



MDN Sample Change-out, N-CON Single-Chimney Collector

Items needed:

- MDN Observer Form (MOF), as started the previous week
- MOF, for current week's sample
- shipping cooler for deployed sample bottle and sample train (previous week's sample)
- shipping cooler for sample and sample train to be deployed (current week's sample)
- fresh (< 6 months old) Reverse Osmosis (RO) water in a plastic squeeze bottle
- Formula 409 cleaner*
- paper towels
- lab wipes
- small, flat-blade screw driver

Precautions:

MDN samples are analyzed for mercury in the parts per trillion (ppt) range. Use care when handling the sample bottle and glassware to avoid contaminating the sample inadvertently.

Upon receipt of the cooler box, inspect the contents of the shipping cooler containing the glassware and sample bottle that will be deployed. Report any problems (e.g., broken glassware, missing glassware, bottle leakage) to the site liaison (see **Contact Information** section of this document). Memos detailing new information from the analytical laboratory may be included in the cooler as well.

Instructions:

1. Approach the collector from the direction that faces into the wind (downwind). This will help prevent accidental contamination of the sample. If there is snow or ice on the collector lid, brush it off before proceeding.
2. Complete block 2 (**Observer – OFF**) of the MOF for the sample to be retrieved. Enter the name of the Observer who is removing the sample.
3. Observe condition of the equipment and the site. List any unusual conditions in block 9 (**Remarks**) of the MDN Observer Form (MOF). See the Appendix to this document for a sample MOF.



* **Disclaimer:** Use of a trade or manufacturer's name does not constitute an endorsement by the University of Wisconsin, the Wisconsin State Laboratory of Hygiene, the National Atmospheric Deposition Program, or project sponsors.

9. REMARKS	<i>For example: equipment malfunction, extreme weather conditions, contamination, farming, burning, logging, leakage, etc.</i>
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4. Open the door to the collector. In block 6 (**Enclosure Temperature**) of the MOF, record the minimum and maximum temperatures from the min/max thermometer located inside the collector. Circle either °F or °C.

6. OVERFLOW	YES	NO
(Check one)	2	1
Amount of Overflow		
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	•	<input type="text"/> mL
ENCLOSURE TEMPERATURE (circle one)		
MAX	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	°F °C
MIN	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	°F °C

5. Using a small, flat-blade screwdriver, adjust the thermostat to help maintain the minimum and maximum temperatures inside the enclosure between 40 and 100°F (4 to 38°C). Consider the expected weather conditions for the next week when adjusting the thermostat.



Retrieving the deployed sample bottle.

6. Position the shipping cooler for the deployed sample bottle near the collector so it may be accessed easily.



7. Trigger the sensor by waving fingers through the detection area of the optical sensor. Turn off power to the collector when the collector lid is in the fully open position.



8. With one hand, grasp and lift the thistle tube out of the sample bottle. With the other hand, grasp the funnel and lift the sample train out of the chimney. Set the sample train aside in a secure location.



9. Put on a pair of clean gloves. Retrieve the sample bottle cap from the zip lock bag and cap the deployed sample bottle. Avoid touching the interior surface of the bottle cap.
10. Leave the capped sample bottle inside the collector while re-packing the thistle tube and funnel in its shipping cooler. Retrieve the used sample train. Remove the blue clip that holds the funnel and thistle tube together and set it inside the collector to be re-used. Separate the funnel and thistle tube, returning each to its zip lock bag, and then to the shipping cooler.
11. Verify the ID of the sample bottle with the value listed in block 3 (**Bottle**) of the MOF. Enter the OFF Date and Time, i.e., the date and time the sample was collected. The Date is expressed in the form MMDDYY. Time is expressed based on a 24-hr clock.

				BOTTLE ID				A B C D (circle one)			
3. COLLECTION				Date				Time			
		MO	DAY	YR		0001-2400					
ON											
OFF											
DAYLIGHT SAVINGS TIME?										YES	NO
										2	1

12. Hold the bottle to the light and inspect the sample for visible contamination. Indicate in block 5 (**Sample Conditions**) of the MOF whether any of the listed contaminants are present in the sample. Check the appropriate box for item #6 in block 5 (**Sample Conditions**) to indicate whether the sample spilled or was otherwise compromised while handling. Describe any problems in block 9 (**Remarks**).

17. Put on a clean pair of gloves. Moisten a lab wipe with RO water. Clean the underside of the collector lid, e.g., the surface of the lid pad.



18. Verify correct operation of equipment (sensor, motorbox, and raingage). Complete block 4 (**Site Operations**) of the MOF. Inspect the lid pad for damage. Request a new lid pad if needed. Indicate if the raingage has been winterized, and the date and time antifreeze was added to the raingage. Include additional comments in block 9 (**Remarks**).

4. SITE OPERATIONS		
<i>Check YES, NO, or U (Unable to determine) for each sample. If NO or U for Item 1 or 2, describe in Block 9 and call NADP Site Support 1-800-952-7353</i>		
YES	NO	U
2	1	0
2	1	0
2	1	0
2	1	0
2	1	0
2	1	0
2	1	0

1. The **collector sensor heater** and **motor box** operated properly.
Lid is in correct position
2. Raingage operated properly during the week.
3. Collector opened and closed at least once during the week, **other than for testing**.
4. Raingage in winterized state during sampling period (antifreeze in bucket).
5. Fresh antifreeze added during sampling period? Date _____ Time _____

Deploying new sample train and bottle.

19. Position the shipping cooler with the glassware to be deployed so it may be accessed easily. Switch to the MOF for the sample to be deployed.
20. Complete block 1 (**Site**) of the MOF for the sample to be deployed. This includes:
 - a. the name of the Site,
 - b. the 4 character ID of the Site (e.g., WI06).

1. SITE					
Name _____	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>				
	SITE ID				

21. Inspect the zip lock bag containing the new sample bottle. In block 9 (**Remarks**) of the MOF indicate any damage to the sample bottle, and any leakage that may have occurred during shipment from the HAL to the site. In block 3 (**Collection**) of the MOF record the ID of the new sample bottle and the Box ID. The letter for the box ID can be found on the inside flaps of the box (i.e. WI06-A).

22. Put on a pair of clean gloves. Remove the sample bottle from its zip lock bag, place the sample bottle in the overflow container inside the collector, and loosen (but do not remove) the cap.
23. Open the zip lock bags that contain the funnel and the thistle tube, but leave them inside the bags. Connect the thistle tube to the funnel, and secure them with the blue clip that was set aside in Step 10.



24. Remove the bag covering the thistle tube.
25. While placing the thistle tube and funnel into the chimney of the collector, remove the cap from the sample bottle. The end of the thistle tube should extend into the sample bottle. Store the bottle cap in the zip lock bag that contained the sample bottle. Seal the bag to prevent accidental contamination.
26. Raise (or lower) the bottle jack so the lip of the funnel is at the top of the chimney cap and so the bulb of the thistle tube forms a seal with the mouth of the sample bottle.



27. Pull the funnel bag so it just covers the funnel.



28. Turn the power back on to the collector. This will cause the collector to close. As the collector lid approaches the funnel, pull the bag from the funnel gently.
29. Reset/clear the min/max thermometer. For an analog thermometer, turn the knob at the bottom of the thermometer. For a digital thermometer, push the “Clear” button while displaying the maximum temperature, and then again while displaying the minimum temperature.



30. Close and secure the door to the collector.
31. Complete the ON portion of block 3 (**Collection**) of the MOF to include the Date and Time that the sample bottle was deployed. Indicated if the time is Daylight Saving Time.

	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		A B C D (circle one)									
	BOTTLE ID		BOX ID									
3. COLLECTION	Date		Time									
ON	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%;">MO</th> <th style="width: 25%;">DAY</th> <th style="width: 25%;">YR</th> <th style="width: 25%;">0001-2400</th> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table>	MO	DAY	YR	0001-2400	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input type="text"/></td> <td style="width: 50%;"><input type="text"/></td> </tr> </table>	<input type="text"/>	<input type="text"/>
MO	DAY	YR	0001-2400									
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>									
<input type="text"/>	<input type="text"/>											
OFF	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"><input type="text"/></td> <td style="width: 25%;"><input type="text"/></td> <td style="width: 25%;"><input type="text"/></td> <td style="width: 25%;"><input type="text"/></td> </tr> </table>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">DAYLIGHT SAVINGS TIME?</td> <td style="width: 10%; text-align: center;">YES</td> <td style="width: 10%; text-align: center;">NO</td> </tr> <tr> <td></td> <td style="text-align: center;"><input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> </tr> </table>	DAYLIGHT SAVINGS TIME?	YES	NO		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>									
DAYLIGHT SAVINGS TIME?	YES	NO										
	<input type="text"/>	<input type="text"/>										

32. Store the MOF for use next week. Switch to the MOF for the previous week’s sample, the sample that will be shipped for analysis.

Incorporating data from raingage.

33. Complete block 7 (**Precipitation Record**) of the MOF to include the daily precipitation values, and the type of precipitation (i.e., rain, snow, mixed, unknown) for each day with

Appendix – Sample MDN Observer Form (MOF)



**MERCURY DEPOSITION NETWORK
 MDN OBSERVER FORM (MOF)**

Send completed form with each sample to:
 NADP Sample Receiving, 465 Henry Mall, Madison, WI 53706

Problems? Call NADP Site Support at 1-800-952-7353
 e-mail: mdn@slh.wisc.edu

FOR OFFICE USE ONLY

RECEIVER INITIALS

BAG OPEN? LEAK?

Place barcode sticker here

<p>1. SITE</p> <p>Name _____</p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> SITE ID </p>	<p>2. OBSERVER (OFF)</p> <p>Print name _____</p> <p style="text-align: right;"> <input type="text"/><input type="text"/><input type="text"/> Initials </p>																																																																																																																																							
<p>3. COLLECTION</p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/> BOTTLE ID </p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> Date </p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> MO DAY YR </p> <p>ON <input type="checkbox"/> OFF <input type="checkbox"/></p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> BOX ID </p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> Time </p> <p style="text-align: center;"> <input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/><input type="text"/> 0001-2400 </p> <p style="text-align: center;"> <input type="checkbox"/> YES <input type="checkbox"/> NO DAYLIGHT SAVINGS TIME? </p>	<p>4. SITE OPERATIONS Check YES, NO, or U (Unable to determine) for each sample. If NO or U for Item 1 or 2, describe in Block 9 and call NADP Site Support 1-800-952-7353</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>YES</th> <th>NO</th> <th>U</th> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table> <ol style="list-style-type: none"> The collector sensor heater and motor box operated properly. Lid is in correct position Raingage operated properly during the week. Collector opened and closed at least once during the week, other than for testing. Raingage in winterized state during sampling period (antifreeze in bucket). Fresh antifreeze added during sampling period? Date _____ Time _____ 	YES	NO	U	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																																																																											
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<p>8. SUPPLIES</p> <p>Circle if needed, until received.</p> <table border="0" style="width:100%;"> <tr> <td>Gloves (S, M, L)</td> <td>Field forms</td> </tr> <tr> <td>Sample bottles</td> <td>Funnel</td> </tr> <tr> <td>Dry side bags</td> <td>Thistle</td> </tr> <tr> <td>Air filter</td> <td>Lid seal pad</td> </tr> <tr> <td>RO water</td> <td>Packing tape</td> </tr> <tr> <td>Site ID Barcode labels</td> <td></td> </tr> </table>	Gloves (S, M, L)	Field forms	Sample bottles	Funnel	Dry side bags	Thistle	Air filter	Lid seal pad	RO water	Packing tape	Site ID Barcode labels		<p>9. REMARKS For example: equipment malfunction, extreme weather conditions, contamination, farming, burning, logging, leakage, etc.</p>																																																																																																																											
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