7.14

STANDARD OPERATING PROCEDURES FOR FISH SKIN ON FILLET TISSUE SAMPLE COLLECTION

Summary

Skin on fillet tissue samples are collected for the analysis of contaminates (e.g., pesticides, PCB's, mercury, trace metals) and other contamination to identify health risk if consumed. Do to the sensitive nature of the analysis and potential impact on consumption it is imperative that clean samples are collected using identical protocols each time. A step-by-step guide for the proper collection, preservation, and shipment of these fish tissue samples is provided below. It is developed to ensure the consistency of the collection and the quality of data generated by this program.

Fish tissue sampling is conducted in conjunction with the North Dakota Game and Fish Department's (NDGFD) spring and fall spawning operations. Fish tissue sampling is also conducted throughout the summer months in conjunction with the NDGFD's test netting operations on specified lakes.

Equipment

- Stainless Steel Knives
- Sharpening Stone
- Fish Scaler
- Fish Measuring Board
- Fish Weigh Scale
- Fillet Board
- Plastic Storage Bags
- Plastic Garbage Bags
- Paper Towels
- Latex Gloves
- Wash Buckets
- Soap (liquid)
- Scrub Brush
- Acetone
- Field Data Sheets
- Markers and Pens
- Labels
- Coolers w/Ice
- Camera and Film
- Waders
- Lab Coats, Coveralls, or Change of Clothes
- Rain Gear
- Life Jackets
- Cleaning Table

- Collection Permit
- First Aid Kit

Procedures

The following fish species are collected, filleted, and composited for tissue contaminant analysis: walleye, bluegill, sauger, northern pike, bass, crappie, chinook salmon, rainbow trout, catfish, carp, sucker, drum, whitefish, perch, and goldeye.

If available, collect up to five fish of similar predetermined size ranges. Generally fish are group in sizes ranging from 0-5", 15-20", 20-25", etc. Left-side fillets are collected from each species and size range, as described below in Part 5. One fish is considered acceptable, especially of the larger size ranges.

1. Collect Fish. Several methods of collection are acceptable. The methods most commonly used are: 1) electro-fishing; 2) hoop netting; 3) trap netting; 4) gill netting; and 5) hook and line. Any method of collection is acceptable which provides fresh fish in good condition, without contamination from analyte compounds or substances which interfere with analyte compound identification or analysis.

2. Record on a field data sheet the location, date, time, collection method, collector, and additional information the collector deems necessary (7.14.1).

3. Record fish data on the fish tissue collection data form (Figure 7.14.1). Data is collected from the fish that will be filleted for analysis. This data should include: 1) species identification; 2) total length; 3) total weight; and 4) notation of anomalous characteristics.

4. Fillet Fish: Wash and rinse all equipment that comes in contact with the fish fillets (e.g., fish scalers, knives, etc.) with soap and water, rinse with clean water, and then acetone. Rinse the equipment between samples which are being submitted for analysis.

    i. Wash and rinse all work surfaces and equipment which will come in contact with the fish or fillet (e.g., table surface, scaler, filleting knifes) between composite samples.

5. Fish Preparation: All fish, with the exception of Ictalurids (catfish), are scaled prior to filleting. Fish are scaled carefully so as to not abrade the underlying tissue, thus permitting unnecessary contamination.

6. After scaling has been completed, cut dorso ventrally behind the opercular flap from the nape to the top of the rib cage, cutting deep enough to reach the spinal vertebrae. Do not cut into the abdominal cavity. If organs or viscera are cut during the filleting process, the fillet and equipment are automatically considered contaminated. The fish is discarded, the equipment rinsed, and a new fish is started.

7. Cut posteriorly along the dorsal surface from the opercular cut to the caudal peduncle.

Cut deep enough to reach the vertebrae on the anterior portion of the fish. Once past the anus, the knife blade can extend ventrally through the fish. The posterior portion of the fillet is cut following the vertebrae to the caudal peduncle.

8. Returning to the anterior portion of the fillet carefully cut along the top of the rib cage, extracting the bulk of the muscle tissue covering this area. As the muscle tissue thins appreciably, continue cutting downward to the bottom of the fish and then to the exterior. Continue this cut to the caudal peduncle.

9. Place each composite of fish to be analyzed in a resealable plastic bag and write the species, length increment, location, and date on the outside of the bag. Place the sample in a cooler with plenty of ice.

10. Transport the samples to a laboratory and keep on ice (not frozen) prior to processing. Each sample must be processed within 48 hours of collection or sample is considered contaminated and is discarded.

Processing for chemical analysis

1. Wash table, grinder, and collection pan, rinse with water, then rinse clean with acetone and allow to dry.

2. Wear latex gloves when processing fillets, and change gloves prior to processing each composite.

3. Place all the fillets from the composite sample through the grinder.

4. Hand mix until thoroughly homogenized then grind a second time.

5. Place approximately 500 grams (approximately one pint), of sample into a QORPAK glass jar and cover.

6. Label QORPAK glass jar (7.14.3).

7. Place sample in freezer and keep frozen prior to analysis.

8. Wash the grinder and collection pan and rinse with water and acetone, and continue the process with the next composite sample.

9. Complete Sample Custody/Identification form (7.14.2).

North Dakota Department of Health
Division of Water Quality
Fish Collection Field Log
Telephone: 701.328.5210
Fax: 701.328.5200

Lab ID Number: _____ **Project Code**: _____

Project Description: _____

STORET No.: _____ **Waterbody Name**: _____

Location Description: _____

Date/Time Collected: _____**Date/Time Processed**: _____

Sampler(s): _____

Collection Method:_____

Species:_____ **Tissue Type**: _____

Comments: _____

Log #	Species Init.	Comp. Size	Sex(m/f/unk.)	Length(cm)	Min	Max	Avg	Mass(g)	Min	Max	Avg

Figure 7.14.1 Fish tissue collection field data form.

North Dakota Department of Health
Sample Identification Record
Division of Laboratory Services–Chemistry
Telephone: 701.328.6140
Fax: 701.328.6280

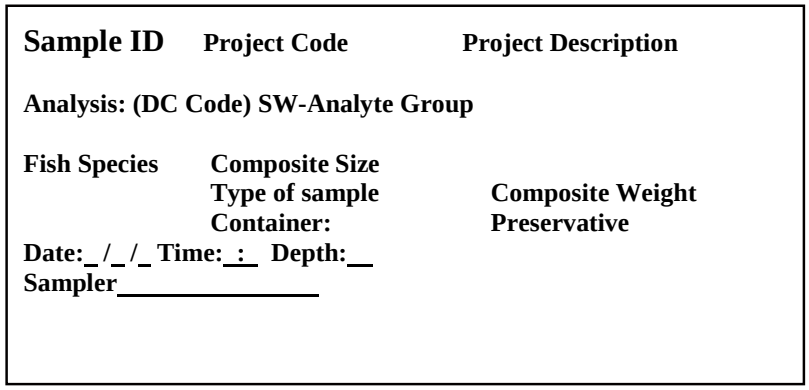
Surface Water Sample Identification Code R (Tissue samples) Samples received without this sheet or without all bold sections fully completed will be rejected and not analyzed.

Sample Collection/Billing Information			
Account #	**Project Code:**	**Project Description:**	
Customer (Name, Address, Phone):			
Date Collected:	**Time Collected:**	**Matrix:** Tissue	**Site ID:**
Site Description:			
Alternate ID:	**Collected By:**		
County Number:	**County Name:**		
Comment:			
Comment:			

Field Information/Measurements				
Species Name:	Species Code:	Tissue Type:		Sample Size:
Comment:		Min. Length (cm):	Max. Length (cm):	Ave. Length (cm):
		Min. Weight (g):	Max. Weight (g):	Ave. Weight (g):

Analysis Requested			
■ 76) Mercury			
■ 77) Base/Neut. Pest			
■ 78) Trace Metals			
■ 106) Acid Herbicides			
■ 107) PCBs			
■ 112) Urons			
■ 113) Carbamates			
■ 143) PAHs			

Figure 7.14.2 Fish sample custody form.



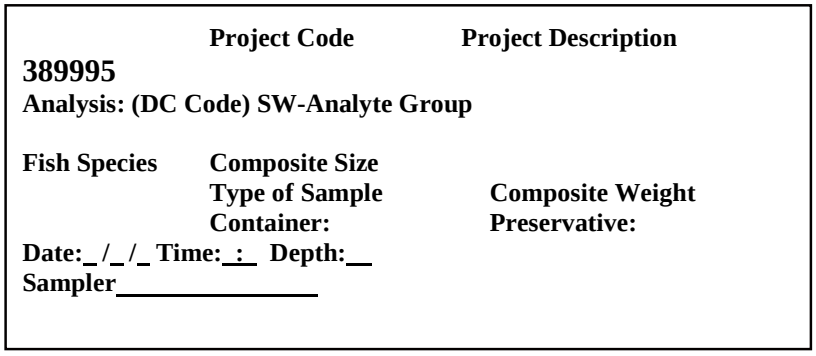


Figure 7.14.3 Fish flesh label, and fish flesh split label.