Collection, Packaging and Shipping Instructions for Clinical Specimens Collected From a Potential Chemical Exposure

Supplies List
Purple top (EDTA) blood tubes
Green or Grey top (heparin or sodium fluoride) blood tubes
Urine cups
Evidence tape
Inner box with tube grid (or analogous inner package for blood tubes)
Absorbent material
Inner box with cup grid (or analogous inner package for urine cups)
Saf-T-Pak® bags (or analogous 95kPa/waterproof bag)
Zip bags (for paperwork included with shipment)
Cold packs
Dry ice
Fiber reinforced packing tape
Additional supplies, for laboratories using Commercial Couriers (i.e.: FedEx, UPS, etc.)
  Shipping boxes (Cardboard outer with Styrofoam inner liner)
  UN3373 shipping label (include words “Biological Substance, Category B”)
  UN1845 Class 9 dry ice labels
  Shipping orientation labels (if not pre-printed on box)

Specimen Collection
Unless otherwise directed, collect the following specimens from each person who may have been exposed:

Urine
- In a screw-capped plastic container, collect at least 25 mL of urine; do not overfill.
- Freeze specimen as soon as possible (−70°C or dry ice preferred).
- Ship the specimen on dry ice.

Whole blood
- Collect three purple-top EDTA 5 or 7 mL tubes OR four purple-top EDTA 3 mL tubes by venipuncture. DO NOT use clot-activator or serum separator tubes.
- From the same venipuncture, collect one 3-mL or larger gray or green top tube.
- Using indelible ink, mark each purple-top tube of blood in the order collected (e.g., # 1, # 2, # 3, # 4 [if using 3 mL tubes]).
- For children, collect only urine unless directed otherwise by MDH.
Blanks
For each lot number of tubes and urine cups used for collection, provide the following to be used as blanks for measuring background contamination:
- Two (2) empty, unopened purple-top tubes.
- Two (2) empty, unopened green- or gray-top tubes.
- Two (2) empty, unopened urine cups.

Labeling Specimens
- Label specimens with labels generated by your facility. These labels should include the following information: medical records number, specimen identification number, collector’s initials, and date and time of collection. Make sure all information appears clearly and legibly on the label.
- If you use bar-coded labels, place the labels on blood tubes and urine cups so that when these containers are upright, the bar code looks like a ladder.
- Maintain a list of names with corresponding specimen identification numbers in your laboratory so that results can be reported to patients.

Packaging Specimens
Packaging consists of the following components: primary receptacles (blood tubes or urine cups), secondary packaging (materials used to protect primary receptacles), and outer packaging (polystyrene insulated corrugated fiberboard shippers).

Secondary Packaging for Blood Tubes
- See the one-page colored chart, “Instructions for shipping Blood Specimens to MDH after a Chemical-Exposure Event (PDF:599KB/1 page)” for a simplified schematic illustrating the procedures for packaging and shipping blood specimens.
- Separate each tube of blood collected from other tubes, wrap tubes to prevent glass-to-glass contact between tubes. Examples of some ways to do this are to:
  - Use a gridded box wrapped with cardboard separating each tube
  - Place tubes in an absorbent sleeve and place inside a sealable polystyrene container or blood tube transport tube
- Ensure enough absorbent material is present between the primary receptacle and the gridded box or transport tube to absorb the entire contents of the primary receptacles. Use evidence tape to seal the closed gridded box or transport tube, writing initials half on the evidence tape and half on the closed gridded box or tube.
- Wrap the package containing specimens (e.g., the closed gridded box or transport tube) with additional absorbent material and place in a clear, waterproof plastic bag (secondary packaging) and seal. Ideally, this bag should be placed inside a white Tyvek Saf-T-Pak ® (or equivalent) sealed and the opening wrapped with a continuous strip of evidence tape initialed half on the packaging and half on the evidence tape. If not using a Tyvek Saf-T-Pak ® (or equivalent) the secondary packaging should be marked with evidence tape.
- It is important to ensure that two levels of evidence tape exist.
- According to 49 CFR 173.199(b), if specimens are to be transported by air, either the primary receptacle or the secondary packaging must be capable of withstanding, without leaking, an internal pressure producing a pressure differential of not less than 95 kPa (0.95
bar, 14 psi). Verify in advance that the manufacturer of either the blood tube or secondary packaging used in your facility is in compliance with the pressure differential requirement.

**Secondary Packaging for Urine cups**
- See the one-page color chart, “Instructions for shipping Urine Specimens to MDH after a Chemical-Exposure Event (PDF:419KB/1 page)” for a simplified schematic illustrating the procedures for packaging and shipping urine specimens.
- Separate each urine cup from other urine cups, or wrap urine cups to prevent contact between urine cups. For example you could use:
  - A gridded box lined and wrapped with absorbent material
  - Individually wrapped urine cups sealed inside a clear, waterproof plastic bag.
- Ensure enough absorbent material is present between the primary receptacle and the gridded box or plastic bag to absorb the entire contents of the primary receptacles. Use evidence tape to seal the closed gridded box or plastic bag, writing initials half on the evidence tape and half on the closed gridded box or plastic bag.
- Wrap the package containing specimens (e.g., the closed gridded box or plastic bag) with additional absorbent material and place in an additional clear, waterproof plastic bag (secondary packaging) and seal. Ideally, this bag should be placed inside a white Tyvek Saf-T-Pak® (or equivalent) sealed and the opening wrapped with a continuous strip of evidence tape initialed half on the packaging and half on the evidence tape. If not using a Tyvek Saf-T-Pak® (or equivalent) the secondary packaging should be marked with evidence tape.
- It is important to ensure that two levels of evidence tape exist.
- According to 49 CFR 173.199(b), *if specimens are to be transported by air*, either the primary receptacle or the secondary packaging must be capable of withstanding, without leaking, an internal pressure producing a pressure differential of not less than 95 kPa (0.95 bar, 14 psi). Verify in advance that the manufacturer of either the blood tube or secondary packaging used in your facility is in compliance with the pressure differential requirement.

**Outer Packaging Requirements for Shipping with a Private Courier**

*Note: please check with private courier for specific package labeling requirements*

**Blood tubes**
- Ensure that your courier is capable of shipping and delivering the specimens at 4°C to 8°C.
- Place the specimens into an over pack bag.
- Place “Patient Specimen Packing List and Chain-of-Custody for Blood” (PDF:62KB/2 pages)” form in a sealable plastic bag and put inside the over pack bag along with the specimens (link provides both blood and urine forms).
- Keep a copy of the chain-of-custody documents for your files.

**Urine cups**
- Ensure that specimens will remain frozen or will freeze during transport.
- Place the specimens in an over pack bag.
- Place the “Patient Specimen Packing List and Chain-of-Custody for Urine” (PDF:62KB/2 pages) form in a sealable plastic bag and put inside the over pack bag along with the specimens (link provides both blood and urine forms).
- Keep a copy of the chain-of-custody documents for your files.
Outer Packaging Requirements for Shipping with a Commercial Transporter

Use polystyrene insulated corrugated fiberboard shippers. Do not ship blood tubes and urine cups together in the same package.

**Blood tubes**
- Ship at 4°C to 8°C.
- For cushioning, place additional absorbent material in the bottom of the shipper.
- Add a single layer of refrigerator packs on top of absorbent material.
- Place the packaged boxes of specimens on top of the refrigerator packs.
- Use additional cushioning material to minimize shifting while the shipper is in transit.
- Place additional refrigerator packs on top of the secondary packaging.
- Place “**Patient Specimen Packing List and Chain-of-Custody for Blood**” (PDF:62KB/2 pages) form in a sealable plastic bag and put on top of packs inside the shipper (link provides both blood and urine forms).
- Keep a copy of the chain-of-custody documents for your files.
- Place lid on shipper and secure with shipping tape.
- Place your shipping address in the upper left-hand corner of the shipper top and put MDH’s receiving address in center (see pg. 5).
- Affix labels and markings adjacent to the shipper’s/consignee’s address that appears on the shipper.
- Place the UN 3373 label and the words “Biological Substance, Category B” adjacent to the label on the front of the shipper.

**Urine cups**
- Ensure that specimens will remain frozen or will freeze during transport.
- For cushioning, place additional absorbent material in the bottom of the shipper.
- Place a layer of dry ice on top of the absorbent material.
- Place packaged urine cups in the shipper.
- Use additional absorbent or cushioning material between wrapped urine cups to minimize shifting while shipper is in transit.
- Place an additional layer of dry ice on top of samples.
- Place the “**Patient Specimen Packing List and Chain-of-Custody for Urine**” (PDF:62KB/2 pages) form in a sealable plastic bag and put on top of dry ice inside the shipper (link provides both blood and urine forms).
- Keep a copy of the chain-of-custody documents for your files.
- Place lid on shipper and secure with shipping tape.
- Place your shipping address in the upper left-hand corner of the shipper top and put MDH’s receiving address in center (see pg. 5).
- Place the UN 3373 label and the words “Biological Substance, Category B” adjacent to the label on the front of the shipper.
- Place a Class 9/UN1845 hazard label on the same side of the shipper as the UN 3373 marking.
- If the proper shipping name, (either dry ice or carbon dioxide, solid) and 9/UN 1845 is not preprinted on the hazard label, add it in an area adjacent to the label.
- Note the weight of dry ice (in kg) on the preprinted area of the hazard label, or place that information adjacent to the class 9/UN 1845 hazard label.
• Orientation arrows are not required on a shipper containing “Biological substance, category B.” If you use arrows, be sure to orient the inner packaging so that closures are aligned with the arrows.
• If the shipper will be transported by a commercial air carrier, complete an airway bill. On the airway bill, note the proper shipping name and UN number for each hazardous material and identify a person responsible for the shipper per IATA packing instruction 650.

Preparing Documentation
• Since blood tubes and urine cups cannot be shipped together in the same package, prepare a separate “Patient Specimen Packing List and Chain-of-Custody” form for each.
• Photocopy the “Patient Specimen Packing List and Chain-of-Custody” forms and place each form (with specimen identification numbers) in a plastic zippered bag on top of the specimens before closing the lid of the polystyrene insulated corrugated fiberboard shipper or in the over pack bag if using a private courier.
• Maintain the original Chain-of-Custody forms at your institution. Each entity or organization handling the specimens is responsible for the specimens only during the time that it has control of the specimens.
• Each entity or organization receiving the specimens must sign-off on the chain-of-custody form of the entity or organization relinquishing the specimens to close that chain.

Note: When the individual relinquishing the specimens (relinquisher) and the individual receiving the specimens (receiver) are not together at the time of specimen transfer, the relinquisher must document on its chain-of-custody form that the receiver is, for example, FedEx (and must document the FedEx Tracking Number) or have the individual transporting the specimens sign the chain-of-custody to indicate that he or she has taken control of the specimens. Likewise, when the receiver receives the specimens, he or she will document on his or her chain-of-custody form that the relinquisher is FedEx (and provide the Tracking Number) or have the individual transporting the specimens sign the chain-of-custody form.

Shipping Specimens
• Please contact the MDH chemical response on-call phone number at 612-282-3750, prior to shipping samples.
• Ship the samples overnight to the following address:

Minnesota Department of Health
Public Health Laboratory Division
Attn: CT on-call Staff
601 Robert Street North
St. Paul, MN 55164-0899

Questions
If you have any questions or problems with specimen packaging or shipment, please call the MDH chemical response on-call phone number at 612-282-3750.