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## WBEA – Standard Operating Procedure

SOP Title		General Integrated Sampling Instructions	
SOP Number		WBEA-INT-001	
Author		Gary Cross	
Implementation date		September 15, 2011	
Revision History			
Revision #	Date	Description	Author
1	February 2012	Addition of shipping information	Kendra Thomas
2	March 2012	Proof-read	Emilie Rainville
3	April 2012	Addition of sampling procedures	Emilie Rainville
4	May 23, 2012	Addition of Rush VOC sample process	Gary Cross
5	July 22, 2012	Addition of EC/OC procedure	Gary Cross
6	November 20, 2012	Addition of procedure for EC PUF on filter	Gary Cross
7	November 27, 2012	Addition of Blank information	Emilie Rainville

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## Introduction and Background

This SOP is intended to describe the basic instructions and procedures for completing receiving, collection, and shipping of all samples in the WBEA network. This document will provide enough information to complete the changes of sample media, and will also include sample logistics like shipping/receiving. Detailed SOPs should be referred to for each of the individual samplers when completing routine maintenance and calibration procedures.

## Sampling Overview

There are numerous sampling systems and media being collected in the WBEA network. All of the sample media is then sent to various laboratories to have the compounds in question extracted and analyzed. Each of these samples need to have sampling data associated with them such as sample dates and times, volumes, etc, depending on the sampler or media. Without this information and a way to associate it to the sample media, the sample is useless. In order for us to keep track of all the samples that are collected in the network, this information must be recorded in the WBEA Doc-It system. This maintains an archived record of the sample meta-data, as well as allows this information to be sent to the laboratory along with the sample media.


Some special sampling programs may require the tech to fill out a specific sample information sheet provided by the owner of the sampling program to accompany the sample media back to the lab. In these cases, the sample meta-data is to be entered into the owner-provided laboratory sample sheet, and is also entered into the WBEA Doc-It system. A copy of the laboratory sample sheet is filed in the WBEA Field Operations Centre (FOC) for future reference.

Blanks are necessary with some sampling programs. Blanks are used to determine if the samples may have picked up any contaminants that were not associated with the sample procedure. There are two types of blanks: field blanks are blanks that mimic the sampling procedure, without actually sampling. They are usually placed in the sampler, without being turned on. Travel blanks are blanks that travel the same journey as the actual samples (ex. from the lab to the FOC, and then back to the lab), without going through the sampling procedure or actually sampling. Different sampling programs have different blank requirements.

The list of all integrated samples currently collected in the WBEA network, including the frequency of collection and the technologist responsible, is presented in Table 1.

Responsibilities for these sampling tasks will change from time to time and will be included in updates of this document. The list below is "as of" the date of the last revision.

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Table 1.0 - WBEA Integrated Sampling List

	Station	Program	Schedule	Exposure Time	Tech Responsible
PAH	AMS 1	WBEA	Every 6 days	24-hour	Dean M
	AMS 5	EC	Every 6 days	24-hour	Emilie R
	AMS 6	WBEA	Every 6 days	24-hour	Zach E
	AMS 7	WBEA	Every 6 days	24-hour	Emilie R
	AMS 11	EC	Every 6 days	24-hour	Emilie R
	AMS 13	EC	Every 6 days	24-hour	Emilie R
	AMS 14	WBEA	Every 6 days	24-hour	Melissa L
PM2.5	AMS 1	WBEA	Every 6 days	24-hour	Dean M
	AMS 5	EC	Every 6 days	24-hour	Emilie R
	AMS 6	WBEA	Every 6 days	24-hour	Zach E
	AMS 7	WBEA	Every 6 days	24-hour	Emilie R
	AMS 11	EC	Every 6 days	24-hour	Emilie R
	AMS 13	EC	Every 6 days	24-hour	Emilie R
	AMS 14	WBEA	Every 6 days	24-hour	Melissa L
PM10	AMS1	WBEA	Every 6 days	24-hour	Dean M
	AMS6	WBEA	Every 6 days	24-hour	Zach E
	AMS7	WBEA	Every 6 days	24-hour	Emilie R
	AMS12	WBEA	Every 6 days	24-hour	Melissa L
	AMS13	WBEA	Every 6 days	24-hour	Melissa L
	AMS14	WBEA	Every 6 days	24-hour	Melissa L
	AMS15	WBEA	Every 6 days	24-hour	Zach E
Precip	AMS1	AENV	Every 7 days	7-days	Dean M
	AMS5	EC	Monthly	30 days	Emilie R
	AMS6	WBEA	Every 7 days	7-days	Zach E
	AMS6	ASPS	Every 7 days	24-hour	Zach E
	AMS 11	EC	Monthly	30 days	Emilie R
	AMS 13	EC	Monthly	30 days	Emilie R
VAPS	AMS14	AENV	Every 14 days	14 Days	Melissa L
VOC	AMS1	WBEA	Every 6 days	24-hour	Dean M
	AMS6	WBEA	Every 6 days	24-hour	Zach E
	AMS7	WBEA	Every 6 days	24-hour	Emilie R
	AMS9	WBEA	Every 6 days	24-hour	Melissa L
	AMS12	WBEA	Every 6 days	24-hour	Melissa L
	AMS13	WBEA	Every 6 days	24-hour	Melissa L
	AMS13	Envi Can	Every 6 days	24-hour	Melissa L
	AMS14	WBEA	Every 6 days	24-hour	Melissa L
	AMS15	WBEA	Every 6 days	24-hour	Zach E

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The following sections describe specific procedures for sample media change, documentation of the sample meta-data, and shipping requirements.


## PAH Samples

There are two PAH sampling projects currently being conducted within the WBEA network. They are:

### A. High Volume PUF Sampling – WBEA

- a. Description - The WBEA High Volume PUF sample collection is carried out at stations 1, 6, 7 and 14. The system used to collect these samples is a standard TISCH high volume PUF sampler to comply with TO Method 13A. The sample cartridges contain a Poly Urethane Foam (PUF) plug in a glass insert. The sample air is pulled through these cartridges using the TISCH sample system. The sample flow for these samplers is approximately 0.25 m<sup>3</sup>/min. The schedule for these samples follows the NAPS schedule, every 6 days. This schedule can be found on the Sample-It calendar on the Doc-It Website.
- b. Receiving – When proofed (prepared sample media from the lab) sample media arrive from the lab, they are to be recorded on the “incoming shipping” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the new sample cartridges should be unpacked and placed on the appropriate shelf in the sample room. When sample media is needed, it should be taken from this shelf to the field for routine sample changes.
- c. Procedure—
  - i. Retrieval
    - Prior to removing old media, turn on sampler and record the magnahelic reading.
    - Record reading on timer. Use this as final time.
    - Remove sample, cover the end that insert into the sampler with the plastic/tissue that should be left from deployment.
    - Cover filter with the top from the new media.
  - ii. Deployment
    - Take media out of plastic bag, remove plastic bag/tissue from one end. Place that end in the sampler, WITHOUT removing the cover on the filter.
    - Turn on the sampler and perform leak check. Magnahelic reading should stay at zero. Record that you’ve performed leak check.
    - Now remove cover from media. Cover may be either a stainless steel cover, or white Teflon.
    - Turn sampler on again, watch magnahelic reading. It should be at 50”H2O. If it isn’t take a screw driver and turn the screw above “motor speed” to

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increase/decrease the speed of the motor until it reads 50”H2O. Record initial magnahelic reading.

- Turn motor off. Move on/off pins to appropriate place on timer wheel. Record reading on timer. Use this as initial time.

iii. Blanks

- A travel blank is shipped to the lab with each set of four samples every NAPS date. The blank is just an unsampled cartridge that was on the shelf in the FOC.
- A COC needs to be prepared for this blank

- d. Shipping – Samples that have been collected and retrieved from the field should be placed on the shelf labelled “Sampled PUF Cartridges”. Once all four collected samples from one NAPS sample day have been returned to this shelf, they need to be shipped back to the lab as quickly as possible. A travel blank should also be included in the shipment--take one of the unsampled cartridges and label it the “travel blank” and add to the shipping container with the other four samples. The travel blank must be entered into the Doc-It system before it is shipped. These samples are shipped to:

**Airzone One Ltd**

222 Matheson Blvd E.

Mississauga, ON L4Z 1X1


Phone (905) 890-6957 ext. 106

Attn: Natalie DeSousa

\*Ship via Purolator express air service

**B. High Volume PUF Sampling – Environment Canada**

- a. Description – The high volume PUF sampling project is sponsored by Environment Canada and is carried out at stations 5, 11, and 13. This program utilizes the NAPS configuration of the TISCH style PUF sampler to collect PAH samples—a ROOTS meter a measures the volume of air sampled for each sample. The PUF cartridges are 4” diameter x 6” long PUF cartridges enclosed in a glass, Teflon and PVC housing. Sample flow through these samplers is typically 0.5 m<sup>3</sup>/min. The duration of this sampling program is undetermined at this point in time.
- b. Receiving – When proofed (prepared sample media from the lab) sample media arrive from the lab, they are to be recorded on the “incoming shipping” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the new sample cartridges should be unpacked and placed on the appropriate shelf in the sample room. When sample media is needed, it should be taken from this shelf to the field for routine sample changes.

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c. Procedure—

i. Retrieval

- Prior to removing old media, turn on sampler and record gas meter inlet (vacuum). Turn off sampler.
- Record reading on timer and gas meter. These should be filled out of the Environment Canada data sheet.
- Remove sample assembly, and bring into station. Remove filter from the filter holder. Place the filter, particulate side up, on the provided tin foil. Fold the foil and filter over two times to seal the particulate sample in the foil. The folded sample then goes into a sealed plastic bag and then into the brown envelope it came from.
- Remove the filter holder from the PAH canister and lace Teflon covers on both ends. One will be with the canister's ring, the other will come from the new media.

ii. Deployment


- Take new media and place the appropriate sampling apparatuses on either end.
- Place new filter in filter holder, shiny side down, and cover with plastic sheet.
- Place in sampler and perform leak check. With the plastic sheet covering the filter, no air should be getting in, so the gas meter reading SHOULD NOT be increasing.
- Remove plastic sheet, turn on sampler and record initial gas meter inlet (vacuum). Turn off sampler and record initial time. This should all be recorded on the Environment Canada data sheet.

iii. Blanks

- This program requires field blanks only.
- On specific dates, given to us by our contact at Environment Canada, a PUF and filter are deployed and left outside in the sampler on the sample day.
- The sampler should never be turned on while the field blank is deployed, so doing a leak check and vacuum check is not necessary.

d. Shipping – Samples that have been collected and retrieved from the field should be placed on the shelf labelled “EC Sampled PUF Cartridges”. These samples are shipped in full sets of two, meaning six samples, three from each NAPS cycle, should be in each shipment. So six sampled cartridges, six particulate filters and three field sample sheets (there are two samples from consecutive NAPS days on each sheet) are to all be shipped in the same cooler. Also ensure that a copy of the field sample sheet is filed in the FOC for future reference. It is not necessary to include a printed COC, just the field sheet is needed for shipping. These samples are shipped to:



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**Environment Canada**

335 River Road

Ottawa, ON K1V 1C7

Attn: Allison Walkey

Phone - (613) 991-4428

\*Ship via Purolator express air service


\*Use EC Purolator account number 8322405

## PM2.5 and PM10 Sampling

There are two PM sampling projects currently being conducted within the WBEA network. They are:

### A. WBEA Particulate Sampling Program

- a. Description – WBEA particulate samples are collected at the sites listed in Table 1.0 on the NAPS schedule. Partisol 2000H and FRM samplers are used to collect these samples. When samples are changed on the NAPS schedule, the COC must be filled out to record all the information relating to each sample. Refer to the individual SOPs for these samplers for information on routine maintenance and calibration procedures.
- b. Receiving – When proofed (prepared sample media from the lab) sample media arrive from the lab, they are to be recorded on the “incoming shipping” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the new sample filters should be unpacked and placed on the appropriate shelf in the sample room. When sample media is needed, it should be taken from this shelf to the field for routine sample changes.
- c. Procedure—
  - i. Retrieval
    - Press “RUN/STOP” on the partisol until top right corner reads “STOP”
    - Remove filter from partisol and place in the petri dish it belongs to.
    - Press “Data” on the screen and record total time, total volume, average ambient temperature, and average pressure.
  - ii. Deployment
    - Take new filter out of petri dish and place in partisol.
    - Press “FILTSET” on screen and set the appropriate sampling date/time.
    - Press “RUN/STOP” until the screen reads “WAIT”.


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- The petri dish should have the following information written on the label: sampling start and end date, filter number, sampling location.
- iii. Blanks
- This program requires travel blanks only.
  - Two unsampled filters should be labeled as blanks, one PM2.5 & one PM10, and sent back to the lab unsampled.
  - A COC needs to be prepared for these blanks
- d. Shipping – When sampling is complete, and all Doc-IT fields filled out, a copy of the corresponding COC must be printed off, folded up and kept in the bubble-wrap pouch with the PM filter. Sampled filters are then stored on the shelf labelled “Sampled PM Filters” in the sample room prior to shipping. All particulate samples are to be shipped every two weeks to include two NAPS sample days. For each NAPS sample day select two unsampled filters and label one PM2.5 BLANK, and one PM10 BLANK. The NAPS sample date should also be entered on the label on the petri dish of each BLANK sample. The sampled filters and blanks should then be put into a cooler, or box in the event that there are no coolers, and taped up. Once a shipping label has been created, it should be taped to the top of the cooler. Ship these samples via Purolator express service. The PM 2.5 and 10 filters are shipped to:

**ALS Environmental**  
520 Mainway Suite 5  
Burlington, ON  
L4L6A4  
Attn: Lynne Wrona  
Phone – 905-331-3111  
\*Ship via Purolator express service

## **B. Environment Canada Particulate Sampling Program**

- a. Description – The Environment Canada particulate samples are collected at the sites listed in Table 1.0 on the NAPS schedule. Partisol FRM samplers are used to collect all these samples. Both COC in Doc-It and the EC provided sample sheets must be filled out for each sample collected. When samples are sent back to the lab for analysis, the EC sample sheets are to be copied and filed in the filing cabinet in the sample room. Refer to the individual SOPs for these samplers for information on routine maintenance and calibration procedures.
- b. Receiving – When proofed (prepared sample media from the lab) sample media arrive from the lab, they are to be recorded on the “incoming shipping” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many

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samples we received, and who received them. Filters for this sampling program come in a batch of filters in a box and are labelled according to the site where the samples are to be collected. Once the shipment has been entered on the sheet, the box of sample filters should be taken to the appropriate site for future use.

c. Procedure—

i. Retrieval

- Press “RUN/STOP” on the partisol until top right corner reads “STOP”
- Remove filter from partisol and place in the petri dish it belongs to.
- Press “Data” on the screen and record required information on Environment Canada data sheet.

ii. Deployment

- Take new filter out of petri dish and place in partisol.
- Press “FILTSET” on screen and set the appropriate sampling date/time.
- Press “RUN/STOP” until the screen reads “WAIT”.
- Record required information on Environment Canada data sheet.


iii. Blanks

- This program requires travel blanks and field blanks
- The travel blanks (2) are labeled in the case as “TB” and are simply to be left alone and sent back to the lab as is.
- The field blanks (2) are labeled in the case as “FB” and should be taken out, uncovered, put into the sampler, and then removed and placed back in the case. As there are usually two field blanks, each one should be done on a different day.
- The date and time the field blanks are deployed are chosen by the technician, who should not when each one was deployed on the data sheet provided.

d. Shipping – When sampling is complete after all sample filters in the batch have been used; the box of filters is to be returned to the shop for shipping. The EC sample sheet(s) containing all the information for each sample should be copied and filed in the file cabinet in the sample room. These samples are then to be shipped immediately back to the EC lab for analysis. It is not necessary to include printed copies of the COCs with these sample batches, only the original EC field sheet(s). Ship these samples via Purolator on the Environment Canada account number. These PM 2.5 filters are shipped to:

**Environment Canada**


Attn: Jennifer Cunningham  
335 River Road

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Ottawa, ON  
K1V 1C7  
Attn: Jennifer Cunningham  
Phone – 613-949-8553  
\*Ship via Purolator express air service  
\*Use Purolator account number 8322406

### C. EC/OC Particulate Sampling Program

- a. Description – Elemental Carbon and Organic Carbon (EC/OC) samples are collected using a quartz filter in a Partisol 2000 particulate sampler. These samples will be collected on the NAPS schedule. A Partisol 2000i is used to collect these samples. When samples are changed on the NAPS schedule, the COC must be filled out to record all the information relating to each sample. A sample form is included in the bag with each sample filter and must be filled out when collecting the samples. Copies of these sample information forms must be made and kept at the FOC in the sample filing cabinet. Refer to the individual SOPs for these samplers for information on routine maintenance and calibration procedures.
- b. Receiving – When prepared sample media from the lab, they are to be recorded on the “incoming shipping” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the new sample filters should be stored in a fridge until used. Place the small cooler with the unsampled filters in the fridge in sample room B. When sample media is needed, it should be taken from this cooler to the field for routine sample changes.
- c. Procedure—
  - i. Retrieval
    - Press “>” on the partisol until status bar reads “STOP”
    - Remove filter from partisol and place in the sample packaging that it came in.
    - Using the menu, navigate to the sample information screen and record total time, total volume, average ambient temperature, and average pressure on the sample information form.
    - After returning to the FOC, store the sampled filter in the cooler marked “sampled filters” in the fridge in sample room B.
  - ii. Deployment
    - Take new filter out of filter packaging and place in partisol.
    - Press “SSET” on screen and set the appropriate sampling date/time.
    - Press “>” until the screen reads “WAIT”.
    - Record the sampling start and end date, filter number, sampling location on the sample information form.

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iii. Field Blank

- The field blank is to be collected once per month. This should be done at the same time every month
- Take an unsampled filter out of its packaging and place into the Partisol filter holder like a normal sample.
- Close the sample holder mechanism.
- Wait for 5 minutes.
- Remove the sample filter from the Partisol and return it to the sample packaging.
- Record the time and date, filter number, sampling location on the sample information form, and that this sample is a field blank.

- d. Shipping – When sampling is complete, and all Doc-IT fields filled out, a copy of the sample information form must be made and filed in the sample info filing cabinet in sample room A at the FOC. The original sample information form must be inserted into the sample bag with the PM filter. Sampled filters are then stored in the fridge in the sample room prior to shipping. These sample filters are to be shipped back to the lab once every three months. Three field blanks should accompany the sample filters for the quarter. The sampled filters and field blanks should then be put into a cooler with cold packs and properly packaged for shipping. Once a shipping label has been created, it should be taped to the top of the cooler. Ship these samples via FedEx - priority. These filters are shipped to:


**Desert Research Institute**  
2215 Raggio Parkway  
Reno, NV  
89512 USA  
Attn: Steve Kohl  
Phone - 775-674-7056  
Steve.Kohl@dri.edu  
Alternate contact: Brenda Cristani  
Phone – 775-674-7158  
brendac@dri.edu  
\*Ship via FedEx - Priority

## Precipitation Samples


There are currently three precipitation sampling programs within WBEA. They are:

### A. AESRD method Precipitation Sampling

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- a. Description - The WBEA currently collects samples at station 1 and 6, which are sampled and analyzed following the AEW standard method. Sampling is completed every Wednesday if there is a sample to collect.
- b. Receiving – when prepared coolers containing the two sample bottles, travel blank and sample sheets arrive, they are to be recorded on the “incoming” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the sample cartridges should be placed on the appropriate shelf in the sample room. New sample media should be taken from this shelf to the field for routine sample collections.
- c. Procedure—
  - i. Retrieval
    - If there is precipitation in the bucket, remove the bucket and pour the sample into the provided sample bottles.
    - If there is additional precipitation in the bucket, measure the excess volume and record this volume on the sample sheet.
    - Seal the lids of the bottles with Teflon tape.
    - Place everything in travel cooler.
    - In the CoC, the media serial number and Lab Sample ID should both be entered as: AMSXXMMMDD/YY
    - Record the Station # and sample date collected on the sample bottle.
  - ii. Deployment
    - Rinse out the previously used bucket with DI water.
    - Replace bucket in sampler.
  - iii. Blanks
    - A precipitation blank is included in each sample cooler. This blanks needs to remain in the cooler and return to the lab for analysis with any precipitation samples.
- d. Shipping – Samples that have been collected and retrieved from the field should be placed on the appropriate shelf in the sample room. Once both samples have been collected from AMS 1 & 6, the coolers are to be shipped to the lab listed below. The COC should be printed and included in the cooler prior to shipment and a copy of the AEW sheet should be made and filed in the filing cabinet in the sample room. Both samples are to be shipped at the same time as soon after the sample day as possible. Precipitation samples should be sent weekly, through Purolator using their ground service. Shipping labels should be taped to the top of the cooler. Make sure to fill out

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shipping information both on the shipping log, and in the COC on Doc-It for each sample.. These samples are to be shipped to:

**Alberta Innovates Technology Futures**

75 Street & Hwy 16A

Vegreville, AB

T9C 1T4


Attn: Candace Gegolick

Phone 780-632-8441

\*Ship via Purolator ground service

**B. Automated Sequential Precipitation Sampler (ASPS)**

- a. Description – The ASPS sampler is designed to capture precipitation events and store each event in a separate sample bottle in temperature controlled housing. The sampler can be programmed to collect samples under a variety of configurations. The most recent configuration (February 1, 2012) sets the sampler to collect a precipitation sample in alignment with the weekly sample schedule of the AEW method samplers. This will allow WBEA to compare the results of both collection methods as the schedule will be the same. Every two months the 16 sample bottles and funnels are shipped back to the University of Michigan for analysis.
- b. Receiving – When prepared sample bottles and funnels arrive from the U of M, they are to be recorded on the “incoming” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the new should be taken to AMS 6 for future use.
- c. Procedure—
  - i. Retrieval
    - x
  - ii. Deployment
    - x
  - iii. Blanks
    - This program has no blank requirements at this time
- d. Shipping – Samples that have been collected and retrieved from the field should be prepared for shipping right away. Shipping labels and documentation are provided by

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the U of M and are used to ship the samples back to their lab in Ann Arbour. These samples are shipped to:

**University of Michigan Air Quality Lab**

RM/STE Load Doc

109 Observatory St

Ann Arbor Michigan

48109 USA

Attn: Matthew Lawrence Salvadori

Phone - 734-763-7714

\*Ship via supplied shipping instructions

**C. Environment Canada – Air Toxics Study – Precipitation Sampling**

- a. Description – The Environment Canada (EC) Air Toxics Study includes monthly sampling of organic and inorganic samples collected by two separate precipitation collectors. These samplers are located at AMS 5, 11, and 13 as described in Table 1.0. Samples at each site from both collectors are collected as close as possible to the 1<sup>st</sup> day of each month. The inorganic precipitation collector follows a similar process as the AEW samples with the exception that the buckets are changed as well and returned to the lab for cleaning. The inorganic sampler involves changing a column of resin beads in water that absorbs the compounds of interest and is then sent back to the lab for analysis. A travel blank sample also needs to be taken at one on the sites on a rotating basis. An extra column is brought, opened up at the desired station, and then closed. ‘BLANK’, station location, and date and time should all be recorded on the column. For each sample collected, there is a sample sheet from EC that needs to be filled out and included with the sample shipment. A copy of each of these sheets needs to be made and filed in the filing cabinet in the sample room.
- b. Receiving – Bulk shipments of organic columns and the three inorganic precipitation buckets are to be recorded on the “incoming” sheet located on the wall in the sample room when they come in. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the sample bucket cases can be placed on the shelf in the sample room until the change-out day arrives. The inorganic columns are to be stored in the refrigerator in the sample room until ready to be used.
- c. Procedure—
  - i. Inorganic
    - I. Retrieval





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- Remove the bucket and pour the collected precipitation into the provided sample bottle.
- If there is additional precipitation in the bucket, measure the excess volume and record this volume on the sample sheet.
- Place sample bottle in provided plastic bag, and then place the bag in the used bucket.
- Remove the lid from its plastic bag, and seal the top of the bucket.
- Fill out Environment Canada sample sheet and then place everything in the shipping container.

II. Deployment

- Remove new bucket from shipping container.
- Remove the lid and place it in a clean plastic bag provided for that purpose.
- Place new bucket in the sampler.
- Fill out Environment Canada sample sheet.

III. Blanks

- This program has no blank requirements at this time


ii. Organic

I. Retrieval

- Remove the carboy and record the volume of water it has collected.
- Unscrew the column from the sampler. Once removed, screw on Teflon cap. Flip the column upside down, remove U-tube and screw on other Teflon cap.
- Write volume from carboy and end date/time on the column. Place the column in the used inorganic sample bucket (but not in the bag with the inorganic sample bottle).
- Fill out Environment Canada data sheet and place in shipping container with inorganic data sheet.

II. Deployment

- Prior to deploying a new column, clean collecting funnel of the sampler with DI water and kimwipes. Use the plastic container located in each station to collect water run-off. Use the supplied wire brush to clean the neck of the funnel.
- Choose a new column, and write start date/time and sample location on the tape on the column.
- Inset the U-tube first. It goes in the end closest to the tape. To insert it, the taped end should be pointing upwards. If the column is too small for the U-tube to fit, select a new column. If the U-tube fits,

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but it's a little loose, use Teflon tape to wrap around the end of the u-tube until it fits snugly in the column (we don't want any leaks).

- Flip the column over and remove the other Teflon cap.
- Screw this end into the sampler.
- Replaced the carboy and place the tubing from the u-tube into the top of the carboy.
- Fill out Environment Canada sample sheet.

### III. Blanks

- This program has field blanks.
- When the columns are changed once a month, an extra column should be brought, opened up at one of the sampling sites and exposed to ambient air for 10s.
- The technician should write BLANK on the yellow tape, along with the date, time and sample location, and this column should be returned to the lab along with the sampled columns.
- The sampling site should rotate every month.

- d. Shipping – Samples that have been collected and retrieved from the field should be prepared for shipment right away. The inorganic sample buckets that were deployed in the field are placed in the blue shipping box. The 2 litre sample bottle with the precipitation sample in it is placed in the sample bucket along with the organic column that was collected from the same site. The blank should be included in the inorganic precipitation bucket from the station the blank was taken at—so one bucket will have two columns, the sampled column and the blank, while the others will just have one. The lid is then placed on the sample bucket and the shipping boxes labelled and shipped to the address listed below.

#### **Environment Canada WQM&S**

867 Lakeshore Road

Burlington, Ontario

L7R 4A6


Attn: M.L. Archer

\*Ship via Purolator express air service

\*Use Purolator account number 3929153


## **Volatile Organic Compounds (VOC) Samples**

There are two VOC sampling projects currently being conducted within the WBEA network. They are:

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#### A. VOC Canister Sampling Program – WBEA

- a. Description - The WBEA VOC sampling program follows EPA TO-15 method to collect VOC samples at stations listed in table 1. Xontech 910A sampling systems are used to control the sample collection in these canisters with the exception of AMS 15 where a different sampling system is employed. Sample air is drawn from the sample manifold in the station through the Xontech sampling system to fill the canister. The canisters are initially under roughly -30 "Hg vacuum that is used to draw the sample in. Once the vacuum is used up, the pump continues the controlled flow until the sample period is complete. The sample flow currently used is 5 cc/min over the 24 hour period. The schedule for these samples is on the NAPS schedule, every 6 days.
- b. Receiving – When proofed (prepared sample media from the lab) canisters arrive from the lab, they are to be recorded on the “incoming shipping” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the sample canisters should be placed on the appropriate shelf in the sample room. New sample canisters should be taken from this shelf to the field for routine sample changes. The oldest canisters on the shelf should be used first.
- c. Procedure—
  - i. Retrieval
    - Record canister pressure, sampler pressure, and total sampling time for DocIT.
    - Record final canister pressure on the tag attached to the canister.
    - Close the canister, unscrew the line from the sampler and screw on brass cap.
  - ii. Deployment
    - Take new canister, ensure the knob is in the “closed” position, then unscrew the brass cap and screw on the Teflon line from the sampler.
    - Open the canister.
    - Record initial sampler pressure and initial canister pressure for DocIT.
    - Record start and end date/time, sample location, and initial canister pressure on the tag attached to the canister.
  - iii. Blanks
    - This program has no blank requirements at this time
- d. Shipping – Samples that have been collected and retrieved from the field should be placed on the shelf labelled “Sampled VOC Canisters”. Once all the sampled canisters have been

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returned to the FOC from the field for one NAPS cycle, they need to be shipped to the laboratory.

- e. Rush Samples – from time to time, samples are collected in canisters during odour events that need to be shipped and analyzed immediately. These rush samples are usually collected manually and outside of the NAPS schedule. Collection of these samples will be dictated on a case by case basis. Please follow the following notification and shipping process for rush samples:
  - i. If a manual sample is being collected, call AITF at the Trace Organics lab 780-632-8455 to inform them that there is a rush sample being collected, and provide any pertinent or known details at that time.
  - ii. Complete the sample collection on site and fill out an ad hoc COC for the sample.
  - iii. There should be either a single or double canister shipping cooler in the sample room to ship either a single or double sample canister to AITF.
  - iv. Try to fill out all the shipping info and have the canister picked up that day by Purolator, or drop off the shipment at the Purolator office to ensure it gets shipped to AITF as soon as possible.
  - v. Call AITF again at the number listed above and notify them that the shipment is on its way and provide them the weigh bill number.

These samples are shipped to:

**Alberta Innovates Tech Futures**

75 Street & Hwy 16A

Vegreville, Alberta

T9C 1T4

Attn: Jessica Payne

Phone: 780-632-8459


[Jessica.Payne@albertainnovates.ca](mailto:Jessica.Payne@albertainnovates.ca)

Also, [TraceOrg@albertainnovates.ca](mailto:TraceOrg@albertainnovates.ca)

\*Ship via Purolator ground service

**B. VOC Canister Sampling Program – Environment Canada**


- a. Description - The Environment Canada VOC sampling program follows EPA TO-14A method to collect VOC samples at AMS 13. A Xontech 910A sampling system is also used to control the sample collection in these canisters. Sample air is drawn from the sample manifold in the station through the Xontech sampling system to fill the canister. The canisters are initially under roughly-30" Hg vacuum which is used to draw the sample in. Once the

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vacuum is used up, the pump continues the controlled flow until the sample period is complete. The sample flow currently used is 10 cc/min over the 24 hour period. These samples are on the NAPS schedule, every 6 days.

- b. Receiving – When proofed canisters arrive from the laboratory in the blue or black shipping cases, they are to be recorded on the “incoming” sheet located on the wall in the sample room. This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the sample canisters should be placed on the appropriate shelf in the sample room. New sample canisters should be taken from this shelf to the field for routine sample changes.
- c. Procedure—
  - i. Retrieval
    - Record sampler pressure and total sampling time on Environment Canada sample sheet.
    - Close the canister, unscrew the line from the sampler and screw on brass cap.
  - ii. Deployment
    - Take new canister, ensure the knob is in the “closed” position, then unscrew the brass cap and screw on the Teflon line from the sampler.
    - Open the canister.
    - Record start and end date/time, sample location, and initial sampler pressure on Environment Canada data sheet.
  - iii. Blanks
    - This program has no blank requirements at this time
- d. Shipping – Samples that have been collected and retrieved from the field have two sampled canisters in the shipping case, and therefore are shipped every two weeks, following two full NAPS cycles. Once these sampled canisters have been returned to the FOC, they need to be shipped to the laboratory. These samples are shipped to:

**Environment Canada**  
335 River Road  
Gloucester, Ontario  
K1V 1C7  
Attn: Patrick Thompson  
Phone: 613-991-1998

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\*Ship via Purolator express air service

## Versatile Air Pollution Sampler (VAPS) Program

- a. Description - The VAPS sampling program is owned by Alberta Environment and Water, and run by WBEA. The sampler is set up only at AMS 14 and collects a sample in a set of sample media over a 14 day period. The sample media are housed in a protective case and mounted outside the station and connected to the pump and control system located inside the station. The system is configured to hold two sets of sample media. When the 14 day sample period is complete on channel A, the system automatically switches to channel B. This leaves the channel A available to be collected and a new set of media deployed.
- b. Receiving – When proofed sample media arrive from the laboratory in the large black pelican cases, they are to be recorded on the “incoming” sheet located on the wall in the sample room This is to keep track of incoming shipments: when they arrived, how many samples we received, and who received them. Once the shipment has been entered on the sheet, the sample cases should be placed on the appropriate shelf in the sample room. Each sample case holds two sets of sample media. New sample cases should be taken to AMS 14 on the next trip to the station so they are on hand for the next sample change.
- c. Procedure—
  - i. Retrieval
    - x
  - ii. Deployment
    - x
  - iii. Blanks
    - This program has no blank requirements at this time
- d. Shipping – Samples that have been collected and retrieved from the field should contain two sampled sets of media in the one case, and so are shipped every two weeks. These samples are shipped to:

### **Alberta Innovates Tech Futures**

75 Street & Hwy 16A  
Vegreville, Alberta  
T9C 1T4  
Attn: Melanie Wyllie  
Phone: 780-632-8359

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\*Ship via Purolator ground service