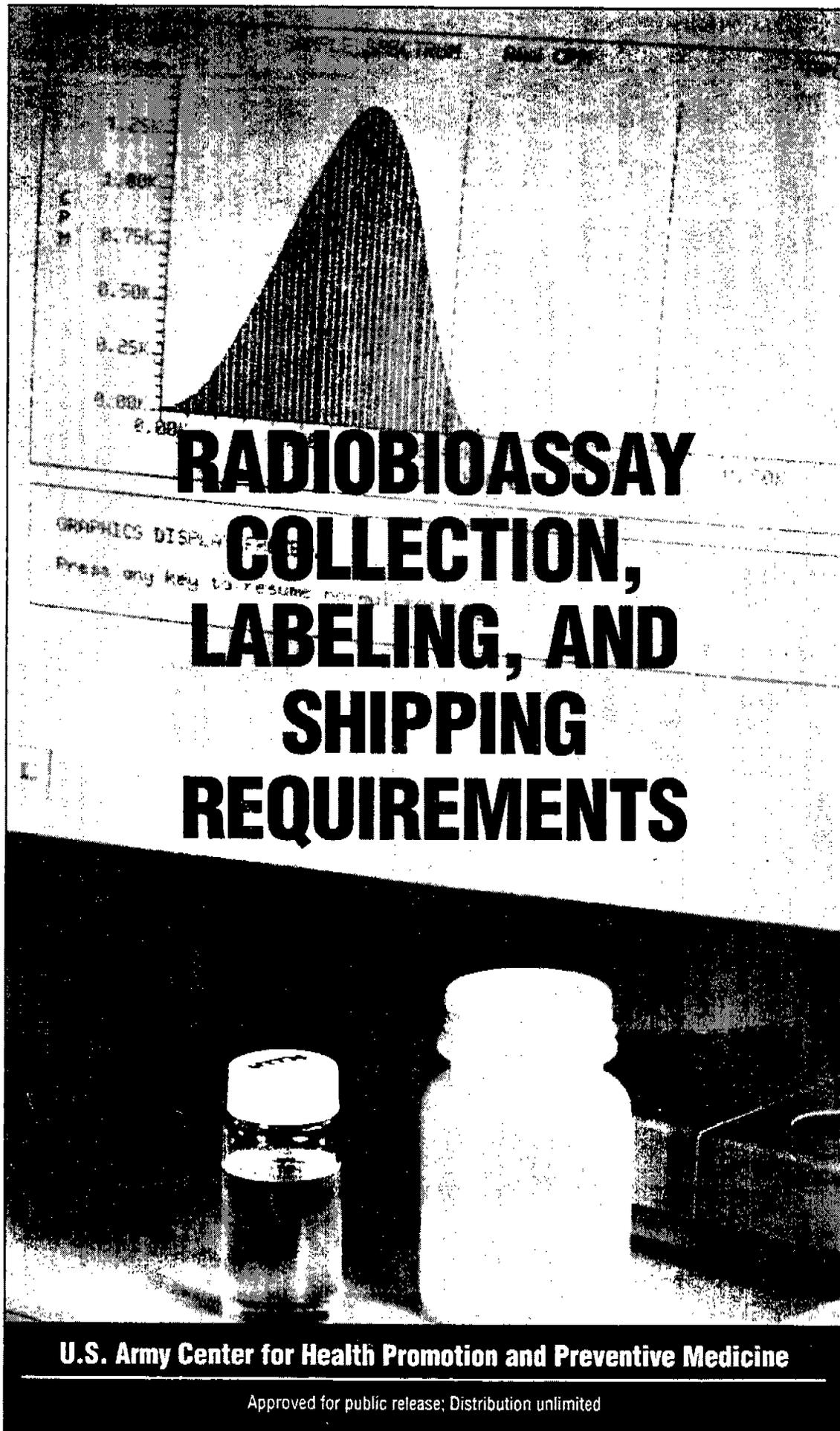


# USACHPPM



## **RADIOBIOASSAY COLLECTION, LABELING, AND SHIPPING REQUIREMENTS**

**U.S. Army Center for Health Promotion and Preventive Medicine**

Approved for public release; Distribution unlimited

**USACHPPM is the proponent of this guide. Users are invited to send comments and suggested improvements on a DA Form 2028 (Recommended Changes To Publications and Blank Forms) directly to Commander, U.S. Army Center for Health Promotion and Preventive Medicine, ATTN: MCHB-DC-LRC, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5422.**

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\* This technical guide supersedes USACHPPM TG No. 211, May 1996

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## CHAPTER 1 INTRODUCTION

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**1-1. PURPOSE.** This technical guide (TG) provides specimen collection, labeling, and shipping instructions that will assist the customer and Radiologic, Classic and Clinical Chemistry Division (*RCCCD*) personnel in the bioassay sampling process.

**1-2. AUTHORITY.** Army Regulation (AR) 40-14 states that under the command jurisdiction of the U.S. Army Medical Command, the commander, U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), through its *RCCCD* laboratory, will provide support, upon request, to Department of the Army (DA) and Defense Logistics Agency (DLA) installations.

**1-3. REFERENCES.** Appendix A provides a list of references.

**1-4. ABBREVIATIONS.** The glossary explains the abbreviations used in this TG.

**1-5. DEFINITIONS OF SPECIAL TERMS.** The following definitions are in accordance with Nuclear Regulatory Commission (NRC) Regulatory Guide 8.32.

a. **Bioassay.** The determination of the kind, quantity or concentration, and location of radioactive material in the human body by direct (*in vivo*) measurement or by analysis (*in vitro*) of materials excreted or removed from the body.

b. **Tritium bioassay.** A single void urine specimen from personnel exposed to tritiated water or gas from standard commodities. If tritium is bound to other compounds, especially those that may be incorporated into genetic material, special collection and analyses need to be determined.

Use of trademarked names and company names does not imply endorsement of the U.S. Army but is intended only to assist in identification of a specific product.

c. **Routine bioassay specimen.** A routine bioassay specimen is a specimen collected as follows:

- (1) Baseline (before exposure, pre-operational, or pre-employment).
- (2) Periodic scheduled monitoring (biweekly, monthly, or quarterly).
- (3) Post-operational (discontinue operation with radioactive material).
- (4) Termination (end of potential exposure or employment).

d. **An emergency or priority bioassay specimen.** A bioassay specimen that is collected as a result of a potential accidental exposure to radioactive material.

e. **Diagnostic bioassay specimen.** A follow-up specimen performed as soon as possible, but not later than 1 week, in order to confirm the initial result of the following cases:

- (1) Tritium air sampling data exceeds established limits.
- (2) Tritium urinary excretion exceeds 5 microcuries per liter. Consult with appropriate personnel, such as medical, health physics, and/or licensee.

f. **Single void urine specimen.** A specimen in which all the urine from a single voiding of the bladder is collected.

g. **24-hour urine specimen.** A specimen collected over a 24-hour time period. Before starting collection, the bladder contents are voided and discarded. Then all urine is collected for a 24-hour period.

## 1-6. GENERAL.

a. Bioassay is only one part of a comprehensive radiation protection program. A radiation protection program may include air monitoring, area monitoring, instrument readings, and respiratory protection. It is important to understand your radiation protection program and coordinate with you local radiation protection officer (RPO) or designated official to ensure a sound program is in place and is being followed.

b. The National Council on Radiation Protection and Measurements (NCRP) Report No. 87 contains an excellent discussion on bioassay.

c. The sampling process begins with planning, followed by specimen collection, labeling, and shipping.

(1) Planning should consider how the laboratory data will be used to make required decision(s). For routine situations, good planning will aid in determining the types and number of specimens to be collected, required analyses, required detection limits, and the need for background specimens.

(2) Specimen collection is extremely important in the analytical process. **Communication between the customer and RCCCD prior to specimen collection is required.**

d. Currently, *RCCCD* only performs *in vitro* analyses. However, *RCCCD*, together with the Medical Health Physics Program of USACHPPM, may be able to provide assistance in obtaining *in vivo* analyses.

e. Table 1-1 provides the recommended specimen type and minimum volume required for the various analyses that *RCCCD* routinely performs.

**Table 1-1. Various Analyses Routinely Performed by *RCCCD***

Analysis	Recommended Specimen Type	Required Volume
Tritium*	Single void	50 - 100 ml
Uranium (Fluorometric)*	24-hour	1000 - 2000 ml
Isotopic Gamma Analysis*	24-hour	1000 - 2000 ml

\* All the analyses may be done on the same 24-hour urine specimen, if sufficient volume (minimum of 1.5 liters) is obtained.

#### 1-7. TECHNICAL ASSISTANCE.

a. For *non-emergency* radiochemistry laboratory support, request *RCCCD* services at least 30 days prior to the planned specimen collection date. This will enable the laboratory to schedule resources and work efficiently to ensure that customer requirements can be fulfilled in a timely manner. Please direct these requests to the contact listed in paragraph c below.

b. For *emergency* radiochemistry laboratory support, notify the *Division Chief, RCCCD*, immediately by telephone [see para c(1) below].

c. Please direct **all** laboratory support requests to the *Division Chief, RCCCD*, by one of the following methods:

(1) Telephone at DSN 584-3983 or commercial (410) 436-3983.

(2) Send an advance memorandum or a CHPPM Form 330-R-E (Request for Laboratory Services) (**not specimens**) requesting radiochemistry laboratory support to the following:

**Commander**  
**U.S. Army Center for Health Promotion and Preventive Medicine**  
**ATTN: MCHB-TS-LRD/Division Chief, RCCCD**  
**5158 Blackhawk Road**  
**Aberdeen Proving Ground, MD 21010-5422**

**NOTE: CHPPM Form 330-R-E may be locally reproduced. A copy of the form is located in the back of this TG. This form may also be submitted electronically to either of the addresses in (3) below. An electronic copy of the form is located on FormFlow.**

(3) Send a cc:mail message to :

**Angel\_Christman@chppm-ccmail.apgea.army.mil**

or

**sampnews@chppm-ccmail.apgea.army.mil**

d. When contacting the *Division Chief, RCCCD*, include the following information:

(1) The name of a technical point of contact (POC).

(2) The POC's DSN and commercial telephone numbers, mailing address, and electronic mail address (if available).

(3) A description of the problem and number of specimens for which services are being requested from *RCCCD*.

(4) Analyses required and anticipated specimen collection date(s).

## CHAPTER 2 COLLECTION INSTRUCTIONS

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### SECTION I. SINGLE VOID URINE SPECIMEN

**2-1. SCOPE.** A single void urine specimen(s) is normally analyzed only for tritium, since the volume of urine collected is insufficient for other urine bioassays.

**2-2. SUPPLIES.** The following are single void urine specimen containers:

a. Bottle, urine specimen, shipping. Suggested source: General Services Administration (GSA), National Stock Number (NSN) 6640-00-165-5778.

b. Round polyethylene bottle, 100 milliliter size, catalog no. F10906-0100, Bel-Art, Pequannock, NJ 07440, (201) 694-0500.

**NOTE:** *USACHPPM* does not normally supply single void urine specimen containers, since they are routine medical items available through GSA.

**2-3. PROCEDURE.**

a. Follow local health clinic/facility procedures for collecting a urine specimen(s). Ensure to--

(1) Wash hands before collecting a specimen(s).

(2) Collect a single void urine specimen(s) in a leak-proof, polyethylene bottle(s) with approximately 50 to 100 milliliter capacity. Use as many bottles as necessary and label as: bottle one of two, two of two, etc.

b. In the event of an accidental exposure to tritium, it is critical the urine specimen(s) collected for analysis is representative of the tritium concentration in the body water. A specimen(s) collected too soon after exposure will not be representative, because the tritium will not have equilibrated throughout the body. The pre-exposure bladder contents will dilute the tritium concentration of the urine which is deposited in the bladder following the exposure. Therefore, for accidents, such as source breaks, follow these three additional instructions:

(1) Discard the initial void of the bladder following the exposure. This should occur within the 2 hours following the exposure. This will empty the bladder of its pre-exposure contents. If voiding cannot be accomplished in this period, consult with the proper medical personnel for resolution and note the problem in the memorandum for priority bioassay analysis.

(2) Discard any additional voids that occur prior to 4 hours post-exposure.

(3) Allow a minimum of 4 hours to elapse following the exposure. During this time, the tritium equilibrates in the body water. Then collect a void following this post-exposure waiting period. The post-exposure waiting period may be longer than 4 hours, but should not be less than 4 hours.

**NOTE: The tritium equilibration times listed in different references varies from 2 to 4 hours. We recommend the 4-hour waiting period, since it is the more conservative estimate. For details, see references 7 and 11, Appendix A.**

c. A minimum of 50 milliliters is required for analysis (recommended NSN bottles will be half full).

d. Close container **tightly** and **rinse** under running water. Dry container before shipping.

e. Do **NOT** add chemicals or preservatives to the specimen(s).

f. Follow labeling instructions in chapter 3, paragraph 3-3.

g. Follow shipping instructions in chapter 4.

h. If a specimen(s) leaks and contaminates packing material and/or the shipping container, USACHPPM will--

(1) Reject and dispose of the specimen(s), without analysis, that do not meet the analytical criteria or pose a hazard to laboratory personnel.

(2) Notify the requestor of the incident and ask them to resubmit the specimen(s).

**SECTION II. 24-HOUR URINE SPECIMEN**

**2-4. SCOPE.** A 24-hour urine specimen(s) can be analyzed for tritium, uranium, gross beta, and gamma-emitters.

**2-5. SUPPLIES.** The following are 24-hour void urine specimen containers:

a. Round polyethylene bottle, 1.0 liter size, catalog no. F10906-1000, Bel-Art, Pequannock, NJ 07440, (201) 694-0500.

b. Environmental sample bottle, 32 oz., high density polyethylene with assemble closure, 50 per case, catalog no. 16060-014, VITECH Corp, 6925T Oakland Mills Rd, Columbia, MD 21045, (410) 461-9688.

**NOTE: USACHPPM does not normally supply urine specimen containers.**

**2-6. PROCEDURE.**

a. Follow local health clinic/facility procedures for collecting a urine specimen(s). Ensure to--

(1) Wash hands before collecting each portion of the urine specimen(s).

(2) Collect a 24-hour urine specimen(s) in a wide-mouth, leak-proof, polyethylene bottle, 1.0 liter capacity. Two bottles may be necessary, since a 24-hour void for reference man is 1.5 liters. See paragraph 2-5 for recommended collection bottles/containers.

**NOTE: Do NOT use clinical 24-hour collection containers or collapsible urine collection containers.**

b. Begin collecting at a convenient time. Discard the initial void, noting the time; this is the start of the 24-hour collection period. Completely void all urine during the 24-hour period into the containers described above.

c. The final portion of the specimen(s) will be the last voided just prior to the time the 24-hour period began the day before (e.g., if you began collecting at 0600 A.M. on 1 Jan 98, you would collect urine up to but not beyond 0600 A.M. on 2 Jan 98).

d. An entire 24-hour specimen is required because results are based on a 24-hour standard. The minimum volume acceptable for analysis of gamma-emitters is 1.0 liter. If we must analyze a smaller specimen, the detection limit of the analysis will increase.

e. In the event of an accidental exposure, except for tritium, collect a 24-hour urine specimen(s) as soon as practical after the exposure. Discard the initial void of the bladder following the exposure. For accidents, such as source breaks, follow these two additional instructions:

(1) Take care to ensure no surface contamination contaminates the specimen(s).

(2) Take a second 24-hour urine specimen immediately after the first. The second specimen is collected because radionuclides have different transport times through the body. The RPO should determine if additional sampling is required.

f. Close container **tightly** after entire specimen(s) has been collected and **rinse** the bottle(s) under running water. Dry containers before shipping.

g. Do **NOT** add chemicals or preservatives to the specimen(s).

h. Follow labeling instructions in chapter 3, paragraph 3-3.

i. Follow shipping instructions in chapter 4.

j. If a specimen(s) leaks and contaminates packing material and/or the shipping container, USACHPPM will--

(1) Reject and dispose of the specimen(s), without analysis.

(2) Notify the requestor of the incident and ask them to resubmit the specimen(s).

### SECTION III. FECAL SPECIMEN

**2-7. SCOPE.** Fecal specimen(s) can be analyzed for gamma-emitters (i.e., americium and thorium). Note that the sources of radioactive material in the feces are more difficult to ascertain and quantify than those for urine. Also interpretation of results may be more difficult because the daily rate of fecal mass excreted is more variable.

**2-8. SUPPLIES.** The following are fecal specimen containers:

- a. Heavy polyethylene bags, 8" x 8" size. Suggested source: GSA, NSN 8105-00-655-8285.
- b. Wide-mouth, multipurpose container with lid, polystyrene, 32 oz. volume, catalog no. C8842-32, Baxter Scientific Products, McGaw Park, IL 60085-6787.

**NOTE: USACHPPM does not normally supply fecal specimen containers, since they are routine medical items.**

**2-9. PROCEDURE.**

a. Follow local health clinic/facility procedures for collecting fecal specimen(s).  
Ensure to--

(1) Wash hands before collecting the fecal specimen(s).

(2) Collect the fecal specimen(s) in a polyethylene bag placed in the wide-mouth, multipurpose container. Take care to prevent contamination of the specimen(s) with transportable contaminants on clothes or surroundings. See paragraph 2-8 for recommended collection containers.

b. In the event of an accidental exposure, it is imperative that **all** feces be collected. For accidents, such as source breaks, consult with the proper medical personnel and the RPO to determine if additional sampling is required.

c. Close container **tightly**.

d. Refrigerate or freeze specimen(s) for preservation. Do **NOT** add chemicals.

e. Follow labeling instructions in chapter 3, paragraph 3-3.

f. Follow shipping instructions in chapter 4.

g. If a specimen(s) leaks and contaminates packing material and/or the shipping container, USACHPPM will--

(1) Reject and dispose of the specimen(s), without analysis.

(2) Notify the requestor of the incident and ask them to resubmit the specimen(s).

**SECTION IV. NASAL SWAB SPECIMEN**

**2-10. SCOPE.** Nasal swabs can be analyzed for gross alpha, gross beta, and gamma-emitters. They must be collected within 10 minutes of exposure, prior to showering or before the nose is blown and cleared. Nasal swabs are an early exposure detection media, but should always be followed by more definitive tests.

**2-11. SUPPLIES.** The following are nasal swab materials:

- a. Cotton tipped applicator. Suggested source: GSA, NSN 6515-00-303-8250.
- b. Polyethylene bag, 4" x 4". Suggested source: GSA, NSN 8015-00-837-7753.

**NOTE:** *USACHPPM* does not normally supply nasal swab materials, since they are routine medical items available through GSA.

**2-12. PROCEDURE.**

a. Follow local health clinic/facility procedures for collecting nasal swab specimen(s).  
Ensure to--

(1) Wash hands before collecting the nasal swab specimen(s).

(2) Use a separate swab for each nostril. Moisten the nasal swab with distilled water. Take care to prevent contamination of the specimen(s) with transportable contaminants on skin, clothes, or surroundings. See paragraph 2-11 for recommended collection containers.

b. In the event of an accidental exposure, collect the nasal swab as soon as conditions permit. For accidents, such as source breaks, consult with the proper medical personnel and the RPO to determine if additional sampling is required.

- c. Break each swab 2" from the tip and place in a separate polyethylene bag.
- d. Do **NOT** add chemicals or preservatives to the specimen(s).
- e. Follow labeling instructions in chapter 3, paragraph 3-3.
- f. Follow shipping instructions in chapter 4.

### CHAPTER 3 SUBMISSION INSTRUCTIONS

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**3-1. SPECIMEN SUBMISSION.** The following instructions are critical to laboratory certification and quality. Problems encountered with specimen submission will be documented in the USACHPPM laboratory report. When corrections are not made in future submissions, the laboratory reserves the right to suspend the privilege to submit specimens until corrections are made or local management assures compliance.

a. When submitting specimen(s) to *RCCCD* for analytical services, uniquely identify each specimen following the labeling instructions in paragraph 3-3.

b. In accordance with AR 40-5, paragraph 9-6, a Standard Form 557 (Miscellaneous) (SF 557) must accompany each specimen submitted for analysis. In addition to the SF 557, a memorandum of request must accompany each group of specimens submitted for analysis.

(1) Complete the SF 557 according to the instructions in paragraph 3-4.

(2) Prepare a memorandum of request according to the instructions in paragraph 3-5.

**3-2. DEFINITIONS OF SPECIAL TERMS.** The following terms are significant to this section:

a. **Dosimetry Account Code.** Unique letter code (2 or 3 letters) assigned by the U.S. Ionizing Radiation Dosimetry Center to an organization that uses the ionizing radiation dosimetry service. The local RPO will normally have the information available.

b. **NRC License Number or DA Radiation Authorization/Permit Number.** Authorization document for possession, use, and management of radioactive material. The local RPO will normally have the information available.

c. **Radioactive Commodity.** Item of Government property composed in whole or in part of radioactive materials and to which a NSN or part number has been assigned. The user will usually know the name of the item resulting in bioassay.

**3-3. LABELING INSTRUCTIONS.** When entering information on a tag or label, either type or print legibly using waterproof ink.

a. Tag or label each specimen container with the following information:

- (1) Individual's full name (i.e., Last Name, First Name, Middle Name or Initial).
- (2) Complete Social Security Number (SSN).
- (3) Date and time of specimen collection or 24-hour period (e.g., 10 Jun 98, 1430 P.M.).

b. For urine specimen(s), mark the level of liquid in the container by placing a line on the outside of the container with a waterproof pen.

**3-4. INSTRUCTIONS FOR COMPLETING AN SF 557.**

a. Follow these instructions when completing an SF 557. If an incorrect entry is made, cross out the incorrect entry with a single strike mark, initial, and date; then insert the correct entry.

(1) **Patient Identification.** Enter the following information:

(a) Patient's Last Name, First Name, Middle Name (or initial), complete SSN, and date of birth.

(b) The complete return address of the health clinic to which the results are to be mailed. Since the results of the bioassays are medical records, they are sent directly to the supporting health facility. If a copy of the results is to be sent elsewhere, such as to the RPO, a written request from the requesting physician must be sent with the specimens or on file at USACHPPM. The physician's letter must specify the applicable timeframe for sending results to others.

(2) **Urgency.** Check ROUTINE or STAT block. Check STAT block for any accident, incident, source break, or suspected source break. If the STAT block is checked, give the justification for this priority on the memorandum of request. Figures 3-1 and 3-2 provide examples of SF 557s with customer input for routine bioassay analysis and priority bioassay analysis, respectively.

(3) **Specimen/Lab Rpt No.** Leave blank for USACHPPM use.

(4) **Patient Status.** Optional.

DOE, John E.      COMPLETE SOCIAL SECURITY NUMBER Date of Birth Occupational Health Clinic Fort Dix, NJ    XXXXX-XXXX		MISC URGENCY <input checked="" type="checkbox"/> ROUTINE TODAY <input type="checkbox"/> <input type="checkbox"/> PRE-OP STAT <input type="checkbox"/>		SPECIMEN/LAB RPT. NO. USACHPPM USE ONLY	
Enter in above space    PATIENT IDENTIFICATION—TREATING FACILITY—WARD NO.—DATE				PATIENT STATUS <input type="checkbox"/> BED <input type="checkbox"/> AMB <input type="checkbox"/> OUTPATIENT <input type="checkbox"/> DOM SPECIMEN SOURCE (Specify) URINE	
REQUESTING PHYSICIAN'S SIGNATURE Jane E. Doe, MD		REPORTED BY USACHPPM USE ONLY    TECH		MD    DATE USACHPPM USE ONLY    LAB ID NO. YOUR LOCAL ID #	
REMARKS Routine monthly (Apr 98)					
TEST(S) SPECIMEN TAKEN DATE    TIME    P.M. 23Apr98    0800    A.M.		REQUESTED Tritium		RESULTS USACHPPM USE ONLY	
MISCELLANEOUS STANDARD FORM 557 (REV. 3-77) PREVIOUS EDITIONS OBSOLETE FORM 104 (04) 201-42-905 557-107					

Figure 3-1. Example of SF 557 with customer input for routine bioassay analysis

DOE, John E.      COMPLETE SOCIAL SECURITY NUMBER Date of Birth Occupational Health Clinic Fort Dix, NJ    XXXXX-XXXX		SPECIMEN/LAB RPT. NO. USACHPPM USE ONLY	
Enter in above space    PATIENT IDENTIFICATION—TREATING FACILITY—WARD NO.—DATE		MISC URGENCY <input type="checkbox"/> ROUTINE <input type="checkbox"/> TODAY <input type="checkbox"/> PRE-OP <input checked="" type="checkbox"/> STAT	PATIENT STATUS <input type="checkbox"/> BED <input type="checkbox"/> AMB OUTPATIENT <input type="checkbox"/> DOM <input type="checkbox"/> NP SPECIMEN SOURCE (Specify) URINE
REQUESTING PHYSICIAN'S SIGNATURE Jane E. Doe, MD	REPORTED BY USACHPPM USE ONLY	MD DATE USACHPPM USE ONLY	LAB ID NO. YOUR LOCAL ID #
REMARKS SOURCE BREAK 0800 12 Apr 98			
TEST(S) SPECIMEN TAKEN DATE    TIME 13 Apr 98    0800 REQUESTED A.M. P.M.	Tritium RESULTS	USACHPPM USE ONLY	
		MISCELLANEOUS 557-107 STANDARD FORM 557 (REV. 3-1-71) Prescribed by OSHA/CDC JMW (ATC) 701-45-505	

Figure 3-2. Example of SF 557 with customer input for priority bioassay analysis

(5) **Specimen Source.** Enter type of specimen submitted, such as urine, etc.

(6) **Requesting Physician.** Enter the name of the practitioner ordering the test. This entry must be made by a licensed health care professional (i.e., physician's assistant, registered nurse, or doctor).

(7) **Reported By and Date.** Leave blank for USACHPPM use.

(8) **Lab ID No.** Enter local ID control number.

(9) **Remarks.** In the event of a source break, accident, or incident, list the date and time of the exposure (e.g., source break 6 May 98, 0800 A.M.). If the date and time of the break are estimated, state this also. For routine collection of specimen(s), state the frequency [e.g., routine biweekly (6 through 17 Apr 98); routine monthly (Apr 98); or routine quarterly (Apr through Jun 98)].

(10) **Test(s).**

(a) **Specimen Taken.**

(1) **Date.** Enter the date the specimen was collected.

(2) **Time.** Enter the time the specimen was collected (circle A.M. or P.M.).

(b) **Requested.** Enter test requested, such as tritium.

(c) **Results.** Leave blank for USACHPPM use.

b. Send the SF 557 with all carbon copies attached and the memorandum of request in a ziplock-type plastic bag to prevent contamination in case a specimen(s) container leaks.

### 3-5. INSTRUCTIONS FOR PREPARING A MEMORANDUM OF REQUEST.

a. The memorandum of request **must** contain the following information:

(1) The requested analyses and a list of the patient's name, social security number, and date of birth for all specimens submitted.

(2) Information required to process the results: dosimetry account code, NRC license number or DA radiation authorization/permit number, the radioactive commodity, and point of contact information for the RPO.

(3) Justification or explanation for either routine or priority support.

(4) Information on the Medical Treatment Facility including POC, DSN and commercial telephone numbers, return address, and electronic mail address.

b. Figure 3-3 provides an example of the memorandum for analytical support.

**TYPE ON OFFICIAL CENTER/INSTALLATION LETTERHEAD**

YOUR OFFICE SYMBOL (40-14c)

Date

MEMORANDUM FOR Commander, U.S. Army Center for Health Promotion and Preventive Medicine,  
 ATTN: MCHB-TS-LRD, 5158 Blackhawk Road, Aberdeen Proving Ground-EA,  
 MD 21010-5422

SUBJECT: Request for Routine/Priority Analytical Support

1. Request that urine specimens be analyzed for isotope(s) of concern for the following patients, listed alphabetically:

NAME	SSN	DOB (MMDDYY)
_____	_____	_____
_____	_____	_____

2. The following information is provided (required to process results) in support of this request:

- a. Dosimetry Account Code \_\_\_\_\_ (Call RPO or Dosimetry Custodian for Code.)
- b. NRC License Number or DA Radiation Authorization/Permit Number \_\_\_\_\_
- c. Radioactive Commodity (Name and NSN, if known) \_\_\_\_\_
- d. RPO Name, Telephone Number \_\_\_\_\_
- e. RPO Electronic Mail Address, Facsimile Number \_\_\_\_\_

3. Justification/Explanation for Routine/Priority Support - In the event of a source break, accident, or incident, list the date and time of the exposure (e.g., source break, 6 May 98, 0800 A.M.). If the date and time of the break are estimated, state this also. For routine collection of specimen(s), state the frequency [e.g., routine biweekly (6 through 17 Apr 98); routine monthly (Apr 98); or routine quarterly (Apr through Jun 98)].

4. Point of contact for additional information is \_\_\_\_\_, DSN \_\_\_\_\_ or commercial (\_\_\_\_)\_\_\_\_\_. The electronic mail address is \_\_\_\_\_. The complete return mailing address for your organization is \_\_\_\_\_.

FOR THE COMMANDER:

SIGNATURE BLOCK  
 of Requestor

**Figure 3-3. Example memorandum for analytical support**

## CHAPTER 4 SHIPPING INSTRUCTIONS

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### 4-1. GOVERNING REGULATIONS.

a. After a specimen is collected, it is usually packed with all other specimens collected and sent to the USACHPPM laboratory for analyses. Various regulations govern packing and transportation of different types of materials.

b. Bioassay specimens are defined as any human or animal material including, but not limited to, excreta, secreta, blood and its components, tissue, and tissue fluids being shipped for purposes of diagnosis. Specimens shipped to undergo a screening test for the purpose of initial diagnosis may be considered as general diagnostic specimens provided such material is not known or suspected to contain infectious substances, such as the Hepatitis B Virus (HBV) or the Human Immunodeficiency Virus (HIV). If a bioassay specimen contains or is suspected to contain an infectious substance, it must comply with the infectious substance transport requirements. Specimens shipped to undergo confirmatory testing which are known or suspected to contain an infectious agent, including viruses, are regulated as infectious substances and must, therefore, comply with infectious substance transport requirements. Shippers are responsible for understanding and complying with the regulations governing bioassay specimens.

**4-2. DEFINITIONS OF SPECIAL TERMS.** The following terms are significant to this section:

- a. **Etiologic Agent.** A substance which can cause disease.
- b. **Primary Container.** A watertight vessel (i.e., bottle, jar, bag, cubitainer, etc.) that contains a specimen.
- c. **Secondary Container.** A watertight vessel (i.e., steel pail, gallon can, etc.) which contains one or more primary containers.
- d. **Shipping Container.** A vessel (i.e., box, carton, etc.) to which USACHPPM's laboratory shipping address is affixed. A shipping container may contain one or more secondary containers.

**4-3. SUPPLIES.**

a. Use the following shipping and packing materials.

(1) Secondary containers.

(a) 1-gallon size. Imperial gallon can, no bails, 5 quart, catalog no. 1840. Possible source: Freund Can Company, Chicago, IL 60620, (312) 224-4230. (This secondary container is recommended for single void urine specimen(s).)

(b) 5-gallon size. Steel pail, 5 gallon, open head, unlined with dish cover with lever ring, catalog no. 1260/4468. Possible source: Freund Can Company, Chicago, IL 60620, (312) 224-4230. (This secondary container is recommended for 24-hour urine specimen(s).)

(2) Pathological shipping box. GSA, NSN 8115-01-013-8533.

(3) Non-particulate absorbent material. Cushioning, cellulosic (MIL-SPEC PPP-C-843). Possible source: GSA, NSN 8135-00-183-8823. (This recommended packing material will hold approximately eight times its own weight of water.)

(4) Shock absorbent material. Cushioning, cellulosic (MIL-SPEC PPP-C-843). Possible source: GSA, NSN 8135-00-183-8823. (This recommended packing material will hold approximately eight times its own weight of water.)

(5) Plastic ziplock-type bags. Bag, plastic (polyethylene), interlocking seal. Possible source: GSA, NSN 8105-00-837-7755

b. Limited supplies of shipping and packing materials may be obtained from the *RCCCD*, DSN 584-3983 or commercial (410) 436-3983.

**NOTE: USACHPPM will only provide container supplies in emergencies, except for customers outside continental United States.**

**4-4. PROCEDURE.**

a. Pack urine specimen(s) according to the following instructions (see figure 4-1 for a cutaway shipping diagram):

(1) Ensure primary specimen(s) container caps are **tight**.

(2) Use a pen with waterproof ink to mark the level of liquid in the container.

# CUTAWAY SHIPPING DIAGRAM FOR URINE SPECIMENS

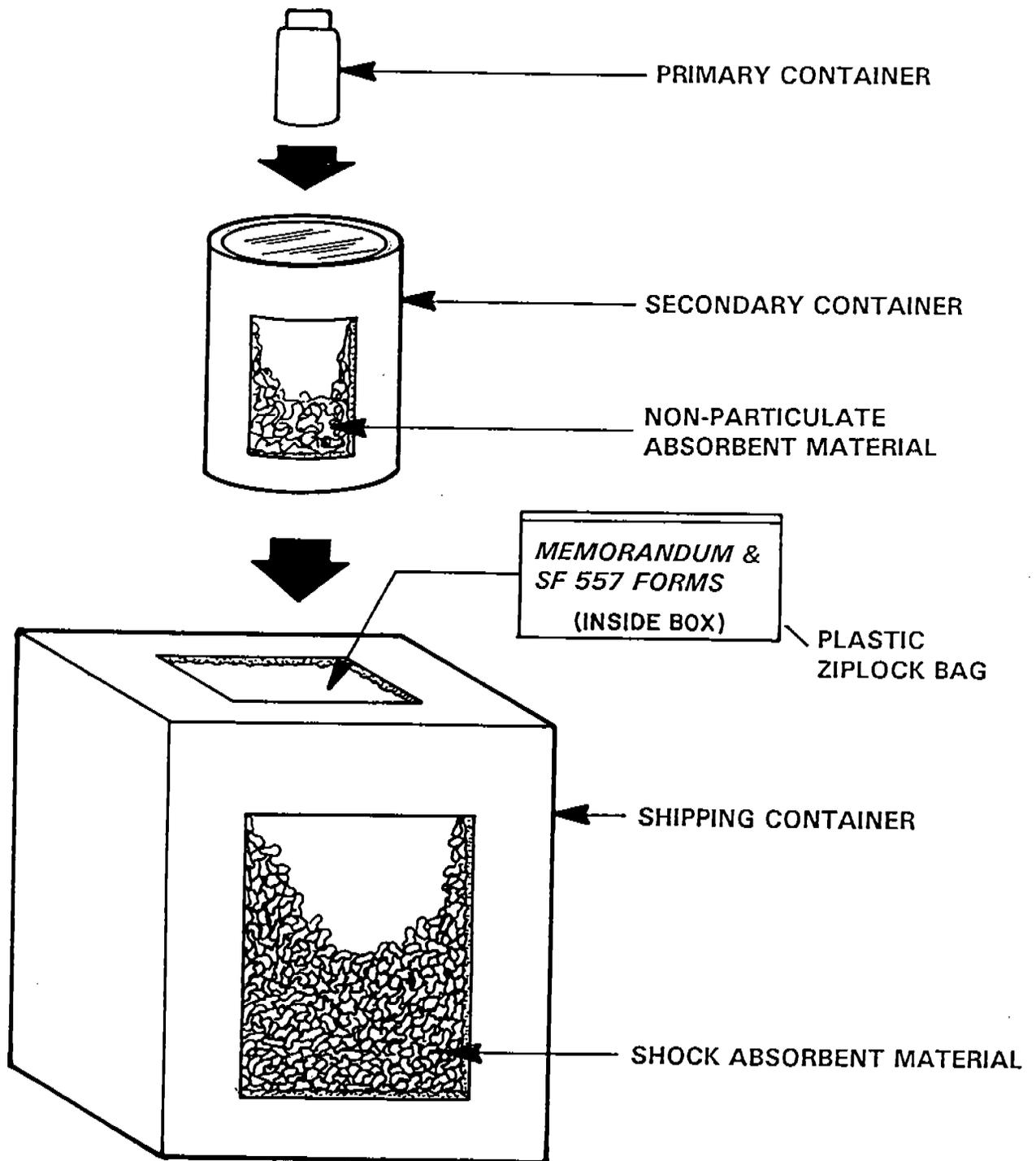


Figure 4-1. Cutaway Shipping Diagram for Urine Specimens

(3) Place the primary specimen(s) containers upright in the leak-proof secondary container.

**NOTE: A fiberboard or cardboard box is NOT considered a leak-proof secondary container.**

(4) Include, in the secondary container, non-particulate absorbent material sufficient to absorb the total specimen volume in case of leakage from the primary container.

(5) Place the secondary container in a shipping container, usually a cardboard box, with shock absorbent material at least equal to the amount used in the secondary container.

b. Pack fecal specimen(s) according to the following instructions:

(1) Ensure the polyethylene bag(s) are **sealed** and the multipurpose container lid(s) are **tight**.

(2) Place the multipurpose containers upright with dry ice in pathological shipping box.

(3) Place the specimen(s) in the bottom of the box under the platform created by the three styrofoam inserts.

(4) Place dry ice on top of the platform.

c. For all biological samples--

(1) Place the accompanying paperwork (SF 557 form(s) and memorandum of request) in a plastic ziplock-type bag in the shipping container. This is necessary to prevent the paperwork from becoming contaminated in case a specimen(s) leaks. **DO NOT** place the SF 557 form(s) on the specimen(s) container or in direct contact with the specimen(s).

(2) Label the shipping container with "THIS END UP" to avoid spillage of specimen(s).

(3) Address the shipping container(s) as follows:

**Commander  
U.S. Army Center for Health Promotion and Preventive Medicine  
ATTN: MCHB-DC-LLI/Sample Management Lab, Bldg E2100  
5158 Blackhawk Road  
Aberdeen Proving Ground, MD 21010-5422**

d. If the specimen(s) is known or suspected to contain an etiologic agent, verbal permission **must** be obtained from *Division Chief, RCCCD*, before shipping. **No exceptions** are allowed. Ensure the hazardous nature of the specimen(s) is described on the memorandum of request. The specimen(s) must be packed and shipped according to the instructions in part 72, title 42, Code of Federal Regulations (42 CFR 72) and 39 CFR 111.

e. If the isotopes and amounts of radioactivity are known, then it is necessary to comply with the shipping requirements of 49 CFR 173.421.

f. Ship the specimen(s) to the laboratory in a manner which is consistent with the requested priority of the specimen(s).

(1) Emergency or priority specimen(s).

(a) In the event of an emergency, notify the laboratory as soon as possible and prior to sending the priority specimen(s). *RCCCD* normal duty hours are 0730 A.M. through 1600 P.M. eastern time zone, Monday through Friday. We are not staffed to provide support outside normal duty hours. When possible, we will endeavor to provide this support.

(b) All priority specimen(s) must be shipped directly to USACHPPM, Building E2100, by the most expeditious means of delivery (e.g., FedEx®, UPS®, DHL Worldwide Express®, etc.). Packages must be properly labeled. See paragraph c(3) above for shipping address.

(c) It is the customer's responsibility to send specimen(s) by next day delivery in the case of an emergency. The *RCCCD* laboratory's responsibility for the specimen(s) begins upon receipt in Building E2100. Our laboratory will NOT track specimen(s) which are not delivered to Building E2100.

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® FedEx is a registered trademark of Federal Express Corp, Memphis, TN 38132.

® UPS is a registered trademark of United Parcel Services of America, Inc., Atlanta, GA 30346.

® DHL Worldwide Express is a registered trademark of DHL Management Services, Inc., Redwood City, CA 94065.

(2) Routine specimen(s).

(a) New requirements for routine analytical support must be approved by the *Division Chief, RCCCD*, before shipment.

(b) Ship specimen(s) via any method that requires a signature on receipt at USACHPPM.

g. If additional information or clarification is required, contact the *Division Chief, RCCCD*.

**APENDIX A  
REFERENCES**

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1. AR 40-5, Preventive Medicine, 15 October 1990.
2. AR 40-14/DLAR 1000.28, Occupational Ionizing Radiation Personnel Dosimetry, 30 June 1995.
3. AR 40-66, Medical Record Administration, 20 July 1992.
4. DA Pamphlet 40-18/DLAI 1000.30, Personnel Dosimetry Guidance and Dose Recording Procedures for Personnel Occupationally Exposed to Ionizing Radiation, 30 June 1995.
5. Health Physics Society N13.30-1996, An American National Standard, Performance Criteria for Radiobioassay.
6. International Commission on Radiological Protection Publication 10, Report of Committee IV on Evaluation of Radiation Doses to Body Tissues from Internal Contamination due to Occupational Exposure (1968).
7. NCRP Report No. 47, Tritium Measurement Techniques, May 1976.
8. NCRP Report No. 65, Management of Persons Accidentally Contaminated With Radionuclides, April 1980.
9. NCRP Report No. 87, Use of Bioassay Procedures for Assessment of Internal Radionuclide Deposition, February 1987.
10. NRC Regulatory Guide 8.32, Criteria for Establishing a Tritium Bioassay Program, July 1988.
11. NRC Regulatory Guide 0938, Information for Establishing Bioassay Measurements and Evaluations of Tritium Exposure, June 1983.
12. 10 CFR 20, Standards for Protection Against Radiation.
13. 39 CFR 111, General Information on Postal Service.

14. 42 CFR 72, Interstate Shipment of Etiologic Agents.
15. 49 CFR 173.421, Limited Quantities of Radioactive Materials.
16. Telephone conversation between Mr. Swatski, RAB, and Dr. Mukai, OEMD, 26 March 1993, subject: Voiding Following Exposure.
17. Memorandum, Health Services Command, HSAP, 8 Mar 93, subject: Transporting Potentially Hazardous Materials.
18. Memorandum, USAEHA, HSHB-MR-H, 2 March 1993, subject: Technical Review of Tritium Bioassay Procedure.

**GLOSSARY**

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AR	Army Regulation
CFR	Code of Federal Regulations
DA	Department of the Army
DLA	Defense Logistics Agency
GSA	General Services Administration
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
NCRP	National Council on Radiation Protection and Measurements
NRC	Nuclear Regulatory Commission
NSN	National Stock Number
POC	point of contact
RCCCD	Radiologic, Classic and Clinical Chemistry Division
RPO	radiation protection officer
SF	Standard Form
SSN	Social Security Number
TG	technical guide
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine

# Directorate of Laboratory Sciences REQUEST FOR LABORATORY SERVICES

For DLS Use Only
LIMS JOB# _____
Date Received _____

PLEASE PRINT OR TYPE ALL REQUESTED INFORMATION

### PART 1: PROJECT INFORMATION

- DATE OF REQUEST: \_\_\_\_\_
- PROJECT #: (CHPPM only) \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ XO# \_\_\_\_\_
- FUND SOURCE:  P84  DERA  OTHER Supplemental (Specify) \_\_\_\_\_
- DIVISION/PROGRAM: \_\_\_\_\_
- INSTALLATION: \_\_\_\_\_
- STATE WHERE SAMPLES TO BE COLLECTED: \_\_\_\_\_
- NAME OF PROJECT OFFICER(s): \_\_\_\_\_  
TELEPHONE: \_\_\_\_\_ FAX# \_\_\_\_\_  
E-MAIL: \_\_\_\_\_
- NAME OF SAMPLE COLLECTOR: \_\_\_\_\_
- PROJECT DESCRIPTION/OBJECTIVE (Screen, Monitoring, Regulatory or Health Concern, Etc.):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- SAMPLE OR SITE HISTORY (High Toxicity, Etc):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- PROJECT COORDINATOR/DLS TECHNICAL CONSULTANT - Was project coordinated with DLS?  YES  NO  
Name of Person in DLS: \_\_\_\_\_

### PART 2: TURNAROUND TIME REQUESTED

- DATE RESULTS REQUIRED: \_\_\_\_\_
- INDICATE THE APPROPRIATE SAMPLE OR PROJECT DESIGNATION:  
 STANDARD  
*(Note: All samples are routinely processed as Standard Analyses Unless Arrangements Have Been Made with DLS for High-Priority or Top-Priority Analyses.)*  
 HIGH-PRIORITY  TOP-PRIORITY  
*(Note: High-Priority and Top-Priority Requests should be Coordinated with DLS and are Subject to Cost Surcharges.)*

### PART 3: REPORT DISTRIBUTION OPTIONS

- REPORT RESULTS BY: (Indicate Preference)  
 cc:MAIL/E-MAIL TO ADDRESS: \_\_\_\_\_  
 FAX TO (Write Fax#): \_\_\_\_\_  
 MAIL: \_\_\_\_\_

REQUESTED BY: \_\_\_\_\_  
 PRINT NAME: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_  
*(Note: Signature Required if Submitted by Hard Copy)*



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July 1998



USACHPPM TG No. 211