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Bob
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November 17, 1992

Ms. Asunción Espinosa
C.I.E.M.A.T.
Instituto del Medio Ambiente
Avenida Complutense, 22
28040-Madrid (Spain)

Dear Ms. ^{*Asunción*} Espinosa:

Anant and I enjoyed meeting with you, and look forward to our cooperation and collaboration. I know we will be involved in interesting and successful endeavors.

As I promised, enclosed please find our urine collection protocol, which I modified in an attempt to reflect the conditions under which you will be acquiring samples. Please let me know if there are any questions or if there are any other ways which I can assist you.

Concerning your comment about receiving bottles: you can use any type of polyethylene bottle with polyethylene screw tops. These are standard issue items. We use 2 liter bottles with walls which are thick enough to withstand acidified conditions, as well as handling, and shipping. We also suggest providing two such bottles per patient. (Note that ICRP23 "Reference Man" refers to 1.4 liter per day from a normal male adult. Based on our experience we need more capacity.)

When shipping the samples we suggest you use tape to secure the screw tops. Please say hello for me to Emilio, Emma, Jose, and Santiago. (Hopefully my future letters will be written, at least in part, in Spanish!)

Sincerely,

Edward Kaplan, Ph.D.
Radiological Sciences Division

EK/jk
encl.

cc: ✓ R. Jones (DOE)
A. Moorthy

URINE COLLECTION PROTOCOL
(modified for CIEMAT 11-10-92)

The Fission Track Analytical (FTA) methodology is capable of measuring ^{239}Pu in urine at levels heretofore impossible. The method is therefore extremely sensitive to any sources of possible contamination. This urine collection protocol is designed to produce samples that are free from contaminants which may interfere with the FTA methodology.

Samples are collected over a 24-hour period under controlled conditions in a facility such as a hospital ward, a laboratory, or, in the case of the Marshall Islands urine collection program, aboard ship. Volunteers are brought into the facility where they are required to shower, and are provided with new clothing which is worn during the collection period. Each volunteer is assigned a new urine collector and collection bottle, which are kept in a special rack between uses. A volunteer's urine is collected under the supervision of a nurse who retrieves the specimen and transfers it to that person's collection bottle. A health physicist is responsible for maintaining the storage racks, supplying the collectors and bottles, preserving (i.e., acidifying) the samples at the end of each 24-hour period, and packing the collection bottles for shipment to BNL.

Urine samples are handled only by authorized personnel, who shall be aware of and comply with the Exposure Control Plan entitled "Occupational Exposure to Urine-borne Pathogens," for compliance with OSHA 29 CFR Part 1910.1030 (see Appendix). These personnel shall be inoculated against hepatitis B virus.

Volunteers should have medical verification of proper gastrointestinal function and all abnormalities should be recorded so that any adjustments deemed necessary may be made.

PROTOCOL

1. A log book will be kept by the on-duty nurse. All entries will be made in indelible ink, with corrections made by striking-through and initializing. Each volunteer will be assigned a single page in the log, on which the on-duty nurse will enter the start date, volunteer's name and identification number, sex, and any other pertinent information. Additional information to be entered is specified below.
2. The on-duty nurse will be responsible for ascertaining that the volunteer is trustworthy of proper collection (e.g., the volunteer understands what is required of him/her by this protocol; and is physically capable of providing the required samples), and is responsible for reporting any collection errors.

Urine Collection Protocol (cont'd.)

3. The on-duty nurse is responsible for instructing volunteers in the method for proper and thorough showering, and will issue new clothing, a towel, and soap to each volunteer. The nurse will also place each patient's personal belongings into an individual plastic bag and place same in a secure location. The nurse will ascertain that each volunteer has properly showered before any urine specimens have been taken, and will so note this in the log.
4. The on-duty nurse will instruct volunteers in the urine collection procedures and will answer questions asked by volunteers with regards to urine collection.
5. Each volunteer will be assigned a wristband, a urine specimen collector, and a 2 liter polypropylene urine collection bottle by a nurse. The nurse will use an indelible marker to mark these with the date, first and last names, ID# of each volunteer, and for the bottle, also the time and date of collection (both beginning and end for that bottle).
6. When a volunteer notifies the on-duty nurse that he/she desires to urinate, the on-duty nurse will perform the following tasks:
 - (1) provide the volunteer with his/her marked urine collector, and remind him/her that ONLY URINE IS TO BE PLACED INSIDE THE COLLECTOR. No feces or other objects are to be placed in the urine collector,
 - (2) retrieve the urine specimen,
 - (3) decant the urine specimen into the volunteer's urine collection bottle, and enter the date, time, and volume (in milliliters) of each such sample into the log book. At this time it is important for the nurse to inquire of the volunteer whether an error in collection has arisen (e.g., missing the bottle, forgetting to collect a urination) and to note this in the log,
 - (3) rinse the collector after each use, close the volunteer's urine collection bottle, and return them to their proper locations on the storage rack.
7. At the end of each 24-hour collection period the health physicist will perform the following tasks:
 - (1) total the individual sample volume entries for each volunteer, verify that the volume in each volunteer's urine bottle is the same as the total entered into that volunteer's log book entry, entering the total of his calculation with written explanations for each discrepancy,
 - (2) discard the urine collectors in an appropriate receptacle,

Urine Collection Protocol (cont'd.)

- (3) acidify each urine collection bottle with 10% by volume of concentrated (i.e., 16N) nitric acid, enter the amount of acid added to that bottle into the log book (using indelible ink), and then initialize and date the label on each such bottle,
- (4) place each urine collection bottle into a crate for shipment to Brookhaven National Laboratory at the end of the sample collection program, and will then sign each volunteer's log book page indicating the completion of these tasks, and
- (5) restock the storage racks with urine collectors and collector bottles.

APPENDIX

MARSHALL ISLANDS RADIATION SAFETY GROUP
RADIOLOGICAL SCIENCES DIVISION
BROOKHAVEN NATIONAL LABORATORY

EXPOSURE CONTROL PLAN
Occupational Exposure to Urine-borne Pathogens

OSHA 29 CFR Part 1910.1030

The Marshall Islands Radiation Safety Group (MIRSP) periodically collects and analyzes urine samples taken from people from the Marshall Islands (and elsewhere).

This exposure control plan is developed in accordance with OSHA Standard, CFR Part 1910.1030 to eliminate or minimize MIRSP employee exposure to urine-borne pathogens.

Procedures to evaluate and follow-up exposure incidents are covered in separate documents (i.e., Policy Manual of the BNL Occupational Medicine Clinic).

EXPOSURE DETERMINATIONS

MIRSP employees in the following job categories may experience occupational exposures to urine-borne pathogens:

- * Occupational chemists
- * Occupational technicians
- * Administrative support staff.

* Exposure possible but highly unlikely.

MIRSP tasks and procedures in which occupational exposures may occur include:

- * urine sample collection
- * preparation of samples for shipment
- * unpacking samples at BNL
- * acidification of samples in laboratory

*Exposure possible but highly unlikely.

No infectious exposure is possible after wet ashing of samples is complete.

Appendix A: Exposure Control Plan (cont'd.)

SCHEDULE FOR IMPLEMENTATION

This exposure control plan is effective immediately.

DEFINITIONS

URINE means human urine and human urine components.

BLOOD means human blood, human blood components, and products made from human blood.

URINE-BORNE PATHOGENS means pathogenic microorganisms that are present in human urine and can cause human disease (these include but are not limited to hepatitis B virus [HBV] and human immunodeficiency virus [HIV]).

CONTAMINATION means the presence or the reasonably anticipated presence of urine or other potentially infectious materials on an item or surface.

CONTAMINATED LAUNDRY means laundry which has been soiled with urine or other potentially infectious materials.

OTHER POTENTIALLY INFECTIOUS MATERIALS means:

certain body fluids (semen, vaginal secretions, CSF, synovial, pleural, pericardial, or amniotic fluid saliva in dental procedures, any body fluid visibly contaminated with blood, or all body fluids which cannot be differentiated from the above),

any unfixed tissues or organs from a living or dead person,

cell lines, tissues, organs, culture media, or solutions containing hazardous infectious agents, including any of these from experimental animals.

PARENTERAL means piercing skin or mucous membranes or the skin barriers through such events as needlesticks, human bites, cuts, and abrasions.

PERSONAL PROTECTIVE EQUIPMENT means specialized clothing or equipment worn for protection against a hazard and does NOT include uniforms or other general work clothes.

METHODS OF COMPLIANCE

UNIVERSAL PRECAUTIONS SHALL BE OBSERVED AT ALL TIMES. All human urine and certain body fluids are treated as infectious for urine-borne hazards.

Where differentiation between body fluid types is not possible, all body fluids should be considered potentially infectious.

Appendix A: Exposure Control Plan (cont'd.)

ENGINEERING AND WORK PRACTICE CONTROLS

Engineering and work practice controls are used to eliminate or prevent employee exposures.

ENGINEERING CONTROLS means items that isolate or remove the hazard from the workplace.

WORK PRACTICE CONTROLS are methods of practice that reduce likelihood of exposure (e.g., never touching urine without gloves).

1. Personal protective equipment shall be used wherever potential occupational exposure could occur despite engineering or work practice controls.

Personal protective equipment is to be used without exception whenever the potential for exposure exists.

All procedures involving urine or other potentially infectious material shall be performed in such a manner as to minimize splashing, splattering, spraying, or generation of droplets of these substances.

Appropriate personal protective equipment shall be used to prevent contamination of employees work clothes, undergarments, skin, eyes, mouth, or other mucous membranes. These include gloves, lab coats, face shield or eye protection, and ventilatory devices.

Gloves shall be worn whenever employees may have hand contact with urine or other potentially infectious material, mucous membranes, non-intact skin, when handling or touching urine or contaminated items or surfaces.

Use of gloves is mandatory in direct contact with any urine or during any procedure which may place the employee in direct contact with urine, tissues, or body fluids of humans.

Masks, eye protection (goggles or glasses with side shields), chin-length face shields shall be worn whenever splashes, sprays, splatters or droplets of urine or other potentially infectious materials may be generated and eye, nose, or mouth contamination is reasonably anticipated.

Lab coats or jackets shall be worn in occupational exposure situations. The type outer protection shall depend on the task and degree of exposure anticipated.

2. Handwashing facilities are provided in each laboratory. Employees shall wash their hands immediately or as soon as possible after removal of gloves or other protective garments.

Appendix A: Exposure Control Plan (cont'd.)

Employees shall wash hands and any other skin with soap and water or flush mucous membranes with water immediately or as soon as possible following contact with urine or other potentially infectious materials.

3. Housekeeping:

Equipment which may become contaminated with urine or other potentially infectious material shall be examined and decontaminated on a regular basis.

All personal protective equipment shall be removed prior to leaving work and placed in designated areas for storage, washing, decontamination or disposal.

Storing, serving, eating food or beverages, smoking, applying cosmetics, and handling contact lenses are prohibited in areas with reasonable likelihood of occupational exposure to urine-borne infectious hazards.

Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets, or countertops where urine or other potentially infectious materials are present.

With the temporary exception of laboratory W4, MIRSP laboratories and offices are non-smoking work areas.

All equipment and environmental and working surfaces including receptacles shall be cleaned and decontaminated after contact with urine and other potentially infectious materials following procedures, spills or at the end of the workshift if the surface may have become contaminated since the last cleaning.

Broken contaminated glassware shall not be picked up by hand. Mechanical means of cleanup shall be used (brush, dustpan, forceps, tongs, etc.).

Contaminated instruments shall be handled using gloves at all times.

Contaminated laundry shall be handled as little as possible with a minimum of agitation. Contaminated laundry shall be bagged or containerized at the location where generated and not sorted or rinsed in the MIRSP.

Contaminated laundry shall be transported in bags or containers per standard. Wet or leaking laundry shall be contained in leak-proof bags in addition to above prior to transport.

Gloves and other protective clothing should be used when handling contaminated laundry.

Above engineering and work practice controls shall be evaluated, maintained, or replaced on a regular schedule.

Appendix A: Exposure Control Plan (cont'd.)

OCCUPATIONAL MEDICINE SERVICES

Hepatitis B vaccine and post-exposure evaluation and follow-up for exposure to urine-borne pathogens is available at the Occupational Medicine Clinic (OMC) to all full-time and eligible part-time BNL employees.

All exposure incidents should be reported to the OMC promptly.

Protocols for preexposure vaccination and post-exposure follow-up are available in accordance with OMC policy.

TRAINING

If necessary as determined by the OMC, MIRSP employees with occupational exposure shall receive training prior to initial assignments, annually thereafter, or any time there is a modification in tasks or procedures.

All MIRSP employees shall receive a copy of CFR Vol. 56, No 235, 12/6/91.

Training of MIRSP employees shall address:

1. Explanation of the epidemiology and symptoms of urine-borne diseases.
2. The mode of transmission of urine-borne hazards.
3. A copy and explanation of this exposure control plan.
4. Recognizing job related activities which could result in exposures.
5. An explanation of the uses and limitations of engineering controls, work practices, and personal protective equipment.
6. Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment.
7. How to select personal protective equipment.
8. Information on the safety, efficacy, administration, benefits of hepatitis B vaccine and that it is offered by the OMC to eligible employees at no cost.
9. Information regarding appropriate actions and persons to contact following exposure to urine-borne pathogens.
10. An explanation of procedures to follow, method of reporting, and medical follow-up after an exposure incident.
11. Explanation of signs, labels, and color coding as required.

Appendix A: Exposure Control Plan (cont'd.)

Training records shall be kept in accordance with CFR Vol 56, No 235 (see page 64181).

DATES

Written exposure control plan 6/92.

Training and records ---/92.

Engineering, work practice controls, vaccinations, medical evaluations, labels, signs ---/92.