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# Guidelines for Collecting Ephemeral Data in the Arctic:

## CHAIN OF CUSTODY

September 2014

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**Note:** Chain of custody procedures should be followed to ensure the integrity of all samples collected to support a Natural Resource Damage Assessment (NRDA) case.

### Guideline Objectives

The primary objective of this document is to provide guidelines on chain of custody procedures for ephemeral data and samples collected in the field during the early stages of an oil spill in the Arctic to support NRDA exposure and injury evaluations.

### Background

Chain of custody procedures are followed to authenticate a sample from the time it is taken until the results are introduced as evidence. For the purposes of litigation, agencies must be able to prove the legal integrity of all samples and data introduced as evidence. This means that it is necessary to have an accurate written record to track possession, handling, and location of samples and data from collection through reporting. Chain of custody facilitates this verification process. Failure to follow chain of custody procedures in this guideline does not necessarily render data unusable; however, any deviations from the chain of custody guidelines should be noted. Assuring that proper chain of custody guidelines is followed is vital to assuring the integrity of the samples, and the data generated by the analysis of those samples.

### Responsibilities

All samplers handling samples collected for NRDA **MUST** follow this procedure when collecting, handling and securing samples. All team leads and supervisors are responsible for ensuring that the designated custodian(s) understand this procedure and strictly adhere to it for all sampling events.

#### *Important Definition*

- **Chain of Custody Form:** A document detailing who is legally responsible for samples at any point in time from collection until the sample is received by the laboratory.
- **Custody:** A sample is in your custody when
  - It is in your actual physical control and presence
  - It is in your view after being in your possession
  - It is not in your physical presence, but is secure in a place of storage to which only you have access
  - It is not in your view or physical presence, but is secured in a place of storage or secure area to which only you and identified others have access
- **Secure Area:** An area in which entry is restricted by keyed lock or similar to a designated custodian

#### *Equipment for Chain of Custody*

- Sample labels
- Tamper resistant evidence tape (for small sample jars and large shipping containers)
- Permanent markers
- Chain of custody and field data forms
- Secure storage area

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## Sample Collection – Chain of Custody

**Note:** As few people as practical should handle the sample from when it is collected through laboratory analysis.

- Sample custody begins immediately after a sample is collected. The sampler who collected the sample is responsible for the preservation and integrity of the sample(s) until that responsibility is transferred to someone else, and documented with the chain of custody form. This chain of custody form then travels with the sample(s) and is used to document any other transfers of custody.
- When a sample is taken, the sampler must:
  - Complete a sample tag or label that identifies each sample. Use waterproof ink and attach the label to the sample jar or container at the time the sample is collected. Labels should contain that following legible information:
    - Sample number
    - Sample type (e.g., sediment, water)
    - Sample containing hazardous goods (such as formalin used as a preservative) (if applicable)
    - Time/date of collection
    - Location
    - Sampler name(s)
  - Seal each sample jar or container with tamper resistant evidence tape. When sealing jars, the tape should connect the jar to the lid. The sample collector should sign and date evidence tape so that the signature is partially on the tape of both the lid and the jar
  - If the sample is collected in a container that is not tamper proof (such as a plastic bag) then the container should be sealed with tamper resistant tape, a serial numbered zip-tie, or other means of verifying that the container has not been opened. The sample should also be stored in a container that is appropriate for chain of custody, such as a box or cooler that can be sealed with tamper resistant tape and signed by the collector
  - If tamper resistant evidence tape is not available, use masking or duct tape and sign across the end of the tape
  - Enter each sample on the chain of custody form
  - Document the sample in the field data sheet, noting details about the sample that may be pertinent later during sample analysis and injury determination
- The sample collector is responsible for care and custody of the samples until they are turned over to an assigned custodian or properly dispatched to the receiving laboratory. All custodians must assure that each sample remains in his/her custody (as defined above) so that no one can tamper with it during the entire duration of their responsibility.
- When samples are turned over to a new custodian:
  - The current custodian must officially relinquish the samples by signing the chain of custody form
  - The new custodian must review the samples, ensuring that they are in good condition and that the sample IDs matches the chain of custody form. Any damage or deviation must be noted on the chain of custody form before the new custodian accepts the samples by signing the form
  - The former custodian must retain a copy of the full set of forms. The original chain of custody forms always stay with the samples
- Pack and seal samples in suitable containers to avoid damage. A sample seal should be attached across the lid of each shipping container in such a manner that the container cannot be opened without breaking the seal. This lock and/or seal are not to be removed until the shipping container is opened by the laboratory custodian or designee.
- Ship samples by registered courier. Other certified shipping services may also be used. Keep all shipping receipts as part of the permanent chain of custody documentation regardless of how samples are shipped. The shipper does not need to sign the chain of custody form.

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- Couriers picking up samples at the airport, post office etc. should sign the shipping documents to acknowledge receipt of the samples.

## Photographs

- Digital photographs can be used as evidence. Like with physical samples, the objective is to be able to ensure that the photographs are an accurate representation of what was seen in the field (see Field Photography guideline).
- It is important to protect the legal integrity of digital photographs stored on digital memory cards (SD cards), as well as the legal integrity of the SD card itself.
- Digital photographs taken in the field and information stored on a digital memory card or camera internal memory **MUST NOT** be deleted, no matter the quality or other issues that may arise.
- All digital photographs files **MUST** be stored sequentially on the SD card and not renamed.
- Photographs should be downloaded to a secured PC and copied to an un-editable format (e.g., CD/DVD).
- Always keep a back-up copy of all photographs.
- See the Field Photography guideline for more details.

## Other Important Considerations

- **Custodian list:** Maintain a list of people who are custodians on samples that includes how each person is related to the assessment.
- **Multiple custodians:** If multiple qualified custodians have access to a secure sample storage area then it is not necessary to document change of custody between custodians. All custodians should be identified on the custodian list.
- **Chain on multiple sheets:** Starting chain of custody documentation on one form and continuing it on a second form for the same samples is not a break in the chain. Care must be taken to keep the forms together.
- **Broken chain:** If the chain is broken for any reason or if you foresee deviations from the procedures in this guideline, contact the legal team for guideline. Changes to the procedures can be made but should be informed by a lawyer. Do not discard ANY samples even if the chain of custody has been broken.
- **Samples on the same sheet are split:** If samples that were recorded on a single chain of custody form are split for shipping, clearly mark the original chain of custody form to show which samples were removed, and when and where they are going. Create a new chain of custody form for the samples that are shipped and include a copy of the original chain of custody form. Keep the original form and a copy of the new form with the samples that are not shipped.

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## **Appendix A**

### **Supporting Documentation - Chain of Custody Forms**

Chain of custody forms may be provided by the lab that will receive the sample or the NRDA lead, otherwise, use the attached form.

- Print the form on weather-resistant paper (if available). Make more than enough copies of the form before going into the field.
- Fill out forms with waterproof pen or permanent marker. Do not use pencil, or biro (erasable) ink.
- Fill in blanks with “N/A” if data are not applicable or not available. Avoid leaving blank values on data forms.
- Do not erase or black out erroneous entries on the field data forms. Errors should be corrected by crossing out the entry with a single line and signing and dating the strike-through.
- Original chain of custody forms should always stay with the samples. Make a copy of the chain of custody form before sending it with the samples.

Attached form:

- Chain of Custody Form

Chain of Custody Form													
Sampler Information							Contact Information						
Contact/Phone/Email:							Contact/Phone/Email:						
Affiliation:							Sample Questions:						
<b>Incident Name:</b>													
Special Instructions:				Analyses requested						Lab Name:			
										Waybill Number:			
										Lab Use Only	Lab Report #:		
											# of Coolers:		
Turn Around Time:							Cooler Temp:						
Sample ID	Sample Date	Sample Time	Matrix							# of containers	Comments		
	mm/dd/yyyy	(24-hr local)		Enter Analyses above, with preservative specified, if needed. Enter x's in boxes below.									
Samples Relinquished by							Received by						
Date	Time	Signature	Printed Name/Org.	Date	Time	Signature	Printed Name/Org.						

### Organics Analyses

Aliphatics  
Alkylated PAH Homologues  
Chlorinated Herbicides (8151)  
Dioxins and Furans (8290)  
OC Pesticides (8081)  
OP Pesticides (8141)  
PAH (8270)  
PCB Aroclors (8082)  
PCB Congeners (680)  
Phenols (8041)  
PIANO (Volatile Paraffins, IsoParaffins, Aromatics, Naphthenes, & Olefins)  
Semivolatile Organics (8270)  
Steranes/Triterpanes  
Volatile Organics (8260)  
[any other analyses or method as needed]  
Nutrients (EPA 300.0, 350.1, 353.2, 365.3) - CWVP

### Petroleum Hydrocarbons

BTEX  
Extractable Petroleum Hydrocarbons (EPH)  
Petroleum Hydrocarbons (8015)  
Saturated Hydrocarbons  
TPH Oil & Grease (418.1)  
TPH-Diesel Range  
TPH-Gas Range  
NWTPH-Dx (NW method)  
NWTPH-Gx (NW method)  
[any other analyses or method as needed]

### Inorganic Analyses

Ammonia  
Grain Size  
Total Dissolved Solids  
Total Kjeldahl Nitrogen (TKN)  
Total Organic Carbon (TOC)  
Total Solids  
Total Suspended Solids  
[any other analyses or method as needed]  
pH / Salinity (EPA 9040, SM 2520B 18th edition) - CWVP  
Soil Organic Matter - CWVP

### Metals Analyses

CLP Metals  
Low Level Arsenic  
Low Level Mercury (1631)  
Mercury (7470/7471)  
MTCA Metals (As, Cd, Cr, Pb, Hg)  
PP Metals (Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, Zn)  
RCRA Metals (As, Ba, Cd, Cr, Pb, Se, Ag, Hg)  
TCLP Metals [any individual metal or list of metals as needed]  
Metals (EPA 200.7/6010: Al, Ba, B, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Na, Zn) - CWVP

### Bio Analyses

Amphipod survival test  
Bivalve bioaccumulation test (chronic)  
Gonad Condition Index  
Infaunal Analysis  
Larval Bivalve development test  
Larval Echinoderm development test  
Length Frequency  
Mysid survival test  
PCR/DNA  
[any other test as needed]  
Belowground Vegetation Biomass - CWVP  
Aboveground Vegetation Biomass - CWVP  
Vegetation Stem Count  
Vegetation Longest/Shortest - Stem Length  
Vegetation Species ID  
Vegetation Live/Dead Sort