Off Site

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ENVIRONMENT DEPARTMENT
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LANL / ES / Biota

Biota Samples

TO: SY Steve Yanicak, LANL POC, DOE OB

FROM: BmV Bryan Vigil, Envi. Spec. D, DOE OB

DATE: December 16, 1997

SUBJECT: Sampling and Analysis Plan for Biota bovine (Domesticated Cow) samples during 1997.

DOE Oversight Bureau (DOE OB) staff plan to collect Environmental Surveillance (ES) split and/or independent biota bovine (domesticated cow) samples from surrounding off-site locations during 1997. The primary purpose is to establish background for analytical constituents, verify LANL's data, and to determine possible Laboratory impacts to the human food chain. Impacts may be determined by measuring and comparing radioactive and metals in foodstuffs between surrounding off-site (within 20 mile radius) bovine with a background (outside a 60 mile radius) bovine sample.

Attempts to collect three bovine samples will be made. Two perimeter cows will be harvested from herd members of San Ildefonso Pueblo, located adjacent to LANL and Cochiti Pueblo, located approximately 7.5 miles south of LANL. One background sample will be either an independent and/or split sample depending upon availability. Before sample collection, considerations must be made that the animal came from a similar environment as LANL although distant from LANL. Targeted analytical constituents will be: plutonium, strontium 90, beryllium, lead, barium, cadmium, and mercury. All Radionuclides will be reported as ash weight, and all metals will be reported as wet weight. For fiscal year 1998 LANL (ESH-20) will dry and ash all samples.

All samples will be collected and cleaned as follows.

PROCESSING OF SAMPLES

The following equipment is required for the processing of samples:

1. safety glasses
2. safety shoes with steel toes

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3. lab coat and rubber gloves
4. cutting block and knives
5. food scale
6. aluminum foil
7. saran wrap
8. ice
9. polyethylene bottles (500 ml)
10. zip-lock bags
11. permanent marker (sharpie)
12. chain of custody

The following steps below are for the processing of samples:

1. carefully remove the skin and discard, and then remove the muscle from the bone (by knife).
2. thoroughly wash muscle, bone, and organs to remove excess blood and debris.
3. use paper towels and pat-dry
4. to obtain samples for metal analysis:
   * remove a 10 g sample of muscle, bone or organ.
   * place samples into a zip-lock bag.
   * record all samples on chain-of-custody form, and then place all samples into a zip-lock bag and freeze until submitted to laboratory.
5. the remaining sample will be used for radiochemistry analysis. Approximately 500 to 2000 g of muscle, bone or organ.
6. place samples into a zip-lock bag or 1000 ml polyethylene bottle.
7. record all samples on chain-of-custody and then place all samples for RAD into a zip-lock bag and freeze until submitted to laboratory.
8. samples should be labeled with sample location, date, time and initialed by sampler/preparer.

Approximate cost for three bovine samples will be $1389.00. Cost includes 3 samples analyzed for isotopic plutonium (145.00/ea), strontium 90 (135.00/ea), gamma spectroscopy (75.00/ea), five metal analysis (12.00/ea) and preparation charges (16.00/ea). All estimates are based on Paragon Laboratory prices. AEN Laboratory is under the process of developing SOPs to meet both NMED and ESH-20 needs.

cc: John Parker, NMED, Chief, DOE OB
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