The Army Institute of Public Health, Laboratory Sciences of the U.S. Army Public Health Command 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 Public Health Command
ATTN: MCHB-IP-LCS 5158 Blackhawk Road,
Aberdeen Proving Ground, MD 21010-5422.

Disclaimer–Suggested equipment and supplies is not an endorsement by the Federal government, the Department of Defense, or USAPHC.
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* This technical guide supersedes USACHPPM TG No. 211, May 1996
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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.
CHAPTER 1
INTRODUCTION

1-1. PURPOSE. This technical guide (TG) provides specimen collection, labeling, and shipping instructions that will assist the customer and U.S. Army Public Health Command (USAPHC), Army Institute of Public Health (AIPH), Laboratory Sciences (LS) personnel in the bioassay sampling and analysis process.

This TG has been designed for routine bioassay monitoring programs and for those requiring emergency radiochemistry laboratory support (source breaks involving potential personnel exposure). This TG may also be of use to those involved with other bioassay requirements. However, for urine specimens that are being collected/submitted to assess potential exposure of deployed soldiers to depleted uranium (DU), please refer to the following link for the applicable policy and requirements: https://www.pdhealth.mil/du.asp#pad. Included at this website is the U.S. Army Medical Command Policy: Medical Management of Army Personnel Exposed to Depleted Uranium (DU) (current policy number is 11-047).

1-2. AUTHORITY. Army Regulation (AR) 40-5 states that under the command jurisdiction of the U.S. Army Medical Command, the commander, USAPHC, through its AIPH-LS laboratory, will provide worldwide 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.

  c. Uranium bioassay. A twenty-four hour void urine specimen from personnel potentially exposed to uranium or depleted uranium munitions of weapon systems.

e. **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).

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

g. **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 in 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 a health care provider (physician, nurse, physician’s assistant, etc.), health physicist, or the licensee.

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

i. **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.

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 AIPH-LS prior to specimen collection is required.**

d. Currently, AIPH-LS only performs *in vitro* analyses. However, AIPH-LS, together with the Health Physics Program of USAPHC, 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 analyses that AIPH-LS routinely performs.

**Table 1-1. Analyses Routinely Performed by AIPH-LS**

<table>
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<tr>
<th>Analysis</th>
<th>Recommended Specimen Type</th>
<th>Required Volume</th>
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<tr>
<td>Tritium*</td>
<td>Single void</td>
<td>50-100 mL</td>
</tr>
<tr>
<td>Uranium (ICP-MS)*</td>
<td>24-hour</td>
<td>1000 mL</td>
</tr>
<tr>
<td>Isotopic Gamma Analysis*</td>
<td>24-hour</td>
<td>1000 mL</td>
</tr>
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Note: *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 AIPH-LS 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 customer requirements can be fulfilled in a timely manner. To request laboratory services, submit an AIPH-LS Laboratory Information Documentation System (LIDS) 330 (Request for Laboratory Services) in one of the following ways:

◆ Submit a LIDS 330 analytical request to the AIPH mailbox “Sampnews” on line (recommended), using the link immediately below. After completing the request document, click the ‘send’ button at the bottom of the LIDS 330 document. [http://phc.amedd.army.mil/topics/labsciences/lsm/Pages/LIDS.aspx](http://phc.amedd.army.mil/topics/labsciences/lsm/Pages/LIDS.aspx)
Send an email message to Sampnews with the LIDS 330 request as an attachment. The LIDS 330 can currently be completed on line, printed, and scanned as a pdf; or printed blank, completed by hand, then scanned as a pdf. The Sampnews email address is USAPHC-DLSSampNews@amedd.army.mil

A copy of the LIDS 330 document is located at the back of this TG. The LIDS 330 may be locally reproduced.

In addition to the LIDS 330, provide a memorandum of request for laboratory support. See paragraph 3-5 for information to include in the memorandum.

b. For emergency radiochemistry laboratory support, immediately notify the AIPH-LS Client Services Division by telephone at 410-436-2208, or DSN 584-2208. In addition, follow the procedures specified in 1-7.a. above.

c. Contact the Client Services Division of AIPH-LS at 410-436-2208 with any questions, to include assistance with the LIDS 330 and to request the status of submitted samples.
CHAPTER 2  
COLLECTION INSTRUCTIONS  

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. A 100-milliliter size single void urine specimen container is used for collecting the specimens. One suggested source for this container is: EP Scientific Products, cat # 156-125WM/N, phone 800-228-4931.

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, and so forth.

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 laboratory request (LIDS 330) and the memorandum for laboratory support 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 125 mL bottles will be about half full).

d. Close container tightly and rinse under running water. Dry the 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 leaks from the bottle, or is compromised for any other reason during transportation, AIPH-LS 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 II. 24-HOUR URINE SPECIMEN

2-4. SCOPE. A 24-hour urine specimen(s) can be analyzed for tritium, uranium, and gamma-emitting radionuclides. For urine specimens that are being collected/submitted to assess potential exposure of deployed soldiers to depleted uranium (DU), please refer to the following link for the applicable policy and requirements: https://www.pdhealth.mil/du.asp#pad. Included at this website is the U.S. Army Medical Command Policy: Medical Management of Army Personnel Exposed to Depleted Uranium (DU) (current policy number is 11-047).

2-5. SUPPLIES. A 1.0-liter size 24-hour void urine specimen container is used for collecting the specimens. One suggested source for this container is: EP Scientific Products, cat# 150-01WM/N, phone 800-228-4931.

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 a recommended collection bottle/container.

**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 (for example, if you began collecting at 0600 on 1 Jan 11, you would collect urine up to but not beyond 0600 on 2 Jan 11).

d. An entire 24-hour specimen is required because results are based on a 24-hour standard. The minimum volume to be provided for analysis of gamma-emitting radionuclides is 1.0 liter. Call the laboratory for further instructions if 1 liter cannot be collected.

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/area contamination contaminates the specimen(s).

   (2) Consult with the RPO to determine if a second 24-hour urine specimen should be collected immediately after the first. The second specimen may be collected because radionuclides have different transport times through the body. If a second sample is to be collected, submit both samples to the laboratory.

f. Close container tightly after entire specimen(s) has been collected and rinse the bottle(s) under running water. Dry the 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 leaks from the bottle or is compromised for any other reason during transportation, AIPH-LS 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. A fecal specimen can be analyzed for gamma and/or alpha-emitting radionuclides (e.g., americium and thorium). Note that the quantity of radioactive material in feces is more difficult to ascertain and quantify relative to 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 (use both):

   a. Heavy resealable polyethylene bags, 8” x 8” size. Suggested source: United States Plastic Corp® Zippit® 48313, 4 mil. (United States Plastic Corp® is a registered trademark of United States Plastic Corp. Zippit® is a registered trademark of Illinois Tool Works, Inc.)


NOTE: The AIPH-LS 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 snap-lock, 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 the specimen 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 is compromised during transportation for any reason, AIPH-LS 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. FRAGMENT SPECIMEN

2-10. **SCOPE.** Fragment specimens can be analyzed for gross alpha activity, gross beta activity, and metals composition by X-ray fluorescence.

2-11. **SUPPLIES.** A small plastic jar is used for fragment specimen collection.

2-12. **PROCEDURE.** Refer to U.S. Army Medical Command Policy 10-041, Management of Metal Fragments Removed from Army Personnel; and DoD Health Affairs Policy 07-029, Policy on Analysis of Metal Fragments Removed from Department of Defense Personnel (or the corresponding superseding policies) for requirements, guidance, responsibilities and procedures involved with submitting metal fragments for laboratory analysis. The policies can be found at [https://www.pdhealth.mil/ehc/metal_fragments.asp](https://www.pdhealth.mil/ehc/metal_fragments.asp). Contact the AIPH Client Services Division (410-436-2208) for additional information and specific laboratory request documents.

SECTION V. NASAL SWAB SPECIMEN

2-13. **SCOPE.** Nasal swabs can be analyzed for gross alpha activity, gross beta activity, and gamma-emitting radionuclides. Swabs are most useful as adjunct measurements used to evaluate the potential for an inhalation intake of radioactive material. 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.

2-14. **SUPPLIES.** The following are nasal swab materials:


NOTE: The AIPH-LS does not normally supply nasal swab materials since they are routine medical items.

2-15. 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 swabs and 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 inches 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

3-1. SPECIMEN SUBMISSION. The following instructions are critical to ensuring data quality. Problems encountered with specimen submission will be documented in the AIPH-LS laboratory report.

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

   b. A Standard Form (SF) 557 (Miscellaneous) must accompany each specimen submitted for analysis (except fragments). In addition to the SF 557, a laboratory request (see paragraph 1-7) 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 laboratory request according to the instructions in paragraph 1-7.

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 (for example, last name, first name, and middle name (or middle initial).

      (2) Complete Social Security Number (SSN).

      (3) Date and start and end times of specimen collection or 24-hour period (for example, 10 Jun 2011, 1430 to 11 Jun 2011, 1445).

   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, and middle name (or middle 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. 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 laboratory request and memorandum of request for laboratory support. 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 AIPH-LS use.

      (4) **Patient Status.** Optional.
Figure 3-1. Example of SF 557 with Customer Input for Routine Bioassay Analysis
(NOTE: Be sure to record date and time specimen was taken and test requested.)
Figure 3-2. Example of SF-557 with Customer Input for Priority Bioassay Analysis.
(NOTE: Indicate date and time specimen was taken and test requested.)

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

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

(7) **Reported By and Date.** Leave blank for AIPH-LS 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 (for example, source break 12 April 11, 0800). If the date and time of the break are estimated, state this also. For routine collection of specimen(s), state the frequency (for example, routine biweekly; routine monthly; or routine quarterly.)
(10) **Test(s).**

(a) Specimen Taken.

i. Date. Enter the date the specimen was collected.

ii. Time. Enter the time the specimen was collected.

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

(c) Results. Leave blank for AIPH-LS 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. See paragraph 1-7 for instructions on how to submit the required LIDS 330 analytical request. In addition, include a memorandum of request for laboratory support with the specimens. The memorandum of request includes information that will not be provided on the LIDS 330. 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 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.

(5) The U.S. Army Dosimetry Center (ADC) bioassay information summary sheet, as an enclosure to the memorandum of request (see Appendix B).

b. Figure 3-3 provides an example of the memorandum for analytical support.
MEMORANDUM FOR Commander, U.S. Army Public Health Command (Provisional)
ATTN: MCIBM-P-LEO, 5158 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5422

SUBJECT: Request for Routine/Priority Analytical Support. (select one)

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

NAME  SSN  DOB (MM/DD/YYYY)

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. Radionuclide 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 (for example, source break, 6 May 11:0800 AM). If the date and time of the break are estimated, state this also. For routine collection of specimen(s), state the frequency for example, routine biweekly (6 through 17 Apr 11), routine monthly (Apr 11), or routine quarterly (Apr through Jun 11).

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:


Figure 3-3. Example Memorandum for Analytical Support
CHAPTER 4
SHIPPING INSTRUCTIONS

4-1. GOVERNING REGULATIONS.

a. After a specimen is collected, it is usually packed with all other specimens collected and sent to the AIPH-LS 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 (for example, bottle or jar) that contains a specimen.

c. Secondary Container. A watertight vessel (for example, steel pail, gallon can), which contains one or more primary containers.

d. Shipping Container. A vessel (for example, box, carton, cooler) to which the AIPH-LS 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) One-gallon size paint cans. Suggested source: Freund Container and Supply, item no. 1800T23 800-363-9822. (This secondary container is recommended for single void urine specimen(s).)

(b) Five-gallon size steel pail, open head, unlined with lever lock ring. Suggested source: Freund Container and Supply, item no. 1252-4462, 800-363-9822. (This secondary container is recommended for 24-hour urine specimen(s).)


(3) Non-particulate absorbent material, cushioning, cellulosic. Suggested source: GSA, 800-488-3111. (Recommended the packing material have the capability to hold approximately eight times its own weight of water.)

(4) Shock absorbent material, cushioning, cellulosic. Suggested source: GSA, 800-488-3111. (Recommended the packing material have the capability to hold approximately eight times its own weight of water.)

(5) Plastic Ziploc®-type bags, polyethylene, interlocking seal. Suggested source: GSA, 800-488-3111. (Ziploc® is a registered trademark of S.C. Johnson and Son, Inc)

b. Limited supplies of shipping and packing materials may be obtained from AIPH-LS (contact the AIPH Client Services Division, 410-436-2208).

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.
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 specimen containers upright in a pathological shipping box. Add dry ice to the box.

(3) Ensure the dry ice does not make direct contact with the specimen container.

c. For all biological samples—

(1) Place the accompanying paperwork (SF 557 form(s) and memorandum of request for analytical support) in a plastic ziplock-type bag (NOT a clinical specimen 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:

U.S. Army Public Health Command  
MCHB-IP-LSM/Sample Management Lab  
Building E2100  
Aberdeen Proving Ground, MD 21010-5422  
POC: 410-436-8356

d. If the specimen(s) is known or suspected to contain an etiologic agent, verbal permission **must** be obtained from the AIPH-LS Client Services Division (410-436-2208) **before** shipping. Ensure the hazardous nature of the specimen(s) is described on the laboratory request (LIDS 330) and the memorandum of request for analytical support. The specimen(s) must be packed and shipped according to the instructions in Title 4, Code of Federal Regulations (CFR), part 72 and Title 39 CFR, part 111.

e. If the isotopes and amounts of radioactivity are known, then it is necessary to comply with the shipping requirements of Title 49 CFR, part 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 immediately, and prior to sending the priority specimen(s).

(b) All priority specimen(s) must be shipped directly to AIPH-LS, Building E2100, by the most expeditious means of delivery (for example, FedEx®, UPS®, DHL Worldwide Express®, and so forth). Packages must be properly labeled. See paragraph c(3) above for shipping address. (FedEx® is a registered trademark of Federal Express Corp. UPS® is a registered trademark of United Parcel Services of America, Inc. DHL Worldwide Express® is a registered trademark of DIJL Management Services, Inc.)

(c) It is the customer’s responsibility to send specimen(s) by next day delivery in the case of an emergency. The AIPH-LS laboratory’s responsibility for the specimen(s) begins upon receipt in Building E2100.

(2) Routine specimen(s). Ship specimen(s) via any method that requires a signature on receipt at AIPH-LS.

g. If additional information or clarification is required, contact the AIPH-LS Client Services Division at 410-436-2208. Alternate contacts are: Chief, AIPH-LS, Laboratory Analytical Division-Inorganic at 410-436-7162; and Chief, Inorganic-Radiochemistry Section at 410-436-8244.
APPENDIX A

REFERENCES


APPENDIX B

Sample AIPH-LS Documents

Figure B-1. LIDS 330, Request for Laboratory Services

Figure B-2. Bioassay Information Sheet

Local Reproduction is Authorized and Encouraged.
Request For Laboratory Services

(For use of this form, see USAPHC TG 214; the proponent is MCHB-IP-LOC)

SECTION A: PROJECT INFORMATION

1. Request submitted by (name): 

2. Program number, PHC ONLY: 

3. JON ID: 

4. SUBJON ID: 

5. Other fund source (if applicable): 

Customer information:

6. Project officer name: 

7. Address: 

8. Voice phone number: 

9. Cell phone: 

10. Email address: 

11. Was project coordinated w/LS? Y (Yes) or N (No) 

12. LS Technical Consultant: 

13. Date range that samples are expected to arrive at LS (ddmmmyyyy): 

To 

14. Project name: 

15. Project installation: 

16. Installation State: 

17. Installation country: 

18. Special project criteria that need to be met: 

a. Regulatory  b. Is there a project QAPP (please provide to Client Services Division POC)  

c. Other special conditions: 

19. Project description / objective: 

20. Sample or site history (High concentrations, etc.): 

LIDS 330 REV 2 Dec 11 Authorized: Chief, Client Services Division

Page 1 of 4

FIGURE B-1. LIDS 330, REQUEST FOR LABORATORY SERVICES
## SECTION B: PROJECT COORDINATION INFORMATION

21. Are sampling kits/supplies needed? □ No  □ Yes
22. Date the kits/supplies are requested by (dd/mm/yyyy):

Kit shipping address information:

23. Kit handling preference: □ Pick-Up  □ Ship

24. Name:

25. Address:

26. Voice phone number:

27. Number of coolers requested:

28. Expected number of shipments:

Special Project Requirements:

29. □ Chain-Of-Custody
30. □ Safety considerations Specify:

31. □ Analyses with short holding times
   List specific analyses:

32. Will samples contain residual chlorine? □ All  □ None
   □ Some  Explain:

33. Number of VOC trip blanks required:

34. Other special handling requirements:

---

## SECTION C: REPORT DELIVERY

35. All results will be delivered by e-mail. The e-mail will contain the final report and associated electronic data deliverables (EDDs).

36. Additional e-mail addresses (if different than e-mail address in item 10):

   Note: The report will be addressed to the project officer. If any others are to receive the report via e-mail, please list their contact information here (at least e-mail, name and address):

---

**Figure B-1. LIDS 330, Request for Laboratory Services (cont.)**
**SECTION D: TURN AROUND TIME REQUESTED**

37. Priority Requested:  
- Standard – (28 calendar days)  
- High – (14 calendar days)  
- Top – (7 calendar days)  

Or Requested Due Date (dd/mm/yyyy):

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**SECTION E: ANALYSIS REQUESTED**

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**Additional comments:**

Phone number to contact the LS Client Services Division: 410-436-2208

**Figure B-1. LIDS 330, Request for Laboratory Services (cont.)**

B-4
SECTION F: INSTRUCTIONS FOR COMPLETING A REQUEST FOR LABORATORY SERVICES
(IP CLARIFICATION NEEDED)

Section 2. Program number: Internal PHC-AIPH customers should list the program number with which the project is associated. External PHC-AIPH customers list program number as 00.

Section 3. JONO: An internal PHC-AIPH Accounting Number. For internal PHC-AIPH customers, indicate the SUBJONO assigned to your project. PHC-AIPH external customers use X70000.

Section 4. SUBJONO: An internal PHC-AIPH Project Job Number. For internal PHC-AIPH customers, indicate the Subjono assigned to your project for laboratory analysis. PHC-AIPH external customers use 1234.

Section 5. Other fund source: (If not identified in JONO, SUBJONO).

Section 13. Date range that samples are expected to arrive at L&S: List the date (dd/mm/yyyy - 12 Dec 2005) you expect LS to receive your samples. Note: Prior arrangements must be made with LS-SML for sample delivery outside of the routine (M-F, 0730-1900hrs) duty hours. This requirement includes weekend and holiday deliveries.

Section 14. Project name: List the name of project as referred to in your project plan.

Section 15. Project installation: The installation or site where sampling is occurring.

Section 19. Project description/objective: Write a brief description of the primary project objective. Indicate whether the samples are being analyzed for screening, monitoring, regulatory compliance, or health concern purposes.

Section 20. Sample or site history: Write a brief statement indicating any pertinent sample or site histories that L&S staff members should be aware of when analyzing the samples.

Section 23. Kit handling preference: Indicate whether the sample containers will be picked-up or request that LS ship sample containers to a specific location. If selecting the shipping option provide address (no P.O. Boxes) and telephone number at the shipping destination.

Section 27. Number of coolers requested: Indicate the number of cooler(s) that need to be shipped by LS to the project site.

Section 28. Expected number of shipments: Indicate the number of sample shipments planned to the laboratory (include direct shipment to LS contract labs).

Section 29. Chain-of-Custody (COC): Check here if project requires COC. COC is legal documentation of the possession and handling of a sample from the time of collection until final disposition.

Section 30. Safety considerations: Briefly list the known associated hazardous and safety requirements for the samples. If available, provide LS with an MSDS on the samples (e.g., see MSDS, use Personal Protective Equipment (PPE) when handling samples, etc.).

Section 31. Analytes with short holding times: List the analyte(s) that have less than 7 days holding times (e.g., BOD, Conductivity, pH, Enrobro Samples, Coliform, etc.). Holding time is the elapsed time from the date of sample collection until the initiation of the analytical procedure.

Section 32. Will samples contain residual chlorine? Drinking water samples, for example, usually contain residual chlorine. Please specify.

Section 33. Note: Volatile organic compound analyses require that trip blanks be included in the sample kit. If applicable, list the number required.

Section 34. Other special handling requirements: In addition to those described above.

Section 36. Additional e-mail addresses: (If different than, or in addition to e-mail address in item 10). Note that the report will be sent to the project officer. If any others are to receive the report via e-mail, please list their e-mail information here.

Section 37. Priority requested: Select the priority you would like for your project. Note: Turn-around-time is calculated using calendar days from date of sample receipt at the laboratory. Samples are routinely processed as Standard Priority. High-Priority and Top Priority requests require coordination with LS and are subject to surcharges. Requesting a nonstandard due date requires pre-approval, and a surcharge may be applied.

Section 38. Analytical request table: List in the table the analysis(ies) requested for the project. If more than 25 analyses will be requested, reuse page 3.

a. LS Acute (optional) - LS analytical procedure code (if known).

b. Analyte/Parameter - Analysis name or abbreviation (e.g., Turbidity, VOCs, Lead, etc.).

c. Method - List the standard method number (e.g., NIOSH 1001, EPA 200.7, ASTM 1613, etc.).

d. Matrix - The predominant material of which the sample to be analyzed (e.g., Drinking Water (D), Water (W), Waste Water (WW), Soil/Sediment/Slice (S), Air (A), Bulk (B), Water (W), Biological Liquid (BL), Biological Solid (BS), Paint Chip (P), Oil (O), Metal Fragment (F), etc.).

e. Quantity - The number of samples to be analyzed for each method and matrix.

f. Comments - List any specific special comments or special supplies needed for each method and matrix (e.g., blanks, extra containers, preservatives forms etc.). List individual metals here.

LIDS 330 REV 2 DEC 11 Authorized: Chief, Client Services Division

FIGURE B-1. LIDS 330, REQUEST FOR LABORATORY SERVICES (CONT.)
Figure B-2. Bioassay Information Sheet
# GLOSSARY

## SECTION II-ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AR</td>
<td>Army Regulation</td>
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<tr>
<td>AIPH</td>
<td>Army Institute of Public Health</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>DA</td>
<td>Department of the Army</td>
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<tr>
<td>DLA</td>
<td>Defense Logistics Agency</td>
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<tr>
<td>DLS</td>
<td>Directorate of Laboratory Sciences (former name; currently LS)</td>
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<tr>
<td>DU</td>
<td>Depleted Uranium</td>
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<tr>
<td>GSA</td>
<td>General Services Administration</td>
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<td>HBV</td>
<td>Hepatitis B Virus</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>ICPMS</td>
<td>Inductively Coupled Plasma-Mass Spectrometry</td>
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<tr>
<td>LIDS</td>
<td>Laboratory Information Documentation System</td>
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<tr>
<td>LS</td>
<td>Laboratory Sciences (within AIPH)</td>
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<tr>
<td>NCRP</td>
<td>National Council on Radiation Protection and Measurements</td>
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<td>Nuclear Regulatory Commission</td>
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<td>National Stock Number</td>
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<tr>
<td>POC</td>
<td>Point of contact</td>
</tr>
<tr>
<td>RPO</td>
<td>Radiation protection officer</td>
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<tr>
<td>SF</td>
<td>Standard Form</td>
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SSN  Social Security Number
TG  technical guide
USACHPPM  U. S. Army Center for Health Promotion and Preventive Medicine (former name; currently USAPHC/AIPH)
USAPHC  U. S. Army Public Health Command

SECTION III-TERMS

Creatinine analysis
A measure of kidney function.

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

Etiologic Agent
A substance which can cause disease.

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.

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.

Primary Container
A watertight \textit{vessel} (for example, bottle, jar, bag, cubitainer, and so forth) that contains a specimen.

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.
**Secondary Container**
A watertight vessel (for example, steel pail, gallon can, and so forth) which contains one or more primary containers.

**Shipping Container**
A vessel (for example, box, carton, etc.) to which the AIPH-LS shipping address is affixed. A shipping container may contain one or more secondary containers.

**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.

**Uranium bioassay**
A 24-hour void urine specimen from personnel potentially exposed to uranium or depleted uranium munitions of weapon systems.