

Workshop for the 2014 Emission Inventory



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Welcome

General Housekeeping:

- Facilities
- Canteen
- Nearby Restaurants
- Fire Drill



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Quick Outline...

- 2014 Emission Inventory Requirements
- WebSat Intro
- Inventory Prep / gathering info
- Calculations and Method Codes
- Websat Data Entry
- Equipment Examples Using WebSat
- Finishing Your Inventory/Electronic Signature



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Submit an Emission Inventory?

- Title V Facilities will submit their Emissions Inventory on a schedule based on the POTENTIAL amount of pollutants emitted
- Type A Sources-every year:
 - SO_x, NO_x, CO \geq 2500 tons/yr,
 - VOC, PM₁₀, PM_{2.5}, NH₃ \geq 250 ton/yr
- All other Title V Sources - every 3 years (2014, 2017, etc.)
- Insignificant Activities will be required to be estimated once



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Emission Inventory

- We use EPA approved methodologies to review inventories
 - expect facilities to use same methodologies when calculating/entering emissions
- Use preferred methods over less preferred methods
- BAQ incorporates all EIIP Preferred Methods Documents into our operating procedures
- EIIP Documents, AP-42 and other EPA estimating tools may be accessed at: <http://www.epa.gov//ttn/chief>



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Emission Inventory

- Staff will review facilities' calculations
 - Send your stuff in! Submittal is not complete without supporting calcs/docs, facil general page and list of Insignificant Activities, even if your Certifier has signed electronically.
 - Confidential – If your facility is considered confidential, you MUST send “public” (sanitized) copy of supporting docs AND a “confidential” copy of docs. Not complete until we get both!



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■ WebSat



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WebSat – What is it???

- An online, web-based Emission Inventory Collection tool
- Facilities are pre-populated with equipment and emissions data
- Users can login, enter/update data, review data (reports)
- Certifiers electronically sign the submittal (“Copy of Record”) as well as enter/review data – signing is AFTER data entry



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WebSat – remember!!

- You must use MSIE 6.0 or later. Other browsers (Google Chrome, Safari, Opera, Firefox, etc.) do not handle the pages properly
- MSIE later than 8, you must use compatibility mode or add sc.gov to your compatibility list
- Turn off any pop-up blockers, or set blocker to allow pop-ups from our site (<https://www.scdhec.gov>)



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WebSat – remember!!

- Userids & passwords are case-sensitive
- You must press the “save” button if you want any of your changes to “stick” – if you don’t “save”, changes on that page are lost & you have to re-enter
- Application will “timeout” after period of inactivity (20 min.) – lose changes unless saved!!
- Users have no delete functionality in WebSat!



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Inventory Prep/Gathering info

- “644” report/Detailed Emission Inventory Report (DEIR)
 - can run from Reports menu in WebSat – listed as “SC Facility Emission Summary” and “SC Process Emission Summary”
- Copy of current Permit (e.g., Title V) and any activated construction permits not already incorporated into the TV permit
- Use your 644 report and permit to help prep/guide you through your facility in WebSat
- In Websat, update from the bottom up, i.e. stacks, controls, groups, process, then emissions, etc



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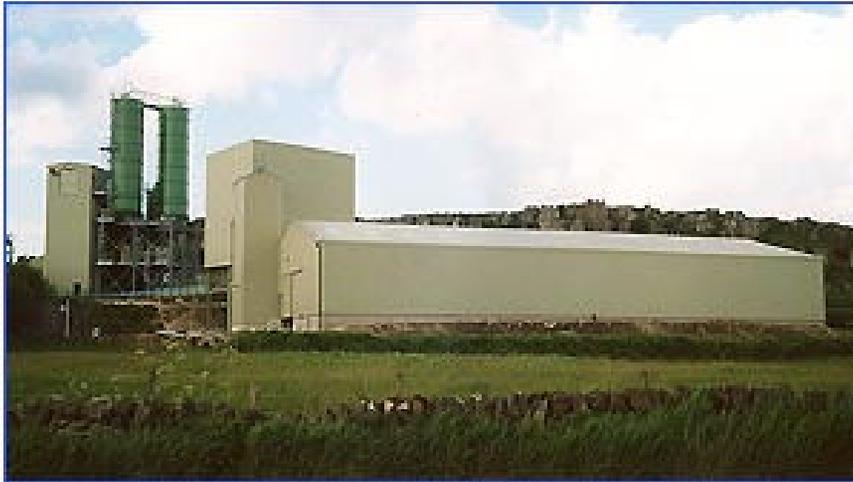
Inventory Prep - 2

- Guidance for data entry and calculations can be found in the online User Manual
- Check pre-populated Facility General information page – send updates in with supporting documentation.
- To determine correct units for activities reported
 - Access WebFIRE software:
<http://cfpub.epa.gov/webfire/>
 - “Chapter 14:Uncontrolled Emission Factor Listing Criteria Air Pollutants”
http://www.epa.gov/ttnchie1/eiip/techreport/volume02/iii14_july2001.pdf



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Facility General



- Facility general sheet must be sent in with supporting documentation – email is ok
- Mark-up pre-populated sheet with any changes.
- The only change allowed in WebSat Facility Gen screen is the “Year of Inventory”.

Emission Units/Processes

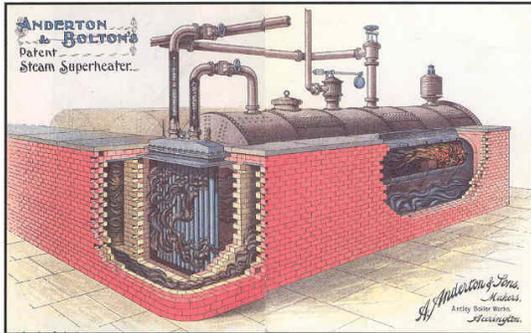
- Reported in terms of your current permit
- Hint: Use your Permit and 644/DEIR as a roadmap!!
- Supplemental Sheets can be very helpful as well



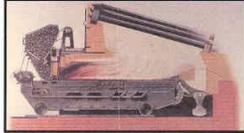
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Fuel Burning

BOILERS



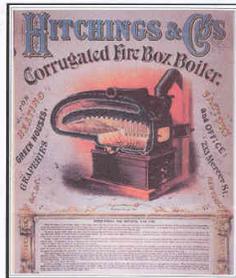
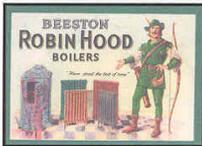
1900 Anderton & Bolton



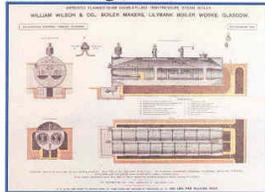
Babcock & Wilcox



Cochran steam accumulator



19C Hitchings, USA



1900 Wm Wilson

- Boilers, dryers, etc.
- Remember to enter fuel amounts in appropriate units, i.e. kgal, mmcf, tons, mmbtu
- Units are driven by SCC and are found in the description pane
- Multiple Factors – specific to boiler type, burner type, etc. – list available from menu in WebSat.

Information for Fuel Combustion

- Report fuel use in the same terms as the SCC description on the screen, i.e., thousands of gallons for liquid fuels, millions of cubic feet for natural gas, and tons for solid fuels.
- Use % sulfur for all fuels except wood, natural gas, propane and butane. For propane and butane, the units needed are grains/100 cubic feet of gas vapor. For example, if the sulfur density is 0.18 grains per 100 CF gas vapor, then enter 0.18 in the process unit sulfur field. Leave blank for natural gas.



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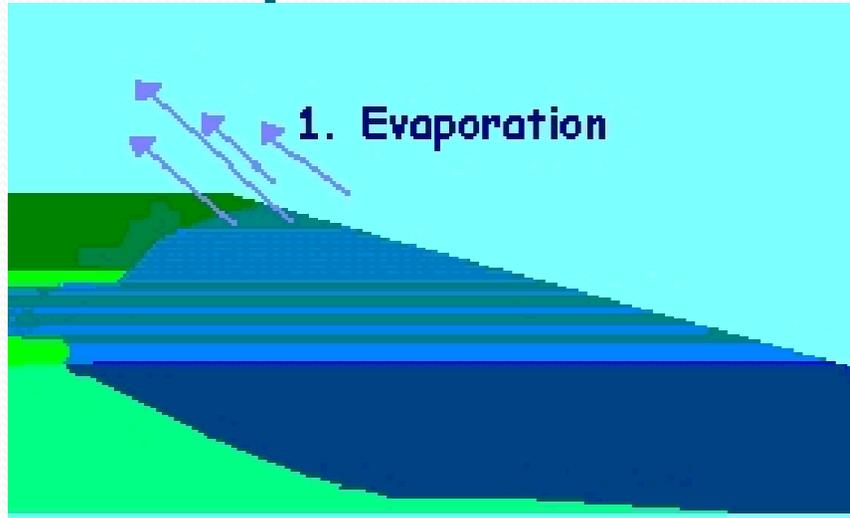
Information for Fuel Combustion - 2

- For coal, please make sure the SCC used is equivalent to the type of boiler you are reporting: pulv. dry bottom; pulv. wet bottom; cyclone; spreader stoker; overfired stoker; underfired stoker; tangentially or wall fired, etc.
 - Same applies for internal combustion engines: turbine; reciprocating; etc.
- Other useful info: controls such as low NO_x burner, equipped w/ CEMs, heat content (BTU value) of fuel – otherwise use App A in AP-42



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Evaporative Loss



- Painting, coating, cleaning, etc. operations
- Calculate emissions using the material balance method
- Spreadsheets, supporting docs
- HAP/TAP

Incineration



- Use SCCs 50100101-50390010 in the document “Chapter 14: Uncontrolled Emission Factor Listing for Criteria Air Pollutants” to help determine incinerator type and correct reporting units
- Incinerators which are control devices should also be listed on a Control Device page. Check that the control device has been linked into the proper process.

Additional Info

- Landfill Calculations
 - Use LandGEM model and formulas in AP-42 Ch. 2.4
 - <http://www.epa.gov/ttn/catc/products.html#software>
- Wastewater Calculations
 - Use Water9 model
 - <http://www.epa.gov/ttn/chief/software/water/index.html>



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Storage Tanks

- When is detailed storage tank information needed?
 - Tank's capacity is greater than 38.7 cubic meters (10,000 gallons), *or*
 - Stores a hazardous air pollutant, *or*
 - Emits one or more HAPs
- Detailed storage tank information is **not** needed for:
 - Pressurized storage tanks containing fluids such as liquid petroleum gas (LPG), liquid natural gas (LNG), natural gas, or inert gases



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TANKS a lot!!

- Tank emissions can be estimated using TANKS 4.09D
 - Windows-based computer program that estimates VOC and HAP emissions from fixed and floating-roof storage tanks.
 - Is based on the emission estimation procedures from Chapter 7 of EPA's AP-42:
<http://www.epa.gov/ttn/chief/ap42/cho7/index.html>
 - Use TANKS to get your emissions, then enter results into WebSat.
- EPA has discontinued support/development of TANKS 4.09D due to the model not being reliably functional on computers using certain operating systems such as Windows Vista or Windows 7.



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TANKS for the memories...

- We will continue to accept tank emissions estimates generated by the TANKS software, we recommend running on a WinXP-based machine.
- If you wish to use other tank estimation methods, please contact Lynn Barnes for approval
- Can be downloaded from EPA's web page:
<http://www.epa.gov/ttn/chief/software/tanks/index.html>
- Send a copy of the TANKS Summary Report (~3 pages) with supporting docs
 - Do not need entire report – can be very long



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Control Devices



- Control devices will be tracked separately from their associated Emission Unit Equipment and stacks
- Fuel use in a control device should be reported separately as a Fuel Burning source.

Stack/Exhaust Point Information



- Check to make sure stack parameters are correct
- “Dummy” stacks
- The stack number is system assigned – don’t fret about it. – “Site Specific ID” is more important.

Insignificant Activities

- Traditionally listed on your Title V Permit.
- New permits do not list Insig Acts, but contain requirement to maintain list onsite
- You must submit that list with your supporting docs!
- Emissions from all Insignificant Activities must be report at least once.
 - If not previously reported, need to report in this Inventory – see your Detailed 644 report!



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Performing Calculations

- When preparing to do your calculations, it is helpful to have a copy of the most recent 644/DEIR and any supplemental sheets.
- Rule effectiveness adjustments need to be made to all calculations when control equipment did not operate as designed – will talk about later
- Emission estimates are required for all regulated air pollutants, including but not limited to, criteria, 112R, HAP, and TAP pollutants
- Include any regulated pollutants in your calculations that have been missed in past inventories



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Performing Calculations - cont'd

- Review your facility's most recent 644/DEIR and any supplemental sheets
- Emissions should be calculated using the same methodology as presented in these documents unless a significant change has occurred at the process (i.e., a Bureau-reviewed source test where there was previously not one)
- The methodology used is indicated by the "method code" in the 644/DEIR. For some method codes more detailed information can be found in the supplemental sheets



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Performing Calculations - cont'd

- AP-42, FIRE, and other EPA emission estimating tools can be accessed/downloaded from the CHIEF web page at <http://www.epa.gov/ttn/chief>
- Staff relies on EPA-approved methodology and uses preferred methods over less preferred methods when accepting calculations
- The order of preferred methods from best to least desirable are:
 - Mass balance calculations
 - Continuous Emissions Monitor data
 - Bureau approved and reviewed source test emission factors
 - AP-42 or FIRE Emission factors
 - In-house stack test
 - Other



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Method Code 9

- If this method code is indicated for a pollutant the facility does not need to calculate emissions for that pollutant. Our database will do this automatically using the appropriate process rate (throughput) entered on the process page
- The factors built into the system for method code 9 are essentially AP-42 factors (updated in some cases with other approved sources)
- No supporting calculations necessary with this method code!



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Method Code 1

- Indicates that emissions are based on a Bureau-reviewed source test. Emission factors that are derived from a source test and used in the calculations should be based on emission-per-throughput rate units during the source test (i.e. lb/ton, lb/million BTU, etc.) and **NOT** a lb/hr factor
- Remember that if condensable PMs are added to this result, the appropriate method code would be “3”. See discussion below
- Complete calculations must be supplied and the date of the source test(s) being used must be indicated



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Method Code 1 – cont'd

- Source Tests are considered applicable for a source from the date of the test up until the day before the source is retested. The below two examples should help clarify this:

Example 1: A facility calculating their 2014 emissions had a source test in 2012 and again on April 15, 2014. The emission calculations for January 1 through April 14 should be based on their 2012 test. The calculations for April 15 to the end of the year should be based on the April 15 test. These two sets of calculations are then added to get total emissions for the tested pollutant.



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Method Code 1 – cont'd

- Example 2: A facility calculating their 2014 emissions had a source which tested in 2012 and again on February 15, 2014 and failed this second test. They did a retest on June 25, 2014 and passed this test. The emission calculations for January 1 through February 14 should be based on their 2012 test. The calculations for February 15 through June 24 should be based in the February 15 test. Finally, the calculations for June 25 to the end of the year should be based on the June 25 test. These three sets of calculations are then added to get total emissions for the tested pollutant



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Method Code 1 – cont'd

- For particulate emissions:
 - Calculations for particulate emissions using source test data must take into account any condensable particulate factors found in AP-42 or FIRE. Since EPA Reference Method 5 only captures filterable particulate emissions you must add these condensable particulate emissions to the filterable emissions in order to get total particulate emissions.
 - If this was not done in the past, please use correct methodology.
 - When adding the condensable particulate emissions to the filterable particulate emissions, the proper method code to use is a “3”.



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Method Code 1 – cont'd

- For PM₁₀ Emissions:
 - If Bureau-reviewed testing for filterable PM₁₀ has not been performed and AP-42 factors are available for filterable PM and filterable PM₁₀, the ratio of these factors can be used to estimate filterable PM₁₀ emissions from tested PM emissions. Any AP-42 condensable particulate matter emissions will then need to be added to the calculated filterable PM₁₀ emissions to get total PM₁₀ emissions. (Condensable particulate matter emissions are all assumed to be less than 1 micron.)
 - If Bureau-reviewed PM₁₀ testing has been performed, any AP-42 condensable PM emissions will need to be added to the filterable PM₁₀ to get total PM₁₀ emissions.
 - A similar scenario should be used to estimate PM_{2.5} emissions
 - In both of these cases, the proper method code to use is a “3”



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Method Code 1 – cont'd

- Source Test Calculator Tools:
<http://www.scdhec.gov/Environment/AirQuality/ComplianceandReporting/EmissionsInventory/HowtoReport/ElectronicReportingGuidance>
- Please note that all calculators are examples for use at your discretion only. Feel free to download & modify for your needs.



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Method Code “M”

- This method code indicates that reported emissions are based on Continuous Emission Monitor (CEM) data
- This data should only be from a CEM that is Bureau-certified
- Calculations and/or documentation of the annual emissions should be supplied
 - We do not need a ream of paper with CEM hourly data, summary is fine.



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Method Code 4

- Emissions with this method code are so indicated because a better method for determining emissions could not be found
- Method code 4 is generally used only when there is no Bureau certified CEM data, mass balance information, Bureau-reviewed source test, or AP-42 or FIRE emission factors available for estimating emissions
- Method code 4 emission estimates may be from in-house source tests, the facility's Title V permit application, industry factors, etc. (Note: If an in-house source test derived factor is used, the methodology for calculating emissions using that factor should follow that discussed for source tests earlier)
- Complete calculations should be supplied with the Inventory



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Other Method Codes

- Those emissions with any other Method Code should be calculated based on that Method Code
- Method Code definitions can be found at the bottom of the calculation pages of the 644/DEIR and in the online User Manual
- Complete calculations should be supplied with the Inventory



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Performing Calculations - cont'd

- Any equipment on your current permit that is not listed in WebSat must be added to the Websat database – contact a member of the Emissions Inventory Section
- No deletes in WebSat!



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Rule Effectiveness

- The EPA asserts that control devices do not operate at their design capacity 100% of the time and...
- traditional emission inventories underestimate the actual emissions because of this...which...
- causes problems because emissions control strategies for non-attainment areas depend on accurate emissions inventories.
 - If estimates are too high, modeling will indicate that more controls must be applied than are necessary to achieve attainment
 - If estimates are too low, then not enough controls will be required, resulting in continued non-attainment



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Rule Effectiveness – cont'd

- EPA guidance requires that a correction factor, called Rule Effectiveness (RE), must be applied to the control device efficiency
- Their default correction factor is 80% (EPA postulates that control devices only operate at stated efficiencies 80% of the time)
- BAQ believes this 80% factor is too conservative
- It is important that facilities account for the time when control devices are operating at less than their stated efficiency!

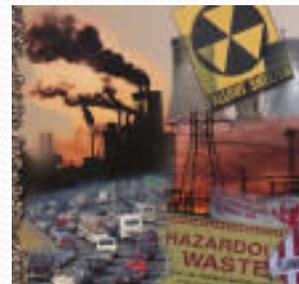


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Air Toxics, HAPs, TAPs



- **Make sure your TRI amounts are the same as your Emission Inventory amounts!!!**



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37 HAPs of Primary Concern

- Report if you emit any of these 37 HAPs at any level: 37 HAPs Table on <http://www.scdhec.gov/Environment/docs/37HAPS.pdf>
- All other HAPs and TAPs should be reported if the facility wide total of that HAP or TAP exceeds 200 lbs
- <http://www.epa.gov/ttn/atw/orig189.html>
- <http://www.scdhec.gov/Agency/RegulationsAndUpdates/LawsAndRegulations/Air/>
- All HAPs and TAPs being reported need to be reported at the Process Unit Level



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Chemical Abstracts Service (CAS)

- EPA's List of HAPs

<http://www.epa.gov/ttn/atw/orig189.html>

- NIST Chemistry Web Book

<http://webbook.nist.gov/chemistry/>

- EPA's Substance Registry System

<http://www.epa.gov/srs/>



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Ammonia and Condensable Organics

- Ammonia, condensable organics, and organic and elemental carbon are precursors to PM 2.5
- Report any Ammonia, PM 2.5 or its precursors



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Finishing up

- After Websat data entry and Certifier electronic signature:
- Need to send to us:
 - supporting calculations/documentation of emissions
 - Facility General page marked with any changes
 - List of Insignificant Activities
- Confidential – MUST send “public” (sanitized) copy of supporting docs AND “confidential” copy of docs



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Finishing up

- Any equipment that did not operate (i.e., no emissions) during the inventory year should be “zeroed-out” in the database and noted in supplemental docs.
- If the equipment has been removed, zero-out in database and make note in supporting docs



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Finishing Up – cont'd

- Supporting materials can be mailed to:

Emission Inventory Section
Bureau of Air Quality
SC DHEC
2600 Bull Street
Columbia, SC 29201

- Supporting docs can be sent electronically
- If you have any questions about completing your Inventory, please contact the Emissions Inventory Staff member who last reviewed an inventory for you or Lynn Barnes at (803)898-4123.
- For questions related to WebSat, call Chris Cheatham (803)898-3827 or Jeff Nuovo (803)898-4085.



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Additional Links

- DHEC BAQ Web Page

<http://www.scdhec.gov/HomeAndEnvironment/Air/>

- Emissions Inventory Web Page

<http://www.scdhec.gov/Environment/AirQuality/ComplianceandReporting/EmissionsInventory/>

- EPA Clearinghouse for Emissions Inventories and Factors (CHIEF)

<http://www.epa.gov/ttn/chief/> - AP-42, Source Classification Code (SCC) resource, TANKS Software, FIRE, and more



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2014 Inventory Workshop...

■ WebSat....



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WebSat – access details

- Registration forms ESA/ERA – fill out completely, must verify identity.
 - ESA – Electronic Signature Agreement
 - for certifier/TV Responsible Company Official
 - ERA – Electronic Registration Agreement
 - for non-certifier, “standard user”
 - Remember, one point of electronic signature is to give digitally signed info the same legal weight as paper signature
- UserIDs and passwords will be emailed once the ESA/ERA forms have been processed



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WebSat – access details 2

- Certifiers must complete additional registration step in the online system
 - Establishes a userID, password, and security questions/answers created by the certifier and known only to the certifier (not by DHEC or other entity)
 - Certifier's temporary userID & password are only valid for 10 calendar days after issuance
- Lost/forgotten userIDs & passwords – will have to send in new ESA/ERA to get reset



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Emissions Inventory / WebSat –

One Big Happy World

