

**Instructions for Cloth Sampling of Beef Bench Trimmings for *E. coli* O157:H7,  
O26, O45, O103, O111, O121, O145  
For use with MPID-Form 27.8c**

This sampling program consists of routine verification sampling of beef bench trimmings or parts at establishments that did not slaughter the animal from which those trimmings or parts were derived. Trimmings or parts sampled include those intended for use in raw non-intact beef products such as raw ground beef, raw ground beef patties, tenderized steaks, etc. or when the intended use of the trimmings or parts is unclear.

**I. Prior to Sample Collection**

1. **Check contents of shipper upon arrival.** The shipper should contain:

- Foam plug
  - Request for Sampling Form
  - FedEx US Airbill or FedEx Billable Stamp
  - 2 ice packs
  - Cardboard mat
  - Large plastic bag (to place sample box into prior to placing in the establishment's cooler)
  - 2 sample security seals
  - 1 cloth sampling device
  - 1 sterile Whirl-pak bag
  - 1 pair of sterile gloves
  - 1 vial of sterile BPW (the vial contains 25 mL of solution)
- a. Other supplies for sampling: Sample Caddy (required) – issued by NCDA&CS MPID Raleigh Office.
- b. Contact the Raleigh Office at [MPIDSampling@ncagr.gov](mailto:MPIDSampling@ncagr.gov) immediately if you are missing supplies, supplies have been compromised (gloves became contaminated or BPW leaked out of the container), BPW is expired (See **Attachment 1**), or if there is not a security seal on the outside of the box or it shows evidence of being tampered with. The microbiologist places a seal on the outside of the shipping container before it is shipped from the lab.

2. **At least 24 hours prior to sample collection:**

- a. Pre-chill the shipping container (with lid open) in a cooler or refrigerator. Place the box in the enclosed large plastic bag before placing the shipping container in a cooler or refrigerator at the establishment. The shipping containers can get dirty during shipment to and from the laboratory. The bag will hopefully keep the shipping container from introducing any contaminants into the cooler. This should also assist in reducing moisture damage to the boxes.
- b. Freeze the ice packs outside of the shipping container. In the hot summer months, be sure to have at least two (2) pre-frozen ice packs on-hand to ship with samples to prevent sample rejection.

**NOTE:** If the ice packs are left inside of the shipping container to freeze, the insulation insert, and foam plug will increase the amount of time it takes for the ice packs to

completely freeze. This could result in product arriving too hot for the laboratory to analyze, and therefore, a rejected sample.

- c. Place all other materials, including the BPW (as it does not require refrigeration) in a secure location until sample collection.
3. Inspectors should notify their supervisor and email [MPIDSampling@ncagr.gov](mailto:MPIDSampling@ncagr.gov) when a sample cannot be collected during the scheduled timeframe as soon as they are made aware. They should hold onto the lab supplies and collaborate via that email for the next available collection date. If the next available collection date is after the BPW expires, include that with your notification so additional BPW solution can be sent out prior to collection.

## **II. Procedures for Establishment Notification of Upcoming Sample Collection**

1. When inspection personnel are rotated into an unfamiliar establishment, they are to discuss sampling with the establishment during a weekly meeting. As part of this discussion, inspection personnel are to determine how much notice to give the establishment before collecting a sample.
2. Establishment management should be provided sufficient notification of the sample collection and provided enough time to hold the sampled lot, but not enough time to alter the process.
  - a. As per FSIS Directive 10,010.1, IPP are to:
    - i. “Provide 1 days’ notice if such advance notice is sufficient for the establishment to hold the sampled lot. IPP may also provide 2 days’ notice, if necessary. The amount of time needed for the establishment notification is not to impede FSIS’s ability to conduct verification activities that are representative of the establishment’s actual production practices. If less than 1 day’s advance notice would not cause hardship for the establishment, IPP may provide less than 1 days’ notice.
    - ii. Consider establishment requests for more than 2 days’ notice before collecting the sample based on the establishment’s product and process flow. In some cases, based on this consideration, IPP may agree that more than 2 days’ notice is necessary. For example, if an establishment makes case-ready product and requests that the inspector give a notice of 2 days before taking a sample, the inspector is to accommodate this request to allow the establishment to adjust production levels to fill its orders but still hold the sampled lot.”
    - iii. If IPP have questions about an establishment’s basis for requesting more than 2 days’ notice, they are to discuss their concerns with their supervisor.
3. Inform establishment management of the reason that a sample is being collected (*e.g.*, routine monitoring, or follow-up sampling in response to an *E. coli* 0157:H7, O26, O45, O103, O111, O121, O145 positive result). Also, inform the establishment that it is required to hold or maintain control of the sampled lot when MPID collects samples for STEC until negative results become available. Negative laboratory results will be available within 48 hours. Positive or inconclusive results will require further laboratory analysis that may take a week or more.

### **III. Determination of the Establishment's Sampled Lot**

1. The **cleanup-to-cleanup** logic alone for defining affected product is no longer appropriate in E. coli O157:H7 and other STEC testing.
  - a. If the establishment uses the same source material on multiple days, and a sample is collected from one of the production days and tests positive for E. coli O157:H7 or the other STECs, all product produced from that same source material is considered to be adulterated. In other words, not only the shift's production that was sampled is adulterated, but also all product produced from the same source material is adulterated. This is the reason why advance notification may be necessary to facilitate holding of the entire lot, including the same source material.
2. The **cleanup-to-cleanup** procedure would apply when changing from one identified lot (all from the same source material) to another lot (from different source material). This would then identify the second lot as not being product from the "sampled" lot.

### **IV. Collection of Sample**

1. Inspection personnel are only to collect samples, when directed.
2. Products sampled as part of this sampling program shall be derived from outside sources. Products eligible for verification sampling include, but are not limited to:
  - i. Trimmings from cuts such as boneless chuck or other parts of boneless beef that are frequently used as components of raw ground beef or other non-intact beef products.

**NOTE:** If during inspected operations, the establishment produces trimmings or parts from product originating from outside sources, however, those trimmings or parts are used in the production of raw non-intact beef products under a retail exemption, those trimmings and parts remain eligible for sampling under the TRIM\_C sampling task.

- ii. Beef of any size, prior to being subjected to non-intact processing (e.g., tenderization or grinding) that the slaughter establishment intended for intact use but is used by the receiving establishment to make a non-intact product. For example, an establishment that places whole beef shoulder clods in the grinder.
- iii. Beef of any size that the slaughter establishment intended to use for raw intact processing but is used by the receiving establishment to make product intended for non-intact use or the intended use is unclear. For example, chucks, loins, or rounds that were not originally eligible for beef bench trimming (TRIM\_C) sampling as the slaughter establishment intended the product to be used for intact processing, however, the receiving establishment changed the intended use to intended for non-intact use for some or all of the received product.

**NOTE:** When an establishment does not maintain clear records concerning the intended use of beef bench trimmings, therefore the intended use is considered unclear, IPP should consider that the product(s) are intended for non-intact use and eligible for sampling under this program.

- iv. Primal and subprimal cuts derived from purchased whole, half, or quartered carcasses provided that the further processors intended those products for raw non-intact use (e.g., grinding, or mechanical tenderization).

**NOTE:** Reference the Federal – MT65\_C / State – TRIM\_C section of **Attachment 2** of this document for the finished product groups in the Products profile of the Establishment Profile in PHIS that are relevant to this sampling task. You can also reference the **Definitions** section immediately following **Attachment 2** for the definition of bench trim.

3. Inspection program personnel are **not** to sample:
  - i. Other beef components such as head meat, cheek meat, weasand meet or organ meat.
  - ii. Primals, subprimals, or trimmings derived from animals slaughtered on-site.
  - iii. Ground beef including ground beef received and further processed (i.e., re-ground) by the establishment, as this is captured in an alternate sampling task.
  - iv. Trimmings that the establishment intends for use in further processing into ready-to-eat products.
4. Collect the sample at any randomly selected day, shift, and time within the scheduled sample collection time frame.

## **V. Cloth Sampling Procedure**

1. IPP are to wash and dry hands to the mid-forearm for at least 30 seconds.
2. IPP are to remove the gloves from their packaging and set to the side.
3. IPP are to remove the clear, shrink wrap/parafilm from the tube of the BPW and set the BPW aside.
4. Prior to gloving and without touching the cloth, IPP are to drop the folded cloth onto the surface of the product using the following procedures:
  - a. Open the bag by removing the perforated strip at the top of the bag. Pull the tabs to open the wire mouth of the bag wide.
  - b. Once the bag is open, invert the bag to drop the cloth onto the surface of the product to be sampled. If the cloth does not come out of the bag, IPP are to use one hand (on the outside of the sample bag) to push the dry cloth to the top of the sample bag and then invert again. Do not touch the cloth with bare hands.



*Invert the bag, push the cloth to the top of the sample bag if needed, and allow the cloth to drop onto the surface of the product to be sampled.*

- c. Place the empty plastic outer bag in an upright position on a clean, sanitary surface such as a sample caddy/tote or table within suitable distance of the sampling area to facilitate placement of the cloth back in the bag once sampling is complete.
5. Place the sterile gloves on your hands in an aseptic manner. IPP are to maintain sanitary conditions after putting the gloves on; nothing should be touched except for the cloth.
6. To begin performing the sampling procedure, after gloving as described above, IPP are to unfold the cloth, which at this point, should be laying on top of the product in the combo, box, tote, or other container.
7. IPP are to visually identify a point in the combo, box, tote, or other similar container to begin and end the sampling procedure because IPP will need to move around the container in a uniform manner to massage the entire surface of product in the container.

**NOTE:**

- a. If you are sampling from a combo bin, only one combo bin from the sample lot of product is required to be sampled.
- b. If you are sampling from a box, tote or other similar container, up to five boxes or totes from the sample lot can be sampled. For example, if an establishment defines its lot as 3 boxes, IPP are to sample all 3 boxes. If the lot is greater than 5 boxes or totes, IPP are to randomly select 5 boxes or totes to sample. One cloth is used regardless of the number of boxes or totes sampled from.
- c. If the establishment uses both combo bins and other containers for the sampled lot, IPP are to randomly select what to sample accordingly as listed in a. and b. above.
8. Once a starting point for sampling has been identified, IPP are to tightly grasp the cloth with both hands.
9. While using both hands, IPP are to apply downward pressure to vigorously massage the surface area of the product with the unfolded cloth. The surface of the beef trim, including spaces and crevices between meat pieces, should be massaged vigorously to ensure as much of the product surface area is sampled as possible.



*Move uniformly around the perimeter of the product in the container, vigorously massaging the surface area and the space between the meat pieces.*

**NOTE:** A non-vigorous massage or simply gliding the cloth across the surface of the product will be ineffective in transferring bacteria from the product to the cloth.

- a. If sampling from a:
  - i. **Combo:** IPP are to use one side of the cloth to massage half of the combo. At the halfway point, IPP are to flip the cloth and use the second side of the cloth to vigorously massage the remaining half of the combo until reaching the point in the combo where the sample procedures started.
  - ii. **Box, tote, or other similar container:** IPP are to use one side of the cloth to massage the product in half of the available containers. At the halfway point, IPP are to flip the cloth and use the second side of the cloth to vigorously massage the remaining product in the other half of the containers. For example, if the establishment's sampled lot comprises of 4 boxes, use the first side of the cloth to sample product in the first 2 boxes, then flip the cloth over to the second side to sample product in the last 2 boxes.

**NOTE:** When sampling product in boxes, it is important to ensure you are not contacting the outside surface of the box when switching from one container to the next. For a visual demonstration on how to avoid contacting the exterior of the box, IPP can watch the cloth sampling training video on IPP help found here: [Cloth Sample Collection Method](#). Select the MT65\_C link to access the Cloth Sample Collection Method video. The demonstration is included shortly after the 8-minute mark in the video.

10. IPP are to vigorously massage for a minimum of 45 – 60 seconds per side of the cloth to ensure a thorough sample collection for a total sampling time of 1.5 to 2 minutes. If multiple containers are being sampled, divide your time equally between the containers.



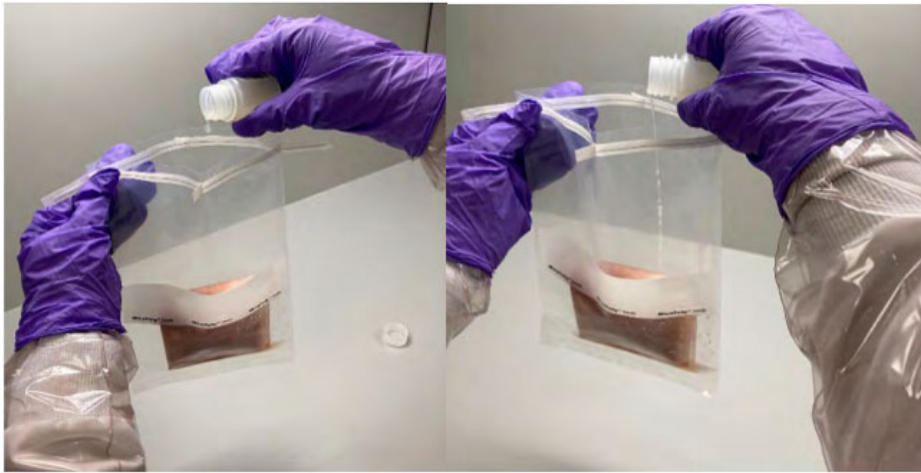
*The cloth, after sampling, will be damp and have picked up juices and bits of meat pieces when the collection is completed.*

11. When the sampling procedure is complete, IPP are to re-fold the cloth following the original fold lines in the cloth and then add 2 additional folds to the cloth. The 2 additional folds will assist with placing the cloth into the sample collection bag. As indicated in the photo below, the cloth is to be folded while resting on the meat product that was sampled.



*Fold cloth along original fold lines, then **add 2 additional folds**.*

12. Once the cloth is folded, IPP are to return the cloth to the original clear plastic sample roll top bag. The cloth should not contact the exterior of the plastic bag while being placed in it.
13. Next, IPP are to carefully open the BPW tube and aseptically pour the BPW into the open bag. IPP are to ensure that the tube does not touch the inside of the bag; only the buffer solution should contact the inside of the bag.



*Pour the sterile BPW into the roll top bag.*

**NOTE:** IPP are to be aware that ASC Microbiology Laboratory will discard samples if the BPW is not used.

14. IPP are to discard the empty BPW tube.
15. IPP are to use gentle pressure on the outside of the roll top bag to push the cloth down into the BPW and remove excess air from the bag.
16. IPP are to close the roll top bag and fold the top of the bag down at least 3 times to prevent leakage. IPP are to then fold in the wire tabs on each side of the bag to secure it.
17. IPP are to place the roll top bag containing the cloth in one of the Whirl-pak bags provided by the laboratory.
  1. To open the Whirl-pak bag, remove the tear strip from the top, grasp the two small white tabs and pull apart.
  2. Once the bag containing the cloth is placed in the Whirl-Pak bag, close the Whirl-pak bag by first removing the excess air, then folding the top of the bag down a few times, and folding the wire attached to the bag inward against the bag.
  3. Place the small security seal over the top, so that the seal is sticking to the sides of the bag and over the top of the fold. See the [MPID Notice](#) entitled Instructions for Use of Sample Seals.
18. **Refrigerate** the sample until it is packed for shipping. IPP should ensure that sample integrity and security is maintained at all times.

## **VI. Packing and Shipment of Sample**

1. **Complete the applicable section(s) of MPID-Form 27.8c "Cloth Sampling of Beef Bench Trimmings for Shiga Toxin-Producing *E. coli* Testing (TRIM\_C)."**

- a. Fill in the Inspector Name, Collection Date, Shipping Date, Production Date, Production Lot Code, Production Volume, along with the Establishment's Contact Name and Phone Number or Email. Check yes or no to indicate whether product is being held.
2. **Complete the pre-addressed FedEx US Airbill or FedEx Billable Stamp. Attach the completed Airbill or Billable Stamp to the exterior of the sample box.**
3. **Place the sample and other contents in the pre-chilled shipper in the following order:**
  - i. Place ice packs in the bottom of the shipper.
  - ii. Prevent the sample from coming into direct contact with the ice packs by placing the cardboard mat on top of the ice packs.
  - iii. Add the sample.
  - iv. Place the styrofoam plug on top.
  - v. Place the completed Request for Sampling Form on top of the styrofoam plug.
  - vi. Use the second security seal to seal the inside flap of the shipping container. Your sample will not be processed by the laboratory without the appropriate seals affixed. See the [MPID Notice](#) entitled Instructions for Use of Sample Seals.
  - vii. Close the shipping container using the velcro tabs.
4. **If a sample must be held overnight, it should be refrigerated.** Refrigerate the sample until it is packed for shipping. Samples must be picked up by FedEx on the same day that the sample is collected. Samples must be analyzed on the day after collection. If a sample is not shipped on the same day that it is collected, or if the sample is not received by the laboratory on the day following collection, the sample cannot be used for bacterial testing and will be discarded.
5. **Samples should not be shipped until the establishment has performed all interventions, except for any intervention that is based on microbiological test results. Ship the sample as soon as FedEx service is available (see below).**
  - a. By **noon** on the day of collection, **arrange for FedEx to pick up the sample** by calling 1-800-Go FedEx (1-800-463-3339).
  - b. Samples collected **before** FedEx pickup Monday through Thursday should be refrigerated until shipped the same day.
  - c. Samples collected **after** FedEx pickup Monday through Wednesday should be held refrigerated and shipped the next day.

**NOTE:** Samples should **not** be collected and shipped the day before a State Holiday or on a Friday. They will be discarded.

## **VII. Documentation of Sample Collection in PHIS**

1. Inspection personnel are to gather information regarding the source materials and suppliers at the time of sample collection. See [Attachment 3](#).

2. Inspection personnel are to document the information collected per **Attachment 3** in a MOI and provide establishment management with a copy.

## **VIII. Microbiological Sampling Frame Update Form & Update Establishment Profile**

1. Inspection personnel, when becoming aware that an establishment begins producing or permanently ceases production of a product mentioned in section **IV.** of this document:
  - a. IPP should review [MPID Form 6c](#) (Microbiological Sampling Frame Update Form) and decide if changes need to be made to the form, considering the one previously submitted to the Raleigh Office.
    - i. If no changes are needed, no further actions need to be taken.
    - ii. If changes are needed, IPP should contact their Area Supervisor, discuss the potential changes, complete the form and email it to [MPIDSampling@ncagr.gov](mailto:MPIDSampling@ncagr.gov).

**NOTE:** See the [MPID Notice](#) entitled Microbiological Sampling Frame Update for State Inspected Plants for more information.

## **IX. Resource Material**

The sampling procedures in section **V. Cloth Sampling Procedure** were adapted from and the images used originated from FSIS Directive 10,010.1 Revision 6 dated 2/15/24.

## Attachment 1: BPW Vials and the Expiration Date

On the vials of BPW, the ASC laboratory will record the:

- media name (BPW),
- lot number, and
- expiration date.

This information will be written on the tube with a sharpie or have a label applied to it (similar to the one below). You can disregard the CM after the letters BPW in the top line of the label; that is the initials of the technician who prepared it and is not part of the media name.



If this information becomes illegible or was not included on the vial, contact the Raleigh Office at [MPIDSampling@ncagr.gov](mailto:MPIDSampling@ncagr.gov).

**Attachment 2: E. Coli O157:H7 and other STEC Sampling Table**

Project	Finished Product Category	Product Group
Federal - MT43 State - VLV	Raw ground, comminuted, or otherwise non-intact beef	Ground Beef/Hamburger/Beef Patty from in-house source materials
		Ground Beef/Hamburger/Beef Patty from purchased source materials accompanied by a COA, no bench trim
		Ground Beef/Hamburger/Beef Patty from purchased source materials intended for intact use
		Ground Beef/Hamburger/Beef Patty from in house source material can include other ground beef component
		Raw ground beef product from non-intact source materials, no bench trim
Federal - MT60_C State – STEC_C	Raw ground, comminuted, or otherwise non-intact beef	Beef Trimming from non-intact beef
		Ground Beef/Hamburger/Beef Patty from in-house source materials
		Ground Beef/Hamburger/Beef Patty from in house source material can include other ground beef component
		Mechanically tenderized products from in-house source materials
		Other Non-Intact Product (fresh sausage, meat loaf, gyros, meat balls, etc.)
	Non-Intact Cuts (including Bone in and Boneless Meats)	
Raw intact beef	Beef Manufacturing Trimmings	
Federal - MT64 State - COMP	Raw ground, comminuted, or otherwise non-intact beef	Advanced Meat Recovery (AMR)
		Ammoniated Beef
		Ground Beef/Hamburger/Beef Patty from in house source material can include other ground beef component
		Low Temperature Rendered Product - Finely Textured Beef (FTB)
		Low Temperature Rendered Product - Partially Defatted Beef Fatty Tissue (PDBFT)
	Raw intact beef	Low Temperature Rendered Product - Partially Defatted Chopped Beef (PDCB)
		Cheek Meat
		Head Meat
		Heart Meat
Weasand Meat		
Federal - MT65_C State – TRIM_C	Raw ground, comminuted, or otherwise non-intact beef	Bench Trim (derived from non-intact beef not slaughtered at the Est.)
		Ground Beef/Hamburger/Beef Patty from purchased source materials intended for intact use
		Mechanically tenderized products from purchased source materials
		Other Non-Intact Product (fresh sausage, meat loaf, gyros, meat balls, etc.)
		Non-Intact Cuts (including Bone in and Boneless Meats)
	Raw intact beef	Bench Trim (trimmings from animals not slaughtered at the Est.)
Not Eligible	Raw ground, comminuted, or otherwise non-intact beef	Fabricated Steaks and other Non-Intact Subprimals
		Formed Steaks
		Portioned raw ground beef product
	Raw intact beef	Carcass (including carcass halves or quarters)
		Cuts (including Bone in and Boneless Meats)
		Edible Offal
		Other Intact
		Primals and Subprimals

## Definitions

1. **Beef Manufacturing Trimmings:** Any of the following products that are originate from beef slaughtered onsite and will be used for the production of raw, non intact product:
  - o Two piece chucks;
  - o Subprimal cuts (e.g., rounds, loins, shanks, ribs) and primals used by another establishment or the same establishment to produce raw, non-intact product;
  - o Raw beef source materials from subprimal cuts;
  - o Other primals listed in 316.9;
  - o Parts of boneless beef in boxes or combos.
  
2. **Raw, Non-intact Product (includes heat treated, not fully cooked):** For purposes of these sampling programs, the following are considered raw, non-intact product. The components used to produce them are sampled under the MT65\_C, MT60\_C, STEC/STEC\_C, or TRIM/TRIM\_C sampling programs:
  - o All product listed above as raw, ground beef products;
  - o Shaped and formed ground beef products other than patties (e.g. meatballs, meatloaf, gyro meat, etc.)
  - o Ground beef meat fillings (e.g. taco meat, tamale meat, etc.);
  - o Ground beef sauces or soups (e.g. "Sloppy Joe, chili, etc.);
  - o Thinly sliced beef derived from reconstructed beef products used in "Philly" style cheesesteaks;
  - o Multi-ingredient raw ground meat or poultry products for which the est. labels the product to show that beef is the predominant species in the product;
  - o Raw beef sausages (e.g. fresh sausages, beef chorizo, etc.);
  - o Diced beef (smaller than ¾ inch);
  - o Char-marked heat-treated but not fully cooked beef patties;
  - o Corned beef;
  - o Other heat-treated, non-intact beef products.
  
3. **Raw ground beef components other than trimmings:** Any of the following products that originate from beef slaughtered onsite and will be used for raw, ground beef products:
  - o esophagus (weasand) meat,
  - o head meat,
  - o cheek meat,
  - o heart meat,
  - o beef from AMR systems,
  - o low temp rendered lean finely textured beef, partially defatted chopped beef, partially defatted beef fatty tissue
  
4. **Bench Trim:** Any of the following products that are produced from beef not slaughtered onsite and will be used for the production of raw, non-intact product:
  - o Secondary trimmings;
  - o Smaller pieces of trim;
  - o Chucks, rounds, sirloins;
  - o Other primal or subprimal cuts
  - o Do not sample course ground or other non-intact beef that will be used entirely for the production of raw, ground beef product
  
5. **Separable Bench Trim:** When a plant receives boxed beef or other primals/sub-primals and the plant trims these products before they further process them. This bench trim then goes into production of another non-intact product usually ground beef. It does not matter if it is co- mingled with any other trim, the fact that it is removed from the primal/sub-primal prior to being used makes it "Separable Bench Trim".
  
6. **Raw, Ground Beef Products:** As described in 319.15(a), (b) and (c):
  - o Ground or chopped beef or veal;
  - o Hamburger;
  - o Beef or veal patties;
  - o Beef or veal patty mix; and
  - o Similar ground beef or veal products made with added seasonings or ingredients

## **Attachment 3**

### **Supplier and Source Material Information for the Sampled Lot Collected by IPP at the Time of Ground Beef or Bench Trim Sample Collection**

A. Supplier information used in the production of the sampled lot if the establishment produces the source materials in-house:

1. Confirmation exists that it was produced in-house (establishment name and number);
2. Lot numbers or slaughter dates;
3. Production dates including slaughter production days if available;
4. Name of the beef components used in the production of the sampled product (e.g., beef trimmings, subprimal cuts, beef hearts, veal trimming, weasand, head or cheek meat) or any information that clearly identifies the source material used;
5. Information on the label of the source product; and

**NOTE:** IPP can keep the actual label from empty packages.

6. Approximate amount of the beef component produced in each lot (in lbs).

B. Supplier information from each supplier used in the production of the sampled lot if the establishment uses the source materials from a domestic outside source:

1. Establishment name and number;
2. Establishment phone number;
3. Establishment point of contact:
  - a. Name;
  - b. Title;
  - c. E-Mail address; and
  - d. Fax number:
4. Supplier lot numbers or slaughter dates;
5. Production dates;
6. Name of the beef components used in the production of the sampled product (e.g., beef trimmings, subprimal cuts, beef hearts, veal trimming, weasand, head or cheek meat or any information that clearly identifies the source material used). Collect information from the label of the product; and

**NOTE:** IPP can keep the actual label from empty packages.

7. Approximate amount of the beef component produced in each lot (in lbs).