COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

FINAL APPROVAL OF March 28, 2002 REVISION

FIELD OPERATIONS MANUAL FOR AIR INSPECTORS
Air Standard Operating Procedures (ASOPs)

ASOP-9: VOC SAMPLING AND ANALYSIS

Per Collaboration Process Development Memo Dated July 20, 2000

- Revision coordinated by Manager, Office of Air Compliance Coordination
- Reviewed by regional Air Compliance Managers and designees
- Presented to Senior Management Team for review and comment
- Finalized by Manager, Office of Air Compliance Coordination

Alice G. Nelson — Date: 4-12-02

- Approved by Division Director of Air Programs

John M. Daniel, Jr. — Date: 4/12/02

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

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ASOP - 9
VOC SAMPLING AND ANALYSIS

I. PURPOSE/SCOPE

Sampling and analysis of applied inks and coatings for Volatile Organic Compound (VOC) content are being performed by the Virginia Department of Environmental Quality (VDEQ) to verify that regulated sources are in compliance with emission limits imposed by their air permits and applicable regulations. VDEQ is currently conducting this air compliance program to meet its responsibilities under state law and the requirements of applicable State Implementation Plans. The City of Philadelphia's Department of Public Health Air Management Services Laboratory is providing laboratory analytical services to VDEQ in support of this VDEQ mission.

This Standard Operating Procedure is to provide an Air Compliance Inspector guidelines on the proper procedures to follow when collecting a coating or ink sample for analysis by EPA Reference Methods 24 and 24A.

II. EQUIPMENT*

A. CONSUMABLE EQUIPMENT

Sample containers with inner seal and screw cap (approximately 4.0 ounce in size)*
Custody seals*
Evidence Tape*
Sample Labels*
Shipping Labels (return address, shipping address of laboratory)
Field documentation forms (Chain-of-custody Form, Field LogBook,)*
Zip-sealing plastic bags*
Clear packing tape*

B. REUSABLE EQUIPMENT

Portable ice cooler
Clip Board
Insulated Shipping Container*
Ice Packs (Freeze Temperature +30°F)*

Personal protective equipment (i.e. safety shoes, hard hat, goggles, etc.)

* These items supplied to the Regional Offices by the Central Office Air Compliance Section. Please contact the DEQ VOC Sampling and Analysis Program Manager when additional supplies are needed.

III. DEFINITIONS

CHAIN-OF-CUSTODY FORM - documentation of exchange and transportation of samples from the field to final analysis.

EPA METHOD 24 - standard method used to determine the volatile matter content, water content, density, volume solids and weight solids of the paint, varnish, lacquer, or related surface coating.

EPA METHOD 24A - this method applies to the determination of the volatile organic compound content and density of solvent-borne (solvent reducible) printing inks or related coatings.

FIELD LOGBOOK - documentation of events occurring during field sampling.

MULTI-COMPONENT COATINGS - coatings that are packaged in two or more parts, which are combined before application. Upon combination a co-reactant from one part of the coating chemically reacts, at ambient conditions, with a co-reactant from another part of the coating.

POT LIFE - the amount of time paint may be stored before it hardens and can no longer be used. This usually refers to catalyzed or "two component" coatings that may have a pot life of only a few hours after the two components are combined.

SAMPLE COLLECTION LABELS - links individual samples with the sample collection records and the chain-of-custody record.

SOLVENT-BORNE COATING - coatings containing only organic solvents. If water is present, it is only in trace quantities.

SPLIT SAMPLE - Two or more representative portions taken from the same sample and submitted for analysis to different laboratories. Split samples are quality control samples that are used to assess analytical variability and comparability.

VOLATILE ORGANIC COMPOUND - any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.

IV. SAMPLE COLLECTION PROCEDURE

A. Notify the City of Philadelphia's Air Management Services Laboratory three to five days prior to the actual sample collection. Notification can be done by e-mailing the Analytical Chemistry Supervisor, Ed McLaughlin, at [edward.m.mclaughlin@phila.gov] or by telephone (215) 685-1064.

B. After notifying the laboratory of your intentions to collect samples, e-mail the VDEQ Program Manager for the VOC Sampling and Analysis Program with the date(s) and names of the facility(ies) from which you are planning to collect samples.

C. Identify coatings or inks and the processes from which they are to be sampled:

1. The sample should be taken at the point of application or as close to that point as possible.

2. Multi-component coatings that harden upon mixing and application to the substrate must be sampled differently. Each component of a multi-component coating must be collected in a separate sample container. The chain-of-custody form for each of these sample containers must identify the sample as part of a multi-component coating. This can be done in the "REMARKS" area of the chain-of-custody form. A formulation sheet indicating the component mix ratio of each component used to make the multi-component coating must be obtained from the facility and submitted to the laboratory.

D. Once the coatings or inks to be sampled have been identified:

1. Determine the cure time of each coating or ink,
2. Ask whether it is a multi-component coating or ink,
3. Request formulation for multi-component coating (if applicable)
4. Determine whether it is a water or solvent based coating or ink,
5. Determine if any special handling or safety precautions are required (if applicable; include this information on the chain-of-custody form under "REMARKS"),
6. Request copies of the Material Safety Data Sheets (MSDS) for each coating or ink sample being collected.
7. Encourage the facility to take a split sample.

E. Request that a facility employee be assigned to accompany the inspector and to draw the sample while under the inspector's supervision.

F. Have the facility's designated employee draw a sample of the selected coating or ink from the location in the system (e.g., printing press ink well, spray gun, etc.) which is as close to the point of application as possible and therefore will provide the best possible "as applied" coating sample.

1. Keep sample containers closed until immediately before collecting the sample. (Note: A new container needs to be used for collection at each location in order to avoid possible mixing and/or contamination of a sample)

2. Inspect the sample container to ensure that the inside and outside are clean and dry. Then hand it to the facility employee assigned to draw the sample.

3. Make sure the coating or ink is thoroughly mixed before sampling. Lacquers and other coatings containing highly volatile solvents should be agitated in closed containers to avoid evaporation. Water-thinned coatings tend to incorporate air bubbles if stirred too vigorously, so they should be stirred slowly.

4. Make sure that the container is completely filled and that there is no headspace between the lip of the sample container and the coating or ink sample. If headspace exists VOC's have a greater chance of escaping and possibly resulting in a lower VOC content when a laboratory analysis is performed on the sample. Due to the possibility of skewed analytical results, the laboratory will reject the sample upon discovering the existence of excessive headspace in a sample container.

G. Have the facility's designated employee draw samples (this includes split samples) by filling each sample container one-at-a-time.

Depending upon the location in the process from which the sample is taken, the steps presented below must be followed in drawing samples. Note that when sampling at locations other than the point immediately upstream of the actual application of the coating or ink, you must make certain that the coating or ink is not thinned beyond the sampling point.

1. **Sampling from a spray gun or other application device***

   a. Shut off the compressed air or atomizing fluid pressure and tilt the nozzle to about a 60° angle.

   b. Tilt the sample container to the same angle, insert the nozzle or application device into the sample container, and begin to fill the sample container using the liquid feed pressure to provide flow, gradually tilting the sample container upright as it fills. *When filling the sample container do not insert the application tip into the coating. This may contaminate the sample or create bubbles leading to VOC loss.*

   c. Slowly fill the container to overflowing to ensure that a representative sample is obtained and to avoid any loss of VOC due to volatilization into the headspace.

* It should be noted that obtaining a representative sample from high-pressure spray gun applicators or from coatings or inks that contain high vapor pressure VOCs might prove difficult.

2. Sampling from an agitated/circulating coating bath or container holding a coating ready for application

a. Wipe off the sample container or make sure it is clean before dipping it into the coating reservoir. Turn the sample container upside down and place it into the coating, approximately halfway down the reservoir. (Note: *Do not take the sample from the top surface*.)

b. Turn the sample container over and slowly bring it to the top of the coating reservoir.

3. Direct Sampling of Inks

A sample may be taken directly from the ink trough at the press using a metal ladle, glass jar, or a clean paper cup to fill the sample container. (Note: *A foam cup should not be used due to the possibility that it may dissolve upon contact with solvents.)*

4. Sampling from an alternate point (i.e. tap, bleed valve, paint hose, drum, or tank)

a. Flush any tap, valve, hose, or other sample line thoroughly before sampling. Sampling from 55-gallon drums or larger tanks should be avoided because stratification or separation of components may occur under all but the most ideal mixing conditions. Hold the sample container upright or at a slight angle so that the sampling tap may be inserted into the container.

b. Insert the tap, valve, or hose into the sample container and begin to fill it while attempting to avoid contamination of the sample by contact with external parts of the sample line.

Note: Sampling at each of these alternate points will require some judgement, since each coating line or process may have a different orientation and layout of taps, valves, hoses, and reservoirs.

G. Once the sample has been collected, verify that a minimum headspace exist between the coating or ink sample and the lip of the sample container. When it has been satisfactorily determined that there is little to no headspace, place the sample container on a flat surface and insert the inner seal into the neck/mouth of the container. Push downward on the inner seal, making sure to apply even force, thus ensuring a tight fit of the inner seal to the opening of the sample container. Screw the cap onto the container. Then wipe all residual coating material off the

sample container. To avoid contamination, do not allow cleaning of the container prior to inserting the inner seal.

I. Completely fill out the adhesive-backed sample container label and place the label on the filled sample container. Sign and date the custody seal and place it over the screw cap of the sample container so that the custody seal extends from the lid onto the sample container itself. Next, place the evidence tape over the screw cap in such a manner that it will be evident if the sample has been tampered with. The evidence tape can be placed over the screw cap of the sample in the same manner as the custody seal.

J. Document sampling activities in the field log for that particular facility. Each facility will have its own field logbook (see attached example page). Each page in the field logbook represents a sample and as such a separate page in the field logbook must be completed for each coating or ink sample collected. Entries must be made in blue or black indelible ink. Corrections will consist of a single lineout deletion that is initialed by the person making the necessary corrections.

K. Complete the chain-of-custody form in its entirety. A separate chain-of-custody form will need to be completed for each coating or ink sample collected.

L. Have the facility employee who originally collected the sample for you sign the locations on the sample label, the chain-of-custody form and the field logbook sheet entitled "PLANT WITNESS (SIGNATURE)". By signing each of these documents, the facility employee is agreeing that he/she was present when the sample was collected and that he/she was the person who actually collected the sample.

V. SHIPMENT OF SAMPLES

A. Place no more than 4 or 5 sample-containers into a Zip-sealing plastic bag and seal the bag. Make sure when you are placing the sample containers into the plastic bag that they remain in an upright position.

B. Place each sealed bag into the insulated shipping container. Note: Each insulated shipping container will hold approximately 16 sample containers. Then place the frozen ice packs around the plastic bags containing the sample containers. This will minimize the amount of shifting of the samples that occurs during shipment.

C. Prior to shipping the samples, sign the line on the chain-of-custody form entitled "RELINQUISHED BY", and complete the areas entitled "TIME", "DATE" and "REASON FOR TRANSFER"(e.g., ship to lab for analysis).

D. Make copies of all sample documentation (MSDS, chain-of-custody form, and formulation sheet for multi-component coatings (if applicable)) and place copies in source file.

E. Fax a copy of the chain-of-custody form(s), and formulation sheet for multi-component coatings (if applicable) to the VDEQ Program Manager (Air Compliance Section) for the VOC Sampling and Analysis Program. The fax number is (804) 698-4510.

F. Place the originals of the sample documentation (MSDS, chain-of-custody form, and formulation sheet for multi-component coatings (if applicable)) along with a return address label (*VA DEQ, Attention: VOC Program Manager - Air Compliance Section, 629 East Main Street, Richmond, Virginia 23219*) into a Zip-sealing plastic bag and seal bag. Place the sample documentation bag on top of the sealed bags containing the sample containers.

G. Close the insulated shipping container by placing the lid of the insulated shipping container on top of the sample documentation bag. Then close the flaps of the corrugated box containing the insulated shipper. Seal the corrugated box with the clear packing tape. Place the address label for the City of Philadelphia's Department of Public Health Air Management Services Laboratory on the box along with a return address label. *Note: To ensure sample integrity when handling and shipping samples, maintain samples at room temperature, preferably at 70°F but within the range of 40°F to 100°F. Do not store sample containers in hot areas such as a closed vehicle. Keep out of direct sunlight and keep from freezing.*

H. A sample should be shipped via common carrier (e.g., United Parcel Service, Federal Express) to the laboratory for analysis on the same day it is collected.

I. *IT IS THE RESPONSIBILITY OF THE PERSON COLLECTING THE SAMPLE(S) TO SEE THAT THEY ARE DELIVERED TO THE LABORATORY IN A TIMELY MANNER. NOTE: SAMPLES SHOULD NOT BE COLLECTED ON A FRIDAY OR ON A DAY BEFORE A HOLIDAY. SAMPLES SHOULD NOT BE MAILED ON A FRIDAY SINCE THE LABORATORY IS CLOSED ON SATURDAY AND SUNDAY.*

J. If a sample must be stored overnight, it should be kept in a secure place, away from extreme temperatures and away from danger of leakage, or tampering, preferably in a locked and refrigerated storage area. Be sure to state in the field logbook that the sample was stored overnight and the location/condition under which it was stored.

K. Upon receipt of the samples, the laboratory shall immediately notify the VDEQ Project Manager if conditions or problems are identified that require immediate resolution. Such conditions include breakage, missing or improper chain-of-custody forms, condition of custody seals indicating that tampering may have occurred, and missing or improper sample labels.

L. Upon completion of the sample analysis, the laboratory will forward all analytical results to the VDEQ Project Manager. The Project Manager will then review these laboratory results and forward them to the appropriate inspector.

CHECKLIST

SAMPLE COLLECTION PROCEDURES

____ Was laboratory notified of sampling event 3-5 days prior to actual sample collection?
____ Was an e-mail sent to VDEQ Program Manager-Air Compliance Section stating the dates and facilities to be visited for the sampling event?
____ Were the coatings or inks and processes from which samples are to be collected identified?
____ Was the cure time determined for each coating or ink?
____ Is the sample being collected a multi-component ink?
____ If applicable, was the formulation for a multi-component coating requested?
____ What kind of coating or ink (e.g., water-based or solvent-based) is being collected?
____ Are there any special handling or safety precautions that the lab should be aware of?
____ If applicable, were the special handling or safety precautions documented on the chain-of-custody form?
____ Were copies requested of the Material Safety Data Sheets for each coating or ink sample being collected?
____ Was the facility encouraged to take a split sample?
____ Was a facility employee requested to accompany the inspector and draw samples?
____ Was a new sample container used when collecting a sample from a new location?
____ Was the sample container clean, dry (e.g., inside and outside) and capped prior to collecting a sample?
____ Was the coating or ink thoroughly mixed prior to obtaining a sample?
____ Was the sample taken from the location closest to the point of application?
____ Were all appropriate steps taken to ensure a representative sample was collected and that possible contamination of the sample was avoided?
____ Was the sample container completely filled and checked to ensure little to no headspace exist between the sample and the lip of the sample container?
____ Was the inner seal placed on the sample container so as to ensure a tight fit and was the cap securely screwed on?
____ Was the sample label completely filled out and placed on the proper sample container?
____ Was the custody seal signed and dated prior to being placed over the top of the sample container?
____ Was evidence tape placed over the screw cap in such a manner as to show later attempts to tamper with the sample?
____ Were sampling activities documented in the field log?
____ Was a chain-of-custody form completed for each sample?
____ Did the facility employee sign all locations entitled "PLANT WITNESS"?

SHIPMENT OF SAMPLES

____ Were the sample containers placed into a sealed plastic bag prior to being put in the insulated shipping container?
____ Were the frozen ice packs placed in the insulated shipping container so as to ensure minimal movement of the samples during shipment?
____ Were the chain-of-custody forms signed in the area entitled "RELINQUISHED BY", and were entries made in the "TIME", "DATE", and "REASON FOR TRANSFER" locations?
____ Were copies of the completed chain-of-custody form made and placed in the source file?
____ Were copies of the sample documentation faxed to the VDEQ Program Manager?
____ Were the original copies of the sample documentation (MSDS, chain-of-custody forms, and formulation sheets for multi-component coatings (if applicable)), along with a return address label placed in a sealed plastic bag prior to being placed in the insulated shipping container?
____ Was the corrugated box containing the insulated shipper properly sealed and addressed?
____ Was the sample picked up by the common carrier on the same day it was collected?

____ If the sample was stored overnight were proper measures taken to ensure that it was kept in a secure place and proper documentation of this event placed in the field logbook?

EXAMPLE PAGE - FIELD LOGBOOK

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
VOC SAMPLING AND ANALYSIS PROGRAM
AIR COMPLIANCE SECTION
FIELD LOG

SOURCE NAME: _____ PERMIT #: _____

ADDRESS: _____

REGION: _____ SAMPLE ID NUMBER: _____ TIME: _____ DATE: _____

REASON FOR SAMPLE COLLECTION: _____

LOCATION OF SAMPLE COLLECTION: _____

COATING NAME/TYPE: _____

PRODUCT CODE: _____ LOT OR BATCH #: _____

SAMPLING METHOD: _____

PROCEDURE: [ ] EPA METHOD 24 [ ] EPA METHOD 24A

ANALYSIS REQUIRED: [ ] VOC CONTENT & DENSITY; [ ] WATER; [ ] EXEMPT SOLVENTS

PROPERTIES: [ ] BASE INK; [ ] MULTI-COMPONENT COATING

WERE SAMPLE PRESERVATION ACTIONS TAKEN(i.e. ice packs used) DURING SHIPMENT:_____

WERE MSDS SHEETS, AND FORMULATIONS (if applicable) INCLUDED WITH SHIPMENT: _____

WAS CUSTODY SEAL SIGNED, DATED AND PLACED OVER TOP OF SAMPLE CONTAINER: _____

WAS DEQ SAMPLE CONTAINER USED DURING COLLECTION: _____ ; IF NOT DESCRIBE TYPE OF SAMPLE CONTAINER USED: _____

WAS SAMPLE LABEL COMPLETELY FILLED OUT AND PLACED ON SAMPLE CONTAINER: _____

PERSON RESPONSIBLE FOR SAMPLES (INSPECTOR'S SIGNATURE): _____

PLANT WITNESS (SIGNATURE): _____

SHIPPED TO LAB BY (courier's name) _____ ON (date and time)_____

IF SAMPLE WAS NOT SHIPPED ON THE DAY IT WAS COLLECTED WHERE WERE SAMPLES STORED PRIOR TO SHIPMENT: _____

LAB USED FOR SAMPLE ANALYSIS: _____

DATE LAB WAS NOTIFIED OF POSSIBLE SAMPLE SHIPMENT: _____ BY WHOM: _____

METHOD OF NOTIFICATION: _____ LAB PERSONNEL NOTIFIED: _____

DATE SAMPLE WAS RECEIVED BY LAB: _____ DATE SAMPLE WAS ANALYZED: _____

REMARKS INCLUDED ON CHAIN OF CUSTODY FORM: _____

_____

_____

_____

ADDITIONAL COMMENTS: _____

_____

_____

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

SUBJECT: Guidance Memo No. 00-2016
Chain of Custody Policy and Procedures

TO: Regional Directors

FROM: John M. Daniel, Jr.
Air Program Coordination Director

Larry G. Lawson, P.E.
Water Program Coordination Director

Karen Jackson Sismour
Waste Program Coordination Director

DATE: October 23, 2000

COPIES: Dennis H. Treacy, David Johnson, David Paylor, Ralph J. Mayer, Compliance, Enforcement and Monitoring Senior Management Team, Remediation Managers Senior Management Team, Permit and Planning Managers Senior Management Team, Matthew Dullaghan

POLICY STATEMENT

It shall be the policy of the Department of Environmental Quality ("DEQ") that all samples will be collected using the following chain of custody procedures to ensure the integrity of samples so they can be used as admissible evidence to enforce the Commonwealth's environmental laws and regulations.

Samples taken in all cases involving a facility, permit, certificate, order or potential violation of a regulation or law shall follow chain of custody procedures. Samples taken for ambient environmental monitoring do not require chain of custody procedures. Variances to these procedures may be granted for those samples taken for special studies, on a case by case basis, only by the joint written agreement of the

appropriate Compliance and Enforcement Managers ("CEM") and Media Division Director.

The Division of Consolidated Laboratory Services ("DCLS") shall be used for the analysis of all samples except another laboratory may be used upon prior written approval of the appropriate CEM and Media Division Director. The chain of custody procedures used by the alternate laboratory shall be reviewed by the appropriate CEM and Media Division Director to ascertain that it meets DEQ's chain of custody policy and procedure requirements. Only following such review shall authorization be given to use an alternate laboratory.

Samples taken by DEQ's VOC Sampling and Analysis Program shall be sent to the City of Philadelphia Department of Public Health Air Management Services Laboratory, Philadelphia, Pennsylvania or DCLS if they are capable of performing the required testing.

I. PURPOSE AND SCOPE

The following procedures are used by all DEQ employees to ensure accountability for and documentation of sample integrity from the time all samples are collected until receipt by the receiving laboratory. These procedures are intended to document each stage of the sample's life cycle (*i.e.*, collection, transport, and delivery). Only the DEQ Director or his designee can authorize exceptions to this policy.

II. DEFINITIONS

2.1. **Custody-Physical Possession or Control.** A sample is "under custody" if it is in the possession or under the control of the Sample Custodian so as to prevent tampering or alteration of its characteristics. A sample is under custody if:

2.1.1. It is in your possession or in your view after assuming possession,

2.1.2. It was in your possession and then you locked or sealed the sample in a manner to prevent tampering, or

2.1.3. It is in a secured area. A secured area should have restricted access, locked storage facilities and be locked at all times when not attended (*e.g.,* inside a locked cooler, locked vehicle, or locked storage area).

2.2 **Sample.** A portion of an environmental or source matrix that is collected and used to characterize that matrix.

2.3 **Sample Custodian.** The person possessing the sample.

2.4 **Chain of Custody.** A process whereby a sample is maintained under physical possession or control. Chain of custody procedures are one piece of a large quality assurance program to assure data and conclusions are defensible in a legal or regulatory situation.

2.5 **Sample Submission Forms.** DEQ or the laboratory provides the forms used to record sample collection information, test(s) requested and result reporting instructions.

2.6 **Sample Set.** Collection of samples collected during one sampling event.

III. SAMPLE COLLECTION

3.1 **Sampling.** Samples are routinely collected by DEQ employees using standard collection procedures defined by media specific Standard Operating Procedures ("SOPs").

3.2 **Custody Assignment.** The sampler shall ensure proper collection, preservation and labeling of the sample. The sampler will also initiate the chain of custody documentation process, prepare sample submission information, and prepare and store samples for transport to the laboratory. Since as few people as possible should handle samples, the sampler is responsible for the initial custody of the sample.

3.3 **Consultation.** Information regarding the collection, preservation, transport, testing and sample custody may be obtained around-the-clock, seven days a week, from DCLS even when not using DCLS.

3.4 **Sample Kits.** Collection kits with containers, preservatives and sampling instructions may be provided by DCLS. DCLS is available for consultation purposes if there are questions about sample collection and preservation regardless of the laboratory used.

3.5 **Sample Identification.** To ensure samples are traceable, samples shall be clearly labeled immediately upon collection. Labeling information may vary by media SOPs, but labels must be written legibly, using a ballpoint (indelible) pen, unique for the sample/case and firmly fixed to the sample. The sample label shall contain the unique sample number or identification, sample type, name of sampler, and date and time of collection.

3.6 **Sample Preservation.** Sample preservation instructions are provided in sample kit collection instructions and in agency SOPs. Sample preservation actions shall be documented in field logs, on chain of custody forms, on lab sheets, and on sample labels.

IV. SAMPLING DOCUMENTATION

4.1 **Field Logbooks**. In any sampling effort, there are field information and measurements that need to be recorded. This information shall be retained in a sampler's field log. Examples of information entered include: purpose of sampling, producer, type of sample, address, sample composition, description of sampling point, sampling method, date and time of collection, sample identification number, field data, and preservative. This record may be considered evidence and part of the larger aspect of data defensibility. Logbooks shall be kept in a safe place.

4.2 **Custody Forms.** Agency chain of custody forms shall be used when submitting a sample for analysis. Attachment 1 is the General DEQ Chain of Custody Form and Attachment 2 is the DEQ VOC Chain of Custody Form. Chain of custody forms shall be completed by the sampler at the time of sample collection and shall be submitted with each sample set. The

completed form shall be signed by the sampler and dated (chain of custody block) and placed in a waterproof carrier (*e.g.*, zip-lock bag) if it is a water sample. The form shall be packaged with the sample for transport to the laboratory. The original form shall be returned to the sampler along with the results of the tests that are performed. The original chain of custody form and laboratory results is then filed in the appropriate case file.

4.3 **Sample Submittal and Test Request Forms.** With each sample submitted to the laboratory for analysis, the sampler shall include the following information:

- 4.3.1 The analytical request
- 4.3.2 Sample identification
- 4.3.3 Field data
- 4.3.4 The chain of custody form
- 4.3.5 Copies of applicable documents (*e.g.,* MSDS, sample formulations (if applicable))
- 4.3.6 Any other information required to meet laboratory testing and reporting requirements
- 4.3.7 This information may be submitted by:
  - 4.3.7.1 An agency lab sheet that is completed following established agency SOPs and packaged and shipped with the chain of custody form with the sample
  - 4.3.7.2 An electronic file generated by the agency's Comprehensive Environmental Database System ("CEDS")

V. SAMPLE PACKAGING, TRANSPORT AND TRANSFER OF CUSTODY

5.1 **Sample Packaging.** The correct preparation and preservation of samples for transport are critical to ensure sample integrity.

5.1.1 The sampler should contact the laboratory if unsure of any aspect of sample collection, preservation, packaging and transport.

5.1.2 Samples must be labeled, tightly sealed in the appropriate container and double bagged in plastic where applicable.

5.1.3 Evidence tape shall be used to seal sample containers. The tape shall be placed across the container in a manner that tampering attempts would be obvious. In all cases, the initials/mark of the person sealing the evidence must be placed on, across or under the seal.

5.1.4 The chain of custody form and other documentation are to be sealed tightly in a plastic zip-lock bag.

5.1.5 Samples and documentation are then placed in an appropriate transport container (*e.g.,* cardboard mailer, stryofoam box, paint can, plastic box or cooler) and padded (*e.g.,* bubble wrap, styrofoam peanuts) as appropriate.

5.1.6 If not immediately delivered to the laboratory by the sampler, containers shall be locked (personal padlock) and sealed (custody seal). When samples are ready for shipment to DCLS lockable transport containers, locks and custody seals provided by DCLS shall be used. DCLS will retain all keys for locks. Once locked and sealed, containers provided by DCLS may be opened only by DCLS staff. Samples that are ready for shipment to laboratories other than DCLS shall be shipped in tamperproof transport containers.

5.1.7 The sampler is responsible for preservation prior to and during transport. If ice is required, it will need to be contained in a way to prevent leakage. Special shipping measures can be briefly described on the chain of custody form and should be described in detail in the field logbook.

5.2 **Sample Transport.** Samples are to be delivered to DCLS or other prior approved laboratory by one of the following means. Regardless of the mode of transport, arrangements are to be coordinated with the laboratory and delivered as soon as possible.

5.2.1 Immediate Delivery by Sample Custodian. Samples are to be delivered to the Sample Records Management section of DCLS or other prior approved laboratory as soon as possible after collection. The sample shall remain in the Sample Custodian's possession or sight at all times.

5.2.2 Routine and Special Courier. DCLS couriers shall be used to deliver legal and regulatory samples to DCLS. Samples will be packaged as described in § 5.1. DCLS provides special lock boxes and coolers for this purpose. Lock boxes and coolers may be delivered to courier pick-up sites for delivery. The DCLS courier routinely picks samples up in the late afternoon and delivers them to the laboratory the next day. A special pick-up can be arranged for any time of night or day. When received by the laboratory custodian, the package will be inspected to ascertain whether tampering occurred and these actions recorded on the chain of custody form.

5.2.3 Common Carriers. Common carrier delivery services (*e.g.*, United Parcel Service, Federal Express) are often the only practical means of delivering samples to laboratories when DCLS cannot provide the required testing and an alternate laboratory must be used. Common carrier delivery services must commit to safeguard all cargo, assuring that it will not be tampered with and will be delivered promptly. Carriers generally specify the type of shipping container to be used when accepting the carrier's services.

5.2.4 Holding Area. Until the courier or the common carrier picks up the container, the container either must be locked or kept in a locked area.

Attachment 1

Shipping Seal Number

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
629 EAST MAIN STREET, RICHMOND, VIRGINIA 23240

CHAIN OF CUSTODY RECORD

SAMPLERS: *(Signatures)* _____ Date Submitted: _____ Agency Case No.: _____

Agency (Print or Type): _____

Address: _____

Phone No.: _____ Fax No.: _____

E-Mail: _____

If this is an Emergency (Priority1) sample, please print 24-hour contact name and number. _____

STATION ID	DATE	TIM'E	STATION DESCRIPTION	COMP.	GRAB	TESTS TO BE RUN IN LAB	Observations, Field Tests, Remarks Made in Field

Relinquished by: *(Signature)*	Date/ Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date/ Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date/ Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date/ Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date/ Time	Received in Laboratory by: *(Signature)*	Date/ Time	Shipping seal received n place? ____ Seal No. _____ Lab Remarks:	

Original to Accompany Shipment; copy to Sampler; Copy to Transporter

Attachment 2

COATING SAMPLE CHAIN OF CUSTODY RECORD

INSPECTOR, AGENCY AND ADDRESS: BRENDA EGGLESTON 629 EAST MAIN STREET P.O. BOX 10009 RICHMOND, VA 23240	*SOURCE NAME AND PERMIT #:*
SAMPLE ID NUMBER:	*AMS LAB #*
COATING NAME/TYPE:	
PRODUCT CODE:	
LOT OR BATCH #:	

PROCEDURE: [ ] EPA METHOD 24 [ ] EPA METHOD 24A	*ANALYSIS REQUIRED:* [ ] VOC CONTENT & DENSITY [ ] WATER [ ] EXEMPT SOLVENTS	*PROPERTIES:* [ ] BASE INK [ ] MULTI-COMPONENT COATING [ ] SAMPLE PRESERVATION ACTIONS TAKEN DURING SHIPMENT

REMARKS:		
PERSON RESPONSIBLE FOR SAMPLE (INSPECTOR'S SIGNATURE):	*TIME:*	*DATE:*
PLANT WITNESS (SIGNATURE):		

RELINQUISHED BY:	*RECEIVED BY:*	*TIME:*	*DATE:*	*REASON FOR TRANSFER:*
RELINQUISHED BY:	*RECEIVED BY:*	*TIME:*	*DATE:*	*REASON FOR TRANSFER:*
RELINQUISHED BY:	*RECEIVED BY:*	*TIME:*	*DATE:*	*REASON FOR TRANSFER:*
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RELINQUISHED BY:	*RECEIVED BY:*	*TIME:*	*DATE:*	*REASON FOR TRANSFER:*