

Screen Sampling for Metals, Mercury, Pesticides, and PCBs

Whole Fish and Plug Collection Procedure

1. General

- Fish must be fresh and preferably alive when collected.
- Unless otherwise noted, the sampler (GF&P field crew) will determine which species of fish are collected, however the goal is to collect two top level predators and one bottom feeder.
- You may collect a maximum of three different fish species. You do NOT have to collect three species if the waterbody does not hold a variety of species.
- You will end up collecting up to 3 five-fish composite samples and plug 10 additional fish from each species collected. For example, you collect 5 northern pike, 5 walleye, and 5 catfish whole-fish composite samples. Then additionally, you plug 10 additional northern pike, 10 additional walleye, and 10 additional catfish of varying sizes.
- Fish lengths should be representative of lengths an angler would reasonably and legally harvest. Do not sample fish that are too small for an angler to keep or trophy fish if an angler is unlikely to catch that size fish on a regular basis.

2. Fish Collection

- **Five Fish Composite -Whole Fish**
 - Each sample is a composite of 5 fish from one species.
 - The fish in each **sample group must be of similar size** (The smallest fish should be no smaller, by length, than 75% of the largest fish).
 - Unless otherwise noted, the sampler (GF&P field crew) will determine the general size of fish collected.
 - Whole fish from the five fish composites will be tested for mercury, cadmium, selenium, pesticides and PCBs.
- **Individual Fish Plugs**
 - Plugs will be collected from 10 additional fish for each species sampled.
 - The **size of fish should be of varying lengths** (for example, some fish should be smaller and some should be larger than the fish in the composite sample).
 - The individual fish plugs will be tested for mercury only. The collection of plugs in addition to the whole fish composite is an attempt to collect sufficient information on mercury levels to reduce the number of sampling trips.

3. Processing

- If fish cannot be processed immediately, place them in a clean plastic bucket or cooler filled with ice or water from the waterbody from which the fish were taken.
- Keep equipment and samples clean. If you need to clean foreign material off a fish, use water from the waterbody from which the fish were taken.
- Put on a clean pair of latex gloves.

Five Fish Composite - Whole Fish

- Dispatch each fish with a clean blunt object.
- Fish ages must be determined so collect scales, otoliths, pectoral spines, etc. as necessary to accomplish aging. Unless otherwise noted, the sampler (GF&P field crew) will determine the aging method utilized. Be sure to include site name, fish species, length, weight and fish identification on all aging records so ages can be matched to each fish. Ages will only be determined on composite groups of fish. Ages will not be determined on individual fish that are plugged.
- Determine the length and weight of each fish and record the data on the Fish Flesh Field Data Collection/Chain-of-Custody Record.
- Clip spines (from catfish and bullheads) and wrap each whole fish in plastic wrap (each fish must be wrapped individually).
- Place Fish ID sticker on the plastic wrap so it is readable.
- Place the five individually wrapped whole fish of one species (that make up one composite sample) in one large plastic bag (so the laboratory knows those five fish make up one sample); tie the bag.
- Place the large plastic bag of fish into a cooler on loose ice.
- Freeze all fish immediately upon arrival at the office. Transporting or shipping frozen samples is the best way to ensure samples arrive at Health Laboratory in good condition.

Individual Fish Plugs

- Any fish that can be sampled and released should be processed ASAP.
- Fish ages will not be determined for individual plugged fish (only whole fish).
- Determine the length and weight of each fish and record the data on the Fish Tissue Contamination Field Sheet - Individual Fish form.
- Make sure the dorsal area is clean; if not, splash with water from the waterbody being sampled.
- Use a knife or the edge of the biopsy punch to scrape scales from the dorsal area from which you will take the plug sample - do not include slime or scales in the biopsy sample.
- Insert the biopsy punch. The punch should be inserted using a twisting motion. The sample can be removed by bending or scooping the punch to cut the base portion of the muscle plug. Use a different biopsy punch for each fish. If the amount of tissue from the plug is limiting take an additional plug and add it to the sample.
- Place a laboratory pipette bulb on the opposite end of the biopsy punch and squeeze, blowing the tissue sample into a pre-labeled whirl-pack bag. Please note that each whirl-pack bag should contain one plug from an individual fish unless a second plug from the same fish is needed for additional tissue.
- Make sure the plug is of adequate size and free from scales and slime.
- Tightly close the pre-labeled whirl-pack bag; make sure all air is expelled.
- Make sure the label on the whirl-pack bag holding the plug matches the Sample ID on the field sheet of the fish you are plugging.
- Place all filled whirl-pack bags into a Ziploc bag and place the bag on loose ice.
- Freeze your sample immediately upon arrival at the office.

4. Fish Flesh Field Data Collection/Chain-of-Custody Record

- Complete the Fish Flesh Field Data Collection/Chain-of-Custody Record.
- The original copy (top/white) of the Fish Flesh Field Data Collection/Chain-of-Custody Record stays with the fish. Fold the original and place it in a small Ziploc bag. Place this bag in the cooler with the fish samples.
- Detach the yellow copy of the Fish Flesh Field Data Collection/Chain-of-Custody form. Mail or interoffice this copy to:

Shannon Minerich
Joe Foss Building
South Dakota DENR
523 East Capitol Avenue
Pierre, SD 57501
- Keep the pink copy of the Fish Flesh Field Data Collection/Chain-of-Custody form for your records.

5. Shipping

- Within one week of collection, deliver the fish coolers or arrange with the Avera Courier to deliver the fish coolers to the South Dakota State Health Laboratory for analysis. Contact the courier Same Day Express by calling 605-366-3299.
- Remove frozen fish bags and plug bags from the freezer and pack into the cooler.
- Make sure all accompanying paperwork is completed and enclosed.
- Add bags of ice (double bag to prevent melt water from seeping into fish samples).
- Tape the cooler shut (make sure you tape along the seams of the cooler).
- Place a DOH lab sticker on the cooler so the courier knows where to deliver the cooler.
 - The courier will deliver the fish coolers to the DOH lab on the following business day after pickup. Make sure you do not ship coolers for arrival over a weekend or holiday.
 - If you have questions about shipping times or to determine if samples arrived at the Health Laboratory call Stacy Ellwanger at 605-773-3241.
 - The Health Laboratory address is:

SD DOH Laboratory
East 4th Street
Pierre, SD 57501

Intensive Sampling for Mercury Plug Collection Procedure

1. Collection and Sample Grouping

- Fish must be fresh and preferably alive when collected.
- Some species of fish to be collected may be predetermined and will be noted on the fish sheet.
- Each fish constitutes an individual sample; we are no longer collecting composite samples.
- Select 10 individual fish of the same species that are of legal size to keep and representative of what an angler may routinely catch. Do not sample fish that are too small for an angler to keep or trophy fish that an angler is unlikely to catch on a regular basis.
- Select fish of varying sizes (smallest to largest, representing at least 3 size classes if possible) that are representative of what anglers may routinely catch and keep.

2. Processing - Sampling

- Any fish that can be sampled and released should be processed ASAP.
- If fish cannot be processed immediately, place them in a clean plastic bucket or cooler filled with ice or water from the waterbody from which the fish were taken.
- Keep equipment and samples clean - If you need to clean foreign material off a fish, use water from the waterbody from which the fish were taken.
- Fish ages will no longer be determined for intensives studies (only screening).
- Determine the length and weight of each fish and record the data on the Fish Tissue Contamination Field Sheet - Individual Fish form.
- Put on a clean pair of latex gloves.
- Make sure the dorsal area is clean; if not, splash with water from the waterbody being sampled.
- Use a knife or the edge of the biopsy punch to scrape scales from the dorsal area from which you will take the plug sample - do not include slime or scales in the biopsy sample.
- Insert the biopsy punch. The punch should be inserted using a twisting motion. The sample can be removed by bending or scooping the punch to "break off" the uncut base portion of the muscle plug. Use a different biopsy punch for each fish.
- Place a laboratory pipette bulb on the opposite end of the biopsy punch and squeeze, blowing the tissue sample into a pre-labeled whirl-pack bag. Please note that each whirl-pack bag should contain one plug from an individual fish.
- Make sure the plug is of adequate size and free from scales and slime.
- Tightly close the pre-labeled whirl-pack bag; make sure all air is expelled.
- Make sure the label on the whirl-pack bag holding the plug matches the SampleID on the field sheet of the fish you are plugging.
- Place all filled whirl-pack bags in a Ziploc bag and place in the cooler on loose ice.

- Freeze your sample immediately upon arrival at the office.

3. Paperwork

- Complete the Fish Tissue Contamination Field Sheet - Individual Fish form. Please note that plug samples are tested for mercury only.
- The original (white) copy of the form stays with the fish plugs. Fold the original copy and place it in a small Ziploc bag. Place this bag inside another plastic bag with the samples.
- Detach the yellow copy of the form and mail or interoffice to DENR:
Shannon Minerich
SWQP - DENR
523 East Capitol Avenue
Pierre, SD 57501
- Keep the pink copy of the form for your records.

4. Shipping

- Within one week of collection, deliver the fish coolers or arrange with the Avera Courier to deliver the fish coolers to the South Dakota State Health Laboratory for analysis. Contact the courier Same Day Express by calling 605-366-3299.
- Remove frozen plug bags from the freezer and pack into the cooler.
- Make sure all accompanying paperwork is completed and enclosed.
- Add bags of ice (double bag to prevent melt water from seeping into fish samples).
- Tape the cooler shut (make sure you tape along the seams of the cooler).
- Place a DOH lab sticker on the cooler so the courier knows where to deliver the cooler.
 - The courier will deliver the fish coolers to the DOH lab on the following business day after pickup. Make sure you do not ship coolers for arrival over a weekend or holiday.
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