



Verification Division  
S/1135/2013  
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ENGLISH only

**NOTE BY THE TECHNICAL SECRETARIAT**

**REPORT OF THE THIRTY-EIGHTH MEETING OF THE VALIDATION GROUP  
FOR THE UPDATING OF THE OPCW CENTRAL ANALYTICAL DATABASE  
24 AND 25 SEPTEMBER 2013**

1. The Validation Group (hereinafter “the Group”) met on 24 and 25 September 2013 to discuss the evaluation of new analytical data for possible inclusion in the OPCW Central Analytical Database (OCAD) and to consider matters related to it. Mr James Riches of the United Kingdom of Great Britain and Northern Ireland acted as Chairperson of the meeting.
2. The Group was informed that Mr Alexandre Bennett (United Kingdom) has been accepted as a new member of the mass spectrometry (MS) subgroup.
3. The Group was formally introduced to Mr Alexander Theologhidis who has taken over the role of OCAD co-ordinator.
4. The evaluators for the analytical techniques evaluated new data and sent their written reports to the coordinators for each analytical technique. The names of the coordinators who were present at the meeting, along with the technique for which each is responsible, are listed below:

Gas-chromatography (retention index) (GC(RI))      Mr Martin Söderström (Finland)

Mass spectrometry (MS)      Mr Sten-Åke Fredriksson (Sweden)

Infrared spectroscopy (IR)      Mr Armando Alcaraz (United States of America)

These coordinators provided an evaluation summary to the Group for discussion at the meeting. The evaluators finalised the evaluation of the analytical data and confirmed that the data approved is technically valid.

5. This report of the Group’s Thirty-Eighth Meeting presents the sets of validated analytical data of scheduled chemicals (see Annex 1) that are to be forwarded to the Director-General for appropriate action.
6. The Technical Secretariat informed the Group that the data on scheduled chemicals validated by the Group at its previous meeting had been approved by the Executive Council at its Seventy-Third Session (EC-73/DEC.2, dated 18 July 2013).



7. The Group recommended that the laboratories report the retention index in whole numbers. In addition, the laboratories are requested to provide retention values for the chemicals in their quality control mixture, along with the standard deviations and comparisons with the OCAD values. It is suggested that the data from at least five quality control measurements acquired during the same time period as the experimental data be submitted for evaluation.
8. A number of proposed changes to the Group's naming rules were agreed and the naming rules were updated accordingly (Version 5).
9. The Group discussed the inclusion in its working database of chemicals related to allegations of use such as riot control agents, non-scheduled degradation products, and chemical agent stabilisers. Mr Armando Alcaraz agreed to collate a list of chemical types from the Group that could be considered for evaluation and to distribute it to the Group for discussion before the next meeting.
10. The Group discussed how to submit MS/MS data in a common format. It was agreed that the National Institute of Standards and Technology (NIST) MS/MS database format could be suitable. Mr Gary Mallard agreed to provide the Group with details of how NIST collates data from different instruments before the next meeting.
11. The use of an external standard in negative ion liquid chromatography (LC)-MS/MS experiments was discussed. The chemical dibutyl phosphate was proposed as a candidate by Mr Martin Söderström. Members of the MS subgroup agreed to investigate the potential of this chemical before the next meeting.
12. Approximately 150 sets of MS, GC(RI), and IR data are available for the next meeting. Available data from all analytical techniques will be sent to the Group at least six weeks before the next scheduled Group meeting.
13. The next meeting is scheduled to take place on 1 and 2 April 2014. The evaluators agreed to send their written evaluation reports to the appointed coordinators no later than 17 March 2014. The evaluators have agreed to come to the meeting prepared to finalise the evaluation of the analytical data referred to in the previous paragraph.
14. Annex 3 to this report lists the evaluators.

Annexes:

- Annex 1: Lists of Approved Data Recommended for Inclusion in the OPCW Central Analytical Database
- Annex 2: Lists of Approved Non-Scheduled Data Relevant to the Chemical Weapons Convention
- Annex 3: List of Members of the Validation Group

## Annex 1

**LISTS OF APPROVED DATA RECOMMENDED FOR INCLUSION  
IN THE OPCW CENTRAL ANALYTICAL DATABASE**

Note: In the last column of the tables that follow, “A” means “accepted”; “B”, “accepted subject to minor corrections”.

**TABLE 1: LIST OF APPROVED MS DATA OF SCHEDULED CHEMICALS**

<b>OPCW Code</b>	<b>Chemical Name</b>	<b>Schedule</b>	<b>Decision</b>
04-2-0513r	2,2-Dimethylpropyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-2-0514r	Hexyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-2-0517r	Heptyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-2-0519r	1-Isopropyl-2-methylpropyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-2-0520r	Octyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
16-2-0174r	Ethyl 2-methoxy-1-methylethyl methylphosphonate	2.B.04	B
16-2-0176r	Ethyl 2-methoxy-1-methylethyl ethylphosphonate	2.B.04	B
16-2-0177r	Ethyl 2-methoxy-1-methylethyl propylphosphonate	2.B.04	B
16-2-0178br	Isopropyl 2-methoxy-1-methylethyl methylphosphonate	2.B.04	B
16-2-0179ar	Isopropyl 2-methoxy-1-methylethyl ethylphosphonate	2.B.04	B
16-2-0179br	Isopropyl 2-methoxy-1-methylethyl ethylphosphonate	2.B.04	B
16-2-0187ar	1,2-Dimethylpropyl 2-methoxyethyl propylphosphonate	2.B.04	A
16-2-0189ar	Cyclopentyl 2-methoxy-1-methylethyl propylphosphonate	2.B.04	B
16-2-0189br	Cyclopentyl 2-methoxy-1-methylethyl propylphosphonate	2.B.04	B
16-2-0192r	2-Isopropoxyethyl methyl ethylphosphonate	2.B.04	A
16-2-0194r	2-Isopropoxyethyl methyl propylphosphonate	2.B.04	A
16-2-0196r	Ethyl 2-isopropoxyethyl methylphosphonate	2.B.04	B
16-2-0197r	Ethyl 2-isopropoxyethyl ethylphosphonate	2.B.04	B
16-2-0198r	Ethyl 2-isopropoxyethyl propylphosphonate	2.B.04	B
16-2-0199r	2-Isopropoxyethyl isopropyl methylphosphonate	2.B.04	A
16-2-0202r	2-Isopropoxyethyl propyl methylphosphonate	2.B.04	A
16-2-0203r	2-Isopropoxyethyl propyl ethylphosphonate	2.B.04	A
16-2-0204r	2-Isopropoxyethyl propyl propylphosphonate	2.B.04	A
28-2-0100	N,N-Dimethyl-P-methylphosphonamidothionochloridate	2.B.04	A
28-2-0101	Methyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0102	Methyl-d3 N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0103	Ethyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0105	Propyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0106	Isopropyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0107	Butyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0108	Pentyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0109	Hexyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0110b	1-Methylbutyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A

OPCW Code	Chemical Name	Schedule	Decision
28-2-0112	Cyclohexyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0113	Phenyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0114	4-Methylphenyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0115	S-Ethyl N,N-dimethyl-P-methylphosphonamidothiolothonate	2.B.04	A
28-2-0116	S-Propyl N,N-dimethyl-P-methylphosphonamidothiolothonate	2.B.04	B
28-2-0117	S-Isopropyl N,N-dimethyl-P-methylphosphonamidothiolothonate	2.B.04	B
28-2-0118	S-Butyl N,N-dimethyl-P-methylphosphonamidothiolothonate	2.B.04	A
28-2-0119	S-Pentyl N,N-dimethyl-P-methylphosphonamidothiolothonate	2.B.04	B
28-2-0121a	N,N-Dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-chloridate	2.B.04	A
28-2-0121b	N,N-Dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-chloridate	2.B.04	A
28-2-0122a	N,N,N',N'-Tetramethyl-P,P'-dimethylpyrophosphonodiamidodithionate	2.B.04	A
28-2-0122b	N,N,N',N'-Tetramethyl-P,P'-dimethylpyrophosphonodiamidodithionate	2.B.04	A
28-2-0123	S-Butyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-thiolate	2.B.04	A
28-2-0124	S-Pentyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-thiolate	2.B.04	B
28-2-0125	Hexyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	A
28-2-0126a	Phenyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	A
28-2-0126b	Phenyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	A
28-2-0127a	4-Methylphenyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	A
28-2-0127b	4-Methylphenyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	A
28-2-0128a	Diphenyl dimethylpyrophosphonodithionate	2.B.04	A
28-2-0128b	Diphenyl dimethylpyrophosphonodithionate	2.B.04	A
28-2-0129a	Bis(4-methylphenyl) dimethylpyrophosphonodithionate	2.B.04	A
28-2-0129b	Bis(4-methylphenyl) dimethylpyrophosphonodithionate	2.B.04	A
28-2-0130	Dicyclohexyl dimethylpyrophosphonodithionate	2.B.04	A
28-2-0131	Dipentyl dimethylpyrophosphonodithionate	2.B.04	A
28-2-0132	S-Propyl methylphosphonothiolothonchloridate	2.B.04	A
28-2-0133	O-Butyl S-ethyl methylphosphonothiolothonate	2.B.04	A
28-2-0134	S-Ethyl O-pentyl methylphosphonothiolothonate	2.B.04	B
28-2-0135	O-sec-Butyl S-propyl methylphosphonothiolothonate	2.B.04	A
28-2-0136	O-Pentyl S-propyl methylphosphonothiolothonate	2.B.04	A

OPCW Code	Chemical Name	Schedule	Decision
28-2-0137	Dipentyl methylphosphonodithiolothionate	2.B.04	A
28-2-0138	S-Ethyl O-pentyl P,P'-dimethyldiphosphonodithiono-P-thiolate	2.B.04	A
28-2-0139	Bis(S-propyl) dimethylpyrophosphonothiolodithionate	2.B.04	A
28-2-0140	Bis(S-butyl) dimethylpyrophosphonothiolodithionate	2.B.04	A
28-2-0141	Bis(S-pentyl) dimethylpyrophosphonothiolodithionate	2.B.04	A
28-2-0142a	O-sec-Butyl S-propyl P,P'-dimethyldiphosphonodithiono-P'-thiolate	2.B.04	A
28-2-0144	O-Butyl S-ethyl methylphosphonothiolate	2.B.04	A
28-2-0145	S-Ethyl O-pentyl methylphosphonothiolate	2.B.04	A
28-2-0146a	O-sec-Butyl S-ethyl methylphosphonothiolate	2.B.04	A
28-2-0146b	O-sec-Butyl S-ethyl methylphosphonothiolate	2.B.04	A
28-2-0147a	S-Ethyl O-1,2-dimethylpropyl methylphosphonothiolate	2.B.04	A
28-2-0147b	S-Ethyl O-1,2-dimethylpropyl methylphosphonothiolate	2.B.04	A
28-2-0148	S-Ethyl O-2-methylbutyl methylphosphonothiolate	2.B.04	B
28-2-0149	O-Butyl S-propyl methylphosphonothiolate	2.B.04	A
28-2-0150	O-Butyl S-isopropyl methylphosphonothiolate	2.B.04	A
28-2-0151a	O-sec-Butyl S-isopropyl methylphosphonothiolate	2.B.04	A
28-2-0151b	O-sec-Butyl S-isopropyl methylphosphonothiolate	2.B.04	A
28-2-0152	Bis(methyl-d3) methylphosphonate	2.B.04	A
28-2-0153	Dipentyl dimethylpyrophosphonate	2.B.04	A
28-2-0154	Dihexyl dimethylpyrophosphonate	2.B.04	A
28-2-0156	Bis(2-methylbutyl) dimethylpyrophosphonate	2.B.04	A
28-2-0157a	Bis(1-methylbutyl) dimethylpyrophosphonate	2.B.04	A
28-2-0157b	Bis(1-methylbutyl) dimethylpyrophosphonate	2.B.04	A
28-2-0157c	Bis(1-methylbutyl) dimethylpyrophosphonate	2.B.04	A
28-2-0157d	Bis(1-methylbutyl) dimethylpyrophosphonate	2.B.04	A
28-2-0157e	Bis(1-methylbutyl) dimethylpyrophosphonate	2.B.04	A
28-2-0158a	Bis(1,2-dimethylpropyl) dimethylpyrophosphonate	2.B.04	A
28-2-0158b	Bis(1,2-dimethylpropyl) dimethylpyrophosphonate	2.B.04	A
28-2-0158c	Bis(1,2-dimethylpropyl) dimethylpyrophosphonate	2.B.04	A
28-2-0158d	Bis(1,2-dimethylpropyl) dimethylpyrophosphonate	2.B.04	A
28-2-0158e	Bis(1,2-dimethylpropyl) dimethylpyrophosphonate	2.B.04	A
28-2-0159	N,N-Dimethyl-P-ethylphosphonamidothionochloridate	2.B.04	A
28-2-0160	Methyl N,N-dimethyl-P-ethylphosphonamidothionate	2.B.04	A
28-2-0162	Ethyl N,N-dimethyl-P-ethylphosphonamidothionate	2.B.04	A
28-2-0164	N,N,N',N'-Tetramethyl-P-ethylphosphonodiamidodithionate	2.B.04	A
28-2-0165a	N,N,N',N'-Tetramethyl-P,P'-diethylpyrophosphonodiamidodithionate	2.B.04	A
28-2-0165b	N,N,N',N'-Tetramethyl-P,P'-diethylpyrophosphonodiamidodithionate	2.B.04	A
28-2-0166b	Methyl N,N-dimethyl-P,P'-diethyldiphosphono-P-amidodithionate-P'-thionate	2.B.04	A
28-2-0167a	Ethyl N,N-dimethyl-P,P'-diethyldiphosphono-P-amidodithionate-P'-thionate	2.B.04	A
28-2-0168a	Ethyl-d5 N,N-dimethyl-P,P'-diethyldiphosphono-P-amidodithionate-P'-thionate	2.B.04	A

OPCW Code	Chemical Name	Schedule	Decision
28-2-0168b	Ethyl-d5 N,N-dimethyl-P,P'-diethyldiphosphono-P-amidothionate-P'-thionate	2.B.04	A
28-2-0169	O,S-Dimethyl ethylphosphonothiolothionate	2.B.04	A
28-2-0170	O,S-Bis(methyl-d3) ethylphosphonothiolothionate	2.B.04	A
28-2-0171	Dimethyl ethylphosphonodithiolothionate	2.B.04	A
28-2-0172	Bis(methyl-d3) ethylphosphonodithiolothionate	2.B.04	A
28-2-0173a	Methyl P,P'-diethyldiphosphonodithiono-P'-chloridate	2.B.04	A
28-2-0173b	Methyl P,P'-diethyldiphosphonodithiono-P'-chloridate	2.B.04	A
28-2-0174	O,S'-Dimethyl P,P'-diethyldiphosphono-P-thionate-P'-thiolothionate	2.B.04	A
28-2-0175	O,S'-Bis(methyl-d3) P,P'-diethyldiphosphono-P-thionate-P'-thiolothionate	2.B.04	A
28-2-0176	Bis(ethyl-d5) P,P'-diethylpyrophosphonodithionate	2.B.04	A

**TABLE 2: LIST OF APPROVED INFRARED DATA**

OPCW Code	Chemical Name	Schedule	Decision
04-1-0335v:r	2,2-Dimethylpropyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-1-0336v:r	Hexyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-1-0339v:r	Heptyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-1-0341v:r	1-Isopropyl-2-methylpropyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-1-0342v:r	Octyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A

**TABLE 3: LIST OF APPROVED GC(RI) DATA**

Note: A "1" under the "Column" heading of GC(RI) data means an HP5 or an SE54 column and a "2" means a DB-5MS column.

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	RI(d)	RI(e)	Decision
17-4-0158	(5-Ethyl-2-methyl-2-oxido-1,3,2-dioxaphosphinan-5-yl)methyl methyl phosphonate	2.B.04	1	2061	2091				A
28-4-0103	N,N-Dimethyl-P-methylphosphonamidodithionochloridate	2.B.04	1	1170					A
28-4-0104	Methyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1107					A
28-4-0105	Methyl-d3 N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1112					B
28-4-0106	Ethyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1164					A
28-4-0107	Ethyl-d5 N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1166					B
28-4-0108	Propyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1261					A
28-4-0109	Isopropyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1215					A
28-4-0110	Butyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1352					A
28-4-0111	Pentyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1455					A
28-4-0112	Hexyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1557					A
28-4-0113	1-Methylbutyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1374	1378				A
28-4-0114	Allyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1254					A
28-4-0115	Cyclohexyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1594					A
28-4-0116	Phenyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1639					A
28-4-0117	4-Methylphenyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1759					A
28-4-0118	S-Ethyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1388					A
28-4-0121	S-Butyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1581					A
28-4-0122	S-Pentyl N,N-dimethyl-P-methylphosphonamidodithionate	2.B.04	1	1685					B
28-4-0123	N,N,N'-Tetramethyl-P-methylphosphonothiono diamide	2.B.04	1	1276					A
28-4-0124	N,N-Dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-chloridate	2.B.04	1	1593	1620				A
28-4-0125	N,N,N',N'-Tetramethyl-P,P'-dimethylpyrophosphondiamidodithionate	2.B.04	1	1749	1762				B
28-4-0126	S-Butyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-thiolate	2.B.04	1	2072					B
28-4-0127	S-Pentyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate-P'-thiolate	2.B.04	1	2170					B
28-4-0128	Hexyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	1	2047					B

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	RI(d)	RI(e)	Decision
28-4-0129	Phenyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	1	2120	2136				B
28-4-0130	4-Methylphenyl N,N-dimethyl-P,P'-dimethyldiphosphonodithiono-P-amidate	2.B.04	1	2234	2247				B
28-4-0131	Diphenyl dimethylpyrophosphonodithionate	2.B.04	1	2454	2479				A
28-4-0132	Bis(4-methylphenyl) dimethylpyrophosphonodithionate	2.B.04	1	2656	2690				A
28-4-0134	Dipentyl dimethylpyrophosphonodithionate	2.B.04	1	2087					A
28-4-0135	S-Propyl methylphosphonothiochloridate	2.B.04	1	1304					B
28-4-0136	O-Butyl S-ethyl methylphosphonothiothionate	2.B.04	1	1442					A
28-4-0137	S-Ethyl O-pentyl methylphosphonothiothionate	2.B.04	1	1543					B
28-4-0138	O-sec-Butyl S-propyl methylphosphonothiothionate	2.B.04	1	1468					A
28-4-0139	O-Pentyl S-propyl methylphosphonothiothionate	2.B.04	1	1630					A
28-4-0140	Dipentyl methylphosphonodithiothionate	2.B.04	1	2059					A
28-4-0141	S-Ethyl O-pentyl P,P'-dimethyldiphosphonodithiono-P-thiolate	2.B.04	1	2035					B
28-4-0142	Bis(S-propyl) dimethylpyrophosphonothiodithionate	2.B.04	1	2155					A
28-4-0143	Bis(S-butyl) dimethylpyrophosphonothiodithionate	2.B.04	1	2343					A
28-4-0144	Bis(S-pentyl) dimethylpyrophosphonothiodithionate	2.B.04	1	2528					B
28-4-0145	O-sec-Butyl S-propyl P,P'-dimethyldiphosphonodithiono-P-thiolate	2.B.04	1	1956	1967				B
28-4-0147	O-Butyl S-ethyl methylphosphonothiolate	2.B.04	1	1366					A
28-4-0148	S-Ethyl O-pentyl methylphosphonothiolate	2.B.04	1	1465					A
28-4-0149	O-sec-Butyl S-ethyl methylphosphonothiolate	2.B.04	1	1292	1296				A
28-4-0150	S-Ethyl O-1,2-dimethylpropyl methylphosphonothiolate	2.B.04	1	1359	1367				A
28-4-0151	S-Ethyl O-2-methylbutyl methylphosphonothiolate	2.B.04	1	1422					B
28-4-0152	O-Butyl S-propyl methylphosphonothiolate	2.B.04	1	1453					A
28-4-0153	O-Butyl S-isopropyl methylphosphonothiolate	2.B.04	1	1389					A
28-4-0154	O-sec-Butyl S-isopropyl methylphosphonothiolate	2.B.04	1	1313	1318				A
28-4-0155	Bis(methyl-d3) methylphosphonate	2.B.04	1	884					B
28-4-0156	Dipentyl dimethylpyrophosphonate	2.B.04	1	1953					A
28-4-0157	Dihexyl dimethylpyrophosphonate	2.B.04	1	2149					A
28-4-0159	Bis(2-methylbutyl) dimethylpyrophosphonate	2.B.04	1	1867					B
28-4-0160	Bis(1-methylbutyl) dimethylpyrophosphonate	2.B.04	1	1762	1768	1785	1803	1804	B



OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	RI(d)	RI(e)	Decision
28-4-0161	Bis(1,2-dimethylpropyl) dimethylpyrophosphonate	2.B.04	1	1733	1744	1756	1761	1779	A
28-4-0162	N,N-Dimethyl-P-ethylphosphonamidothionochloridate	2.B.04	1	1244					A
28-4-0163	Methyl N,N-dimethyl-P-ethylphosphonamidothionate	2.B.04	1	1185					A
28-4-0164	Methyl-d3 N,N-dimethyl-P-ethylphosphonamidothionate	2.B.04	1	1181					B
28-4-0165	Ethyl N,N-dimethyl-P-ethylphosphonamidothionate	2.B.04	1	1233					A
28-4-0166	Ethyl-d5 N,N-dimethyl-P-ethylphosphonamidothionate	2.B.04	1	1230					B
28-4-0167	N,N,N',N'-Tetramethyl-P-ethylphosphonodiamidothionate	2.B.04	1	1345					A
28-4-0168	N,N,N',N'-Tetramethyl-P-P'-diethylpyrophosphonodiamidodithionate	2.B.04	1	1882	1900				A
28-4-0169	Methyl N,N-dimethyl-P,P'-diethyl/diphosphono-P-amidothionate-P'-thionate	2.B.04	1	1756	1762				B
28-4-0170	Ethyl N,N-dimethyl-P,P'-diethyl/diphosphono-P-amidothionate-P'-thionate	2.B.04	1	1794	1800				B
28-4-0171	Ethyl-d5 N,N-dimethyl-P,P'-diethyl/diphosphono-P-amidothionate-P'-thionate	2.B.04	1	1791	1797				B
28-4-0172	O,S-Dimethyl ethylphosphonothiolothionate	2.B.04	1	1219					B
28-4-0173	O,S-Bis(methyl-d3) ethylphosphonothiolothionate	2.B.04	1	1213					B
28-4-0174	Dimethyl ethylphosphonodithiolothionate	2.B.04	1	1450					A
28-4-0175	Bis(methyl-d3) ethylphosphonodithiolothionate	2.B.04	1	1448					B
28-4-0176	Methyl P,P'-diethyl/diphosphonodithiono-P'-chloridate	2.B.04	1	1605	1609				B
28-4-0177	O,S'-Dimethyl P,P'-diethyl/diphosphono-P-thionate-P'-thiolothionate	2.B.04	1	1817					B
28-4-0178	O,S'-Bis(methyl-d3) P,P'-diethylphosphono-P-thionate-P'-thiolothionate	2.B.04	1	1812					B
28-4-0179	Bis(ethyl-d5) P,P'-diethylpyrophosphonodithionate	2.B.04	1	1684					B

## Annex 2

## LISTS OF APPROVED NON-SCHEDULED DATA RELEVANT TO THE CHEMICAL WEAPONS CONVENTION

TABLE 1: LIST OF APPROVED GC(RI) DATA FOR DERIVATIVES OF SCHEDULED CHEMICALS

OPCW Code	Chemical Name	Schedule	Associated Schedule	Column	RI(a)	Decision
08-4-0063	2-(2-Chlorovinyl)-1,3,2-dithiarsolane	DS	1.A.05	1	1558	A
08-4-0065	2-(2-Chlorovinyl)-5-methyl-1,3,2-dithiarsole	DS	1.A.05	1	2020	A

TABLE 2: LIST OF APPROVED GC(RI) DATA FOR NON-SCHEDULED CHEMICALS

OPCW Code	Chemical Name	Schedule	Column	RI(a)	Decision
19-4-0019	4-Ethyl-2,6,7-trioxa-1-phosphabicyclo[2.2.2]octane 1-oxide	NS	1	1832	A

## Annex 3

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