The current contacts are:

EPA Contacts

Program Lead: Melinda Beaver; beaver.melinda@epa.gov; 919-541-1062

Technical Point of Contact: Joann Rice; rice.joann@epa.gov; 919-541-3372

Quality Assurance: Doug Jager; jager.doug@epa.gov; 919-541-4804

Mega Performance Evaluation Program: Colin Barrette; barrette.colin@epa.gov; 919-541-5535

Regional Contacts

Region 1: Anne McWilliams; mcwilliams.anne@epa.gov; 617-918-1697

Region 2: Gavin Lau; lau.gavin@epa.gov; 212-637-3708

Region 3: Lori Hyden; hyden.loretta@epa.gov; 215-814-2113

Region 4: Keith Harris; harris.keith@epa.gov; 706-355-8624

Region 5: Chad McEvoy; mcevoy.chad@epa.gov; 312-886-6084

Region 6: Josh Madden; madden.joshua@epa.gov; 214-665-7251 and Fran Verhalen; verhalen.frances@epa.gov; 214-665-2172

Region 7: Leland Grooms; grooms.leland@epa.gov; 913-551-5010

Region 8: Josh Rickard; rickard.joshua@epa.gov; 303-312-6460

Region 9: Dena Vallano; vallano.dena@epa.gov; 415-972-3134

Region 10: Will Wallace; wallace.will@epa.gov; 206-553-2495

General Contacts

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