



OPAQ

Secretaría Técnica

Oficina del Director General Adjunto

S/545/2006

6 de febrero de 2006

ESPAÑOL

Original: INGLÉS

NOTA DE LA SECRETARÍA TÉCNICA

CUESTIONARIO SOBRE LA CAPACIDAD DE LOS ESTADOS MIEMBROS PARA ANALIZAR MUESTRAS BIOMÉDICAS

1. En los párrafos 16 y 17 de la Parte XI del Anexo sobre verificación de la Convención sobre las Armas Químicas, se estipula la obtención de muestras biomédicas durante las investigaciones realizadas por la OPAQ sobre el presunto empleo de armas químicas. El análisis de dichas muestras puede ayudar a los grupos de inspección a sacar conclusiones en relación con dicho presunto empleo.
2. A partir de las recomendaciones formuladas por el Consejo Consultivo Científico (CCC) en el informe de su sexto periodo de sesiones (SAB-6/1, de fecha 18 de febrero de 2004), el Director General creó un grupo de trabajo temporal sobre muestras biomédicas. En una reunión celebrada del 17 al 19 de noviembre de 2004, el grupo de trabajo temporal recomendó a la OPAQ “crear y alimentar un inventario de laboratorios de los Estados Miembros que trabajen en la esfera de los análisis biomédicos, y capacidad de los mismos”. En el informe de su séptimo periodo de sesiones, el CCC respaldó dicha recomendación (SAB-7/1, de fecha 11 de marzo de 2005).
3. En previsión de la labor que el grupo de trabajo temporal seguirá realizando en este ámbito, la Secretaría Técnica (en adelante, la “Secretaría”) ha elaborado un cuestionario, que figura en el anexo a la presente, sobre la capacidad de los Estados Miembros para analizar muestras biomédicas.
4. Se pide a las Autoridades Nacionales que remitan copia del cuestionario a los laboratorios que, en su opinión, puedan tener dicha capacidad.
5. Se pide a los laboratorios que cumplimenten el cuestionario y lo envíen al Laboratorio de la OPAQ, hasta el 31 de marzo de 2006, inclusive. Los cuestionarios habrán de remitirse a la siguiente dirección:

*Mr Mieczyslaw Sokolowski
Acting Head
OPCW Laboratory
Heulweg 28-30
2288 GN Rijswijk
The Netherlands*



Anexo (en inglés únicamente):

Questionnaire on the Capabilities of Member States regarding the Analysis of Biomedical Samples (Cuestionario sobre la capacidad de los Estados Miembros para analizar muestras biomédicas)

Appendix 1: Sampling and Analysis of Biomedical Samples for the Presence of Chemical Agents: Key Methods (Apéndice 1: Toma y análisis de muestras biomédicas para detectar la presencia de agentes químicos: Métodos clave)

Appendix 2: Analytical Methods in Use in Your Laboratory (Apéndice 2: Métodos analíticos utilizados en su laboratorio)

QUESTIONNAIRE ON THE CAPABILITIES OF MEMBER STATES REGARDING THE ANALYSIS OF BIOMEDICAL SAMPLES

1.	State Party		
2.	Laboratory name		
3.	Contact person	Family name:	First name:
4.	Contact address (Please do not give a post-office box number)	Street	
		Number	Post code
		City	
		Country	
5.	E-mail address		
6.	Telephone numbers, including country and city codes	Work	
		Mobile	
7.	Fax numbers, including country and city codes	Home	
		Work	
8.	Is your laboratory currently conducting research into techniques for analysing biomedical samples for the presence of scheduled chemicals, their free metabolites, or other conjugated biomarkers of exposure, such as DNA or protein adducts?	Yes ☐	No ☐
		If so, please provide a separate list of references to any publications by your laboratory in this area and, if possible, copies of any of these publications that have appeared within the last five years.	
9.	If your laboratory is active in biomedical sampling and analysis, please describe the quality-control systems it has in place, such as external accreditation, and recognition for Good Laboratory Practice.		
10.	Is your laboratory interested in participating in an effort to establish an OPCW capability to analyse biomedical samples?	Yes ☐	No ☐
		Please provide any comments in the space below.	

11.	Is your laboratory willing to be designated by the Director-General of the Secretariat to analyse biomedical samples in the context of OPCW activities and proficiency testing?	Yes ☐	No ☐
		Please provide any comments in the space below.	
12.	Is your laboratory willing to participate in inter-laboratory confidence-building exercises?	Yes ☐	No ☐
		Please provide any comments in the space below.	
13.	Is your laboratory willing to participate in proficiency testing with a view to being selected as an OPCW Designated Laboratory?	Yes ☐	No ☐
		Please provide any comments in the space below.	
14.	Is your laboratory willing to share its knowledge and skills regarding the analysis of biomedical samples—for example, by providing training to technicians from other Member States?	Yes ☐	No ☐
		Please provide any comments in the space below.	
15.	Would your laboratory be willing to analyse samples obtained by the OPCW in connection with an investigation into the alleged use of chemical weapons?	Yes ☐	No ☐
		Please provide any comments in the space below.	

Appendix 1

SAMPLING AND ANALYSIS OF BIOMEDICAL SAMPLES FOR THE PRESENCE OF CHEMICAL AGENTS: KEY METHODS¹

The following tables list analytical methods that the temporary working group on biomedical samples considers to be particularly useful. Please indicate, in the fourth column, what capability, if any, your laboratory has for each method listed. Please make any additional comments in the last column.

TABLE 1: ANALYTICAL METHODS TO CHECK FOR THE PRESENCE OF SULFUR MUSTARD

Sample Type	Key Biomarkers	Analytical Methods Currently Available	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Urine	Thiodiglycol (TDG) TDGO β -lyase metabolites	GC-MS-MS	☐	☐	
			☐	☐	
		LC-MS-MS	☐	☐	
			☐	☐	
Blood	Protein adducts: N-terminal valine on Hb	Chemical or enzymatic digestion, followed by: GC-MS or GC-MS-MS	☐	☐	
			☐	☐	
			☐	☐	
			☐	☐	

¹ Adapted from Appendix 6 to the report of the Seventh Session of the SAB (SAB-7/1).

Legend for abbreviations used in this Annex:

BA: Benzoic acid

BuChE: Butyryl-cholinesterase

BZ: 3-quinuclidinyl benzilate

CVAA: 2-chlorovinyl-arsenous acid

DNA: Deoxyribose nucleic acid

EI: Electron impact

ELISA: Enzyme-linked immunosorbent assay

GC-MS-MS: gas chromatography-mass spectrometry-mass spectrometry

Hb: Haemoglobin

HETE: Hydroxyethylthioethyl

HR: High resolution

LC-MS-MS: Liquid chromatography-mass spectrometry-mass spectrometry

Q: 3-quinuclidinol

TDGO: Thiodiglycol sulfoxide

Sample Type	Key Biomarkers	Analytical Methods Currently Available	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Blood, continued	Protein adducts: Histidine residues on Hb Cysteine residue on albumin Aspartic acid/glutamic acid residues on blood proteins and keratin	Chemical or enzymatic digestion, followed by: LC-tandem MS	☐	☐	
		LC-tandem MS	☐	☐	
		GC-MS	☐	☐	
Urine	DNA adducts: Alkylation of deoxyguanosine (N7)	LC-MS-MS for N7-HETE-guanine	☐	☐	
Blood	Alkylation of deoxyguanosine (N7)	ELISA for N7-HETE-guanosine-5'-phosphate	☐	☐	
	Other biomarkers		☐	☐	

TABLE 2: ANALYTICAL METHODS TO CHECK FOR THE PRESENCE OF NERVE AGENTS

Sample Type	Key Biomarkers	Analytical Methods Recommended	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Blood	Cholinesterase activity		☐	☐	
Blood	Fluoride reactivation method: Phosphylated BuChE (and other proteins)	GC-MS	☐	☐	
			☐	☐	
		GC-HR-MS with large-volume injection	☐	☐	
			☐	☐	
Blood	Analysis of phosphylated peptides: Phosphylated BuChE	LC-MS-MS (after enzymatic digestion of modified cholinesterase)	☐	☐	
Urine/serum	Hydrolysis products: Alkyl methyl-phosphonic acids (does not include tabun)	GC-MS-MS	☐	☐	
			☐	☐	
		LC-MS-MS	☐	☐	
			☐	☐	

Sample Type	Key Biomarkers	Analytical Methods Recommended	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
	Other biomarkers		☐	☐	

TABLE 3: ANALYTICAL METHODS TO CHECK FOR THE PRESENCE OF LEWISITE

Sample Type	Key Biomarkers	Analytical Methods Recommended	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Urine	CVAA	Solid-phase micro-extraction headspace sampling, followed by GC-MS with EI ionisation	☐	☐	
Blood	CVAA (globin bound and free)	GC-MS	☐	☐	
	Other biomarkers		☐	☐	

TABLE 4: ANALYTICAL METHODS TO CHECK FOR THE PRESENCE OF PHOSGENE

Sample Type	Key Biomarkers	Analytical Methods Recommended	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Blood	Protein adduct: Albumin peptide	LC-MS-MS	☐	☐	
	Other biomarkers		☐	☐	

TABLE 5: ANALYTICAL METHODS TO CHECK FOR THE PRESENCE OF CYANIDE

Sample Type	Key Biomarkers	Analytical Methods Recommended	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Blood	Cyanide itself	GC	☐	☐	
Urine	Cystine adduct SCN 2-amino-thiazoline, 4-carboxylic acid	HPLC GC-LC GC-LC	☐ ☐ ☐	☐ ☐ ☐	
	Other biomarkers		☐	☐	

TABLE 6: ANALYTICAL METHODS TO CHECK FOR THE PRESENCE OF BZ

Sample Type	Key Biomarkers	Analytical Methods Recommended	Is the Method Available in Your Laboratory?		Comments
			Yes	No	
Urine	BZ, BA Q	LC-MS-MS	☐	☐	
	Other biomarkers		☐	☐	

Appendix 2

ANALYTICAL METHODS IN USE IN YOUR LABORATORY²

Sample Type ³	Biomarker ⁴	Analytical Technique and Instrumentation ⁵	Comments ⁶

--- 0 ---

2 Please include additional copies of this page if necessary.

3 Blood, urine, and so on

4 Phosphylated BuChE, CVAA, and so on

5 GC-MS, LC-MS-MS, and so on

6 Please mention any relevant quality-control procedures, any accreditation the laboratory has earned in respect of this method, and so on.