Chemical Terrorism Specimen Collection Procedures

July 2016

CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
	Clinical	Urine: Collect a minimum of 50 mL in plastic urine specimen cup with o-ring.	LC/MS/MS	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory.	Abrinine biomarker determination. 2 blank cups from each lot and type must also be provided.
Abrin/ Ricin Abrin toxin/ Ricin toxin– Abrinine/Ricine biomarker	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing DPHL/ODW trace metals drinking water kit.	LC/TOF ¹ ELISA ²	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	12-36 hours, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	LC/TOF ¹ ELISA ²	Store at room temperature in secondary container.	2 -4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	LC/TOF ¹ ELISA ²	Store at room temperature in secondary container.	2 -4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

Notify DPHL of any field characterization testing performed.

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CHEMICAL OR AGENT	SAMPL	E / SPECIMEN SELECTION	TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
	Clinical	Blood: Collect 2 x 4 mL (min. 8 mL) in plastic purple top K3EDTA blood tubes. Pediatrics: CONTACT DPHL PRIOR TO COLLECTION.	GC/MS: available.	Refrigerate at 2°C -10°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	Collection prior to antidote administration is preferred but not required. 2 blank tubes from each lot and type must also be provided.
Cyanide Cyanide salts Cyanogen chloride Isocyanide Cyanide- producing compounds	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing DPHL/ODW drinking water kit preserved with 0.1M NaOH.	GC/MS Wet Chemistry Test Strips	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	12-36 hours	
		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	GC/MS Test Strips	Store at room temperature in secondary container.	2-4 days plus shipment time to CDC or LRN laboratory,	Contact DPHL for further assistance.
		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	GC/MS Test Strips	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

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Trace Heavy Metals (Antimony, Arsenic, Barium, Beryllium, Cadmium*, Cesium, Chromium*, Cebuk Load*	Clinical	Blood: Collect 3 x 4 mL (min. 12 mL) in plastic purple top K ₃ EDTA blood tube. Collect 1 x 4 mL in plastic green top lithium heparin blood tube.	ICP/MS	Refrigerate at 2°C -6°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Urine: Collect a minimum of 50 mL in plastic urine specimen cup with orring.	ICP/MS – DRC	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 , plus shipment time to CDC or LRN laboratory	2 blank cups from each lot and type must also be provided.
Mercury*, Molybdenum, Platinum, Selenium, Strontium, Thallium, Tin, Tungsten, Uranium	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing DPHL/ODW trace metals drinking water kit.	ICP/MS 2D-IC	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	12-36 hours	
		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	ICP/MS	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
Vanadium) Heavy metal salts Heavy metal- containing compounds or materials		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	ICP/MS	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

* Only analyzed in blood for Clinical samples, to urine test available. Notify DPHL of any field characterization testing performed. Submitters must contact DPH Environmental Health Evaluation Branch concerning any suspected clinical exposure, environmental release, or suspected food contamination.

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Lewisites L, HL	Clinical	Urine: Collect minimum 50 mL in plastic urine specimen cup with o-ring.	LC-ICP/MS GC/MS/MS	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	Utilizes CVAA hydrolysis product for detection. 2 blank cups from each lot and type must also be provided.
	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing glass jar.	LC-ICP/MS GC/MS ³	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	2-4 days, plus shipment time to CDC or LRN laboratory	Utilizes CVAA hydrolysis product for detection.
		Powders, solids, or semi-solids: Collect minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	LC-ICP/MS GC/MS ³	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Utilizes CVAA hydrolysis product for detection.
		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	LC-ICP/MS GC/MS ³	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Utilizes CVAA hydrolysis product for detection.

Notify DPHL of any field characterization testing performed.

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Nerve Agents	Clinical	Urine: Collect a minimum of 25 mL - 50mL in plastic urine specimen cup with o-ring.	LC/MS/MS	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	Metabolite identification method. 2 blank cups from each lot and type must also be provided.
Nerve Agents Organo- Phosphorous Nerve Agents Sarin (GB), Soman (GD), Cyclohexyl- sarin (GF), Russian VX (rVX), VX Organo- phosphorous Pesticides	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing glass jar.	LC/MS/MS GC/MS Wet Chemistry Test strip/triage	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	LC/MS/ MS GC/MS Wet Chemistry Test strip/triage	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	LC/MS/ MS GC/MS Wet Chemistry Test strip/triage	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Nitrogen Mustards HN1 (bis(2-	Clinical	Urine: Collect a minimum of 25-50 mL in plastic urine specimen cup with oring.	LC/MS/MS	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	Utilizes hydrolysis products EDEA, MEDEA, and TEA for detection. 2 blank cups from each lot and type must also be provided.
	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing glass jar.	LC/MS/MS	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
chloroethyl)et hyl amine), HN2 (bis(2- chloroethyl)m ethyl amine)		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	LC/MS/MS	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
ethyl amine), and HN3 (tris(2- chloroethyl)a mine)		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	LC/MS/MS	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

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contamination.

CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Pesticides Dialkylphosphate, Thiophosphate, Dithiophosphate Metabolites, of Organophosphate Pesticides General Pesticide Screen Alachlor, Arochlor (1016, 1221, 1232, 1232, 1248, 1254, 1260), Aldrin, Atrazine, Butachlor, Chlorbenzilate.	Clinical	Urine: Collect minimum 50 mL in plastic urine specimen cup with o-ring.	GC/MS ¹ LC/MS/MS ¹	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	2 blank cups from each lot and type must also be provided.
	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing DPHL/ODW pesticides drinking water kit preserved with NaS ₂ O ₃ .	GC ⁵ GC/MS ⁵ LC/MS/MS ⁵ Test strip/triage	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
Chloradane, Chloroneb, Chlorothalonil, Cyanazine, DCPA, 4,4'- DDD, 4,4'-DDE, 4,4'- DDT, 4,4'-Dibromobiphenyl,		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	GC/MS ⁵ LC/MS/MS ⁵ Wet Chemistry Test strip/triage	Store at room temperature in secondary container.	2-4 days plus shipment time to CDC or LRN laboratory,	Contact DPHL for further assistance.
 A. Holstoniobipheny, Dieldrin, Endosulfan I, II, Endrin, Endrin Aldehyde, Etridiazole, HCH, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocylopentadi ene, Methoxychlor, Methoxychlor, Metribuzin, Permethrin, Propachlor, Simazine, Tribfluralin, Toxaphene 		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	GC/MS ⁵ LC/MS/MS ⁵ Wet Chemistry Test strip/triage	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION*		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Radioactive Elements Alpha spectroscopy: Americium 241 Californium 252 Plutonium 238 Radium 226 Uranium 238 ⁶ Beta counting: Strontium 90 ⁶ Gamma Spectroscopy: Cesium 137 ⁶ Americium 241 Cobalt 60 ⁶ Europium 154 Iridium 192 ⁶ Ruthenium 103 Ruthenium 106	Clinical	Urine: Collect a minimum of 50 mL in plastic urine specimen cup with O-ring.	ICP/MS ⁶ Test strip/triage Alpha and gamma spectroscopy ⁷	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	2 blank cups from each lot and type must also be provided.
	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing glass jar.	ICP/MS ³ Test strip/triage Alpha and gamma spectroscopy ⁷	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	12-36 hours, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	ICP/MS ³ Test strip/triage Alpha and gamma spectroscopy ^{3,7}	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	ICP/MS ^{3,7} Test strip/triage	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

*DPHL will refer radiological testing to a radiological contract laboratory through DEMA. All specimens received at DPHL must be screened for radioactivity prior to submission and/or acceptance by DPHL personnel.

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Riot Agents Chloro- acetophenone (CN) Chlorobenzyl- idenomelano	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing glass jar.	GC/MS ³	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	2-4 days plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
nitrile (CS), Chloropicrin (PS), Bromobenzyl-		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	GC/MS ³	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.
Bromobenzyl- cyanide (CA), Dibenzo- xazepine (CR) Vomiting Agents Adamsite (DM)		Liquids: Collect a minimum of 2 oz. in 15 or 50 mL plastic centrifuge tube.	GC/MS ³	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance.

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
Sulfur Mustards HD,H, HT, HL, HQ	Clinical	Urine: Collect a minimum 50 mL in plastic urine specimen cup with o-ring.	GC/MS/MS ¹	Freeze at -20°C to -80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	24 to 48 hours, plus shipment time to CDC or LRN laboratory	Utilizes SBMTE metabolite for detection. 2 blank cups from each lot and type must also be provided.
	Environmental	Drinking Water: Collect 1 bottle (1 L) utilizing glass jar.	GC/MS/MS ³ GC/MS ³	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	2-4 days, plus shipment time to CDC or LRN laboratory	
		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 15 or 50 mL plastic centrifuge tube.	GC/MS/MS ³ GC/MS ³	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	
		Liquids: Collect a minimum of 2 oz. in a 15 or 50 mL plastic centrifuge tube.	GC/MS/MS ³ GC/MS ³	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	

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CHEMICAL OR AGENT	SAMPLE / SPECIMEN SELECTION		TEST METHOD	TRANSPORT INSTRUCTIONS	PROCESSING TIME	COMMENTS
	Clinical	Blood: Collect 1 x 4 mL in plastic purple top K3EDTA blood tubes. Collect 2 x 4 mL in plastic green top lithium heparin blood tubes.	GC/MS	Refrigerate at 2°C -10°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	48 to 72 hours, plus shipment time to CDC or LRN laboratory	2 blank tubes from each lot and type must also be provided. Method available through LRN network, at DPHL.
VOCs Volatile Organic Compounds	Environmental	Drinking Water: Collect 3 vials (40 mL each) utilizing DPHL/ODW drinking water kit preserved with either Sodium thiosulfate (non-chlorinated) or Ascorbic acid (chlorinated), followed by field addition of HCI (pH<2).	GC/MS Wet Chemistry Test strip/triage	Refrigerate at 2°C -6°C following ODW and EPA guidelines.	12-36 hrs.	Contact DPHL for further assistance. 3 field blank bottles must also be prepared. Use appropriate blanks are based on chlorinated or non- chlorinated water.
drinking water 10 analytes in blood 38 analytes in		Powders, solids, or semi-solids: Collect a minimum of 1 tbsp of material in 8 oz. glass container.	GC/MS Wet Chemistry Test strip/triage	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Container blanks must also be provided for background analysis.
38 analytes in blood through LRN network		Liquids: Collect a minimum of 2 oz. in 8 oz. glass container.	GC/MS Wet Chemistry Test strip/triage	Store at room temperature in secondary container.	2-4 days, plus shipment time to CDC or LRN laboratory	Container blanks must also be provided for background analysis.

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Chemical Terrorism Specimen Collection Procedures

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CHEMICAL OR AGENT	SPECIMEN SELECTION FROM SAMPLES		TEST METHOD	TRANSPORT MEDIUM/ INSTRUCTIONS	PROCESSING TIME	COMMENTS
Unknown Chemical Exposure Any unknown or suspected chemical exposure – intentional or unintentional,	Clinical	Blood: Collect 3x4 mL (min. 12 mL) in plastic purple top K3EDTA blood tubes. Collect 1x4 mL in plastic green top lithium heparin blood tubes. (ADULT PATIENTS ONLY) Urine: Collect minimum 50 mL in plastic urine specimen cup with o-ring. (ALL PATIENTS)	GC/MS: available.* ICP/MS: available.* GC/MS: available.* ICP/MS: available.* LC/MS/MS: available.*	Refrigerate at 2°C - 10°C following IATA PI 650 and CDC Chemical Exposure Guidelines. Freeze at -20°C - 80°C following IATA PI 650 and CDC Chemical Exposure Guidelines.	48 to 72 hours, plus shipment time to CDC or LRN laboratory 24 to 48 hours, plus shipment time to CDC or LRN laboratory	 2 blank tubes from each lot and type must also be provided. Rapid toxicological testing is available through the LRN network. Limited at DPHL. 2 blank cups from each lot and type must also be provided. Rapid toxicological testing is available through the LRN network. Limited at DPHL.
threat related.	Environmental	Drinking Water: Utilize DPHL/ODW unknown contaminant drinking water kit.	GC/MS: available** ICP/MS: available** LC/MS/MS: available** Other Chemistry: available**	Refrigerate at 2°C - 6°C following ODW and EPA guidelines.	12-36 hours, plus shipment time to CDC or LRN laboratory	Contact DPHL for further assistance. **Methodology may be present at DPHL or ERLN network laboratories.
		Powders, solids, or semi-solids: Collect minimum of 1 tbsp of material in 8 oz. glass container.	GC/MS: available** ICP/MS: available** LC/MS/MS: available** Other Chemistry: available**	Store at room temperature in secondary container.	2 -4 days, plus shipment time to CDC or LRN laboratory	Container blanks must also be provided for background analysis. Contact DPHL for further assistance. **Methodology may be present at DPHL or ERLN network laboratories.
		Liquids: Collect a minimum of 2 oz. in 8 oz. glass container.	GC/MS: available** ICP/MS: available** LC/MS/MS: available** Other Chemistry: available**	Store at room temperature in secondary container.	2 -4 days, plus shipment time to CDC or LRN laboratory	Container blanks must also be provided for background analysis. Contact DPHL for further assistance. **Methodology may be present at DPHL or ERLN network laboratories.

Notify DPHL of any field characterization testing performed.

Submitters must contact DPH Environmental Health Evaluation Branch concerning any suspected clinical exposure, environmental release, or suspected food contamination

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