

# Sampling for Mercury and Selenium Fish Plug Collection Procedure

## 1. Collection and Sample Grouping

- Fish should be fresh and preferably alive when collected.
- If a specific species of fish is to be collected it will be noted on the fish sheet.
- Each fish constitutes an individual sample.
- 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 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 3 size classes if possible) that are representative of what anglers may routinely catch and keep.

### **Selenium Plug Collection to be Paired with One Species Sampled for Mercury Analysis**

Select the highest priority species to be plugged for Selenium according to the following list.

Selenium Analysis Priority List:

- 1) Acipenser (Shovelnose sturgeon) only by special sampling)
- 2) Lepomis (Bluegill, Green sunfish)
- 3) Oncorhynchus (Rainbow trout, Chinook salmon)
- 4) Salmo (Brown trout)
- 5) Esox (Northern pike)
- 6) Micropterus (Largemouth bass, Smallmouth bass)
- 7) If none of the above species are available choose one from what has been collected

*For example:* If you collect Walleye, Yellow perch, and Black bullheads, none are on the above priority list but we would still want Selenium samples taken from one of any one of those three species even though they are not on the list.

*Another example:* If you collect Bluegill, Northern pike, and Largemouth bass, all of those are on the above list but you would only take Selenium plugs from the Bluegill as they are the highest priority.

*Note:* Fish that are plugged for Selenium also need to be plugged for Mercury as these are paired samples  
**If you have any questions, contact Aaron Leingang at 773-6539 or Robert Hanten at 280-8122.**

## 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 bucket or cooler filled with ice.
- Keep equipment and samples clean. Clean foreign material and dirt off fish by using water from the waterbody which the fish were collected.
- Determine the length and weight of each fish and record the data on the Fish Tissue Contamination Field Sheet - Individual Fish - Hg or Se form.
- Put on a clean pair of powderless nitrile gloves.
- Make sure the dorsal area is clean; if not, rinse 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 get slime or scales in the biopsy sample.
- Insert the biopsy punch using a twisting motion. The sample can be removed by bending or scooping the punch while inserted in the fish to cut the base portion of the muscle plug.
- Use a new biopsy punch for each new fish. **The same biopsy punch should be used to collect the paired Hg and Se samples from the same fish.**

- **A full plug is important as 1-2 grams of flesh is needed.** If the amount of tissue from the plug is minimal take an additional plug and add it to the sample.
- Place a laboratory pipette bulb or baby aspirator bulb on the opposite end of the biopsy punch and squeeze, blowing the tissue sample into a pre-labeled whirl-pack bag. 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.
- 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 - Hg or Se form.
- The original (white) copy of the form stays with the fish plugs. Fold the original copy and seal it in a small Ziploc bag. Double bag and seal in a second Ziploc bag and put in the cooler with the fish samples.
- Detach the yellow copy of the form and mail or interoffice to DANR:  
 Aaron Leingang  
 WQP - DANR  
 523 East Capitol Avenue  
 Pierre, SD 57501
- Keep the pink copy of the form for your records.

### 4. Shipping

- Reasonably soon after collection (couple weeks), deliver the fish coolers or arrange to have the courier deliver the fish coolers to 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 (tape along the seams of the cooler to prevent leaking).
- 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.
  - For questions about shipping times or to verify samples arrived at the Health Laboratory call Shipping and Receiving at 605-773-3183.
  - The Health Laboratory address is:  
 SD DOH Laboratory  
 East 4<sup>th</sup> Street  
 Pierre, SD 57501

**If you have any questions, contact Aaron Leingang at 773-6539 or Robert Hanten at 280-8122.**

# Screen Sampling for Metals, Mercury, Pesticides, and PCBs

## Whole Fish Collection Procedure

### 1. General

- Fish must be fresh and preferably alive when collected.
- Unless otherwise noted, the sampler (GFP 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 collect up to 3 five-fish composite samples. For example, you collect 5 northern pike, 5 walleye, and 5 catfish. 5 whole-fish of one species equals one composite sample.
- 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** (Ideally the smallest fish should be no smaller, by length, than 75% of the largest fish).
  - The sampler (GFP 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.

### 3. Processing

- If fish cannot be processed immediately, put them in a clean plastic bucket or cooler filled with loose ice.
- 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 powder free nitrile gloves.

#### **Five Fish Composite - Whole Fish**

- Dispatch each fish with a clean blunt object.
- 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 (this makes one composite sample) in one large plastic bag (so the laboratory knows those five fish make up one composite 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.

**If you have questions, please contact Aaron Leingang 605-773-6539.**