

**NOTE BY THE TECHNICAL SECRETARIAT****REPORT OF THE FOURTY-FIFTH MEETING OF THE VALIDATION GROUP
FOR THE UPDATING OF THE OPCW CENTRAL ANALYTICAL DATABASE
29 AND 30 MARCH 2017**

1. The Validation Group (hereinafter “the Group”) met on 29 and 30 March 2017 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 served as Chairperson of the meeting.
2. 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 was responsible, are listed below:

Gas chromatography (retention index) (GC(RI))	Mr Gary Mallard (acting coordinator) (United States of America)
Mass spectrometry (MS)	Mr Alexandre Bennett (United Kingdom of Great Britain and Northern Ireland)
Infrared (IR) spectroscopy	Mr Armando Alcaraz (United States of America)
Nuclear magnetic resonance (NMR) spectroscopy	Mr Damian Magiera (Germany)

3. The coordinators provided an evaluation summary of the data presented to the Group for discussion at the meeting. The evaluators finalised the evaluation of the analytical data and confirmed that the approved data is technically valid.
4. The Group welcomed the following four new members:
 - (a) Ms Shilei Liu from the Research Institute of Chemical Defence (RICD) of China has joined the MS subgroup;
 - (b) Mr Jijun Tang from the Academy of Military Medical Science (AMMS) of China has joined the GC(RI) subgroup;
 - (c) Mr Dušan Trefilík from the Chemical Department of the 31st Radiological Chemical and Biological Defence Regiment of the Czech Republic has joined the MS subgroup; and



- (d) Mr Brian Paul Mayer from the Lawrence Livermore National Laboratory (LLNL) of the United States of America has joined the NMR subgroup.
5. The Group accepted the resignations of Mrs Sarah Chinn (United States of America) from the NMR subgroup, Mr Jingquan Liu (China) from the MS subgroup, and Mr Martin Söderström (Finland) from the GC(RI) subgroup. The Group acknowledged the support of all these contributors, especially Mr Martin Söderström, who has contributed to the development of the OCAD for 23 years.
 6. Mr Ferdinand Visser (South Africa) agreed to coordinate the GC(RI) subgroup from the Forty-Seventh Meeting onwards, following the resignation of Mr Martin Söderström.
 7. Mr Alexandre Bennett (United Kingdom of Great Britain and Northern Ireland) agreed to collate and coordinate MS/MS data through the MS subgroup following the resignation of Mr Martin Söderström.
 8. This report of the Forty-Fifth Meeting of the Group presents the sets of validated analytical data of scheduled chemicals to be forwarded to the Director-General for appropriate action (Annex 1).
 9. The Group discussed the list of non-scheduled chemicals from the Validation Group Working Database recommended for inclusion in the OCAD and forwarded to the Director-General for appropriate action following the Forty-Fourth Meeting of the Group. It was agreed that a set of these chemicals (Annex 2) will be removed from the list.
 10. Changes to the “Procedures for the Evaluation of Data to be Included in the OPCW Central Analytical Database” (S/969/2011, dated 2 November 2011) were agreed by the Group and forwarded to the Technical Secretariat for appropriate action.
 11. Mr Harri Koskela (Finland) presented the NMR subgroup’s work on evaluating suitable electronic submission formats for NMR data. The choice of the JCAMP-DX format and the use of JSpecView software were explained clearly and accepted by the Group.
 12. The Group discussed Raman data collection and possible inclusion in the OCAD. It was agreed that the technique would be designated “technique number 6” and that the IR subgroup would work on submission and evaluation criteria at future meetings.
 13. Available data from all analytical techniques will be sent to the Group at least six weeks before its next scheduled meeting.
 14. The next meeting of the Group is scheduled to take place on 27 and 28 September 2017. The evaluators agreed to send their evaluation reports to the appointed coordinators no later than 13 September 2017. The evaluators have agreed to come to the meeting prepared to finalise the evaluation of the analytical data referred to in the previous paragraph.
 15. Annex 3 to this report lists the members and evaluators of the Group.

Annexes:

- Annex 1: Lists of Approved Data Recommended for Inclusion in the OPCW Central Analytical Database
- Annex 2: List of Data to be Removed from Annex 2 of the Report of the Forty-Fourth Meeting of the Validation Group (S/1433/2016)
- 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

OPCW Code	Chemical Name	Schedule	Decision
04-2-0580	1-Ethylpropyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
07-2-3543	Propyl S-2-N-methyl-N-propylaminoethyl propylphosphonothiolate	1.A.03	A
07-2-3544	Methyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3545	Methyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3546	Methyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3547	Methyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3548	Methyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3549	Methyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3550	Ethyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3553	Ethyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3554	Ethyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3555	Ethyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3556	Propyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3557	Propyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3558	Propyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3559	Propyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3560	Propyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3561	Propyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3562	Isopropyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A

OPCW Code	Chemical Name	Schedule	Decision
07-2-3563	Isopropyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3564	Isopropyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3565	Isopropyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3566	Isopropyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3567	Isopropyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3568	Butyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3569	Butyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3570	Butyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3571	Butyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3573	Butyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3574a	sec-Butyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3574b	sec-Butyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3575a	sec-Butyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3575b	sec-Butyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3576a	sec-Butyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3576b	sec-Butyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3577a	sec-Butyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3577b	sec-Butyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3578a	sec-Butyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3578b	sec-Butyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3579a	sec-Butyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3579b	sec-Butyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3580	Isobutyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A

OPCW Code	Chemical Name	Schedule	Decision
07-2-3582	Isobutyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3583	Isobutyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3584	Isobutyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3585	Isobutyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3586	Cyclohexyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3587	Cyclohexyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3588	Cyclohexyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3589	Cyclohexyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3590	Cyclohexyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3591	Cyclohexyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3592a	Pinacolyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3592b	Pinacolyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3593a	Pinacolyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3593b	Pinacolyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3594a	Pinacolyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3594b	Pinacolyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3596a	Pinacolyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3596b	Pinacolyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3597a	Pinacolyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
07-2-3597b	Pinacolyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	A
16-2-0268r	2,2-Dimethylpropyl propyl methylphosphonate	2.B.04	A
16-2-0269r	2,2-Dimethylpropyl propyl ethylphosphonate	2.B.04	A
16-2-0281ar	1,2-Dimethylpropyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0291ar	1,2-Dimethylpropyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A

OPCW Code	Chemical Name	Schedule	Decision
16-2-0297ar	2-Ethoxy-1-methylethyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0297br	2-Ethoxy-1-methylethyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0298	3-Methoxypropyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0299	Cyclobutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0300	2-Methylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0301	Hexyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0302a	1-Methylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0302b	1-Methylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0304	2-Propoxyethyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0305	3-Ethoxypropyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0306	4-Methoxybutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0309	3-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0310	2-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0311a	1-Ethylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0311b	1-Ethylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0312a	1-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0312b	1-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	A
16-2-0313	3-Methoxypropyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0315	2-Methylbutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0316	Hexyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0318	3-Methoxybutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0319	2-Propoxyethyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0320	3-Ethoxypropyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0322	Cyclobutylmethyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0323	4-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0324	3-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0325	2-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0326a	1-Ethylbutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0326b	1-Ethylbutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0327a	1-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
16-2-0327b	1-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	A
28-2-0230	Methylphosphonoselenic dichloride	2.B.04	A
28-2-0231	Methyl methylphosphonoselenochloridate	2.B.04	A
28-2-0232	Ethyl methylphosphonoselenochloridate	2.B.04	A
28-2-0233	Ethyl-d5 methylphosphonoselenochloridate	2.B.04	A
28-2-0234	Propyl methylphosphonoselenochloridate	2.B.04	A
28-2-0235	Isopropyl methylphosphonoselenochloridate	2.B.04	A
28-2-0237	Butyl methylphosphonoselenochloridate	2.B.04	A

OPCW Code	Chemical Name	Schedule	Decision
28-2-0238a	sec-Butyl methylphosphonoselenochloridate	2.B.04	A
28-2-0238b	sec-Butyl methylphosphonoselenochloridate	2.B.04	A
28-2-0239	Phenyl methylphosphonoselenochloridate	2.B.04	A
28-2-0240	Dimethyl methylphosphonoselenoate	2.B.04	A
28-2-0241	Bis(methyl-d3) methylphosphonoselenoate	2.B.04	A
28-2-0242	Diethyl methylphosphonoselenoate	2.B.04	A
28-2-0243	Bis(ethyl-d5) methylphosphonoselenoate	2.B.04	A
28-2-0244	Dipropyl methylphosphonoselenoate	2.B.04	A
28-2-0245	Diisopropyl methylphosphonoselenoate	2.B.04	A
28-2-0246	Bis(isopropyl-d7) methylphosphonoselenoate	2.B.04	A
28-2-0247	Dibutyl methylphosphonoselenoate	2.B.04	A
28-2-0248a	Bis(sec-butyl) methylphosphonoselenoate	2.B.04	A
28-2-0248b	Bis(sec-butyl) methylphosphonoselenoate	2.B.04	A
28-2-0250	Ethyl propyl methylphosphonoselenoate	2.B.04	A
28-2-0251	Ethyl isopropyl methylphosphonoselenoate	2.B.04	A
28-2-0252a	sec-Butyl ethyl methylphosphonoselenoate	2.B.04	A
28-2-0252b	sec-Butyl ethyl methylphosphonoselenoate	2.B.04	A
28-2-0253	Butyl propyl methylphosphonoselenoate	2.B.04	A
28-2-0254a	sec-Butyl propyl methylphosphonoselenoate	2.B.04	A
28-2-0254b	sec-Butyl propyl methylphosphonoselenoate	2.B.04	A
28-2-0255	Butyl isopropyl methylphosphonoselenoate	2.B.04	A

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

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)	Decision
04-4-0389	1-Ethylpropyl N,N-dimethylphosphoramidocyanidate	1.A.02	1	1342			A
07-4-3407	Methyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1582			A
07-4-3408	Methyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1661			A
07-4-3409	Methyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1662			A
07-4-3410	Methyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1720			A
07-4-3411	Methyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1706			A
07-4-3412	Methyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1776			A
07-4-3413	Ethyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1624			A
07-4-3416	Ethyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1758			A
07-4-3417	Ethyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1744			A
07-4-3418	Ethyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1814			A
07-4-3419	Propyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1710			A
07-4-3420	Propyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1788			A
07-4-3421	Propyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1788			A

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	Decision
07-4-3422	Propyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1843			A
07-4-3423	Propyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1828			A
07-4-3424	Propyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1896			A
07-4-3425	Isopropyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1631			A
07-4-3426	Isopropyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1707			A
07-4-3427	Isopropyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1706			A
07-4-3428	Isopropyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1762			A
07-4-3429	Isopropyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1748			A
07-4-3430	Isopropyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1815			A
07-4-3431	Butyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1801			A
07-4-3432	Butyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1878			A
07-4-3433	Butyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1879			A
07-4-3434	Butyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1933			A
07-4-3436	Butyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1986			A
07-4-3437	sec-Butyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1721	1727		A

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	Decision
07-4-3438	sec-Butyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1797	1802		A
07-4-3439	sec-Butyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1797	1801		A
07-4-3440	sec-Butyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1853	1858		A
07-4-3441	sec-Butyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1837	1842		A
07-4-3442	sec-Butyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1904	1909		A
07-4-3443	Isobutyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1756			A
07-4-3445	Isobutyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1832			A
07-4-3446	Isobutyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1886			A
07-4-3447	Isobutyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1871			A
07-4-3448	Isobutyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1939			A
07-4-3449	Cyclohexyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	2046			A
07-4-3450	Cyclohexyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	2124			A
07-4-3451	Cyclohexyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	2124			A
07-4-3452	Cyclohexyl S-2-N-ethyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	2179			A
07-4-3453	Cyclohexyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	2165			A

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	Decision
07-4-3454	Cyclohexyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	2232			A
07-4-3455	Pinacoyl S-2-N-ethyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1840	1855		A
07-4-3456	Pinacoyl S-2-N-methyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	1916	1930		A
07-4-3457	Pinacoyl S-2-N-isopropyl-N-methylaminoethyl isopropylphosphonothiolate	1.A.03	2	1916	1931		A
07-4-3459	Pinacoyl S-2-N-ethyl-N-isopropylaminoethyl isopropylphosphonothiolate	1.A.03	2	1955	1969		A
07-4-3460	Pinacoyl S-2-N-isopropyl-N-propylaminoethyl isopropylphosphonothiolate	1.A.03	2	2019	2032		A
16-4-0332	3-Methoxypropyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1856			A
16-4-0333	Cyclobutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1791			A
16-4-0334	2-Methylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1798			A
16-4-0335	Hexyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1938			A
16-4-0336	1-Methylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1751	1766		A
16-4-0338	2-Propoxyethyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1917			A
16-4-0339	3-Ethoxypropyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1916			A
16-4-0340	4-Methoxybutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1960			A
16-4-0343	3-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1901			A

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	Decision
16-4-0344	2-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1881			A
16-4-0345	1-Ethylbutyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1834	1841		A
16-4-0346	1-Methylpentyl 2-diisopropylaminoethyl methylphosphonate	2.B.04	1	1840	1859		A
16-4-0347	3-Methoxypropyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1923			A
16-4-0349	2-Methylbutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1866			A
16-4-0350	Hexyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	2003			A
16-4-0352	3-Methoxybutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1964			A
16-4-0353	2-Propoxyethyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1983			A
16-4-0354	3-Ethoxypropyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1982			A
16-4-0356	Cyclobutylmethyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1968			A
16-4-0357	4-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1967			A
16-4-0358	3-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1968			A
16-4-0359	2-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1946			A
16-4-0360	1-Ethylbutyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1898	1902		A
16-4-0361	1-Methylpentyl 2-diisopropylaminoethyl ethylphosphonate	2.B.04	1	1905	1922		A
28-4-0233	Methylphosphonoselenoic dichloride	2.B.04	1	980			A
28-4-0234	Methyl methylphosphonoselenochloridate	2.B.04	1	997			A
28-4-0235	Ethyl methylphosphonoselenochloridate	2.B.04	1	1072			A
28-4-0236	Ethyl-d5 methylphosphonoselenochloridate	2.B.04	1	1068			A
28-4-0237	Propyl methylphosphonoselenochloridate	2.B.04	1	1164			A
28-4-0238	Isopropyl methylphosphonoselenochloridate	2.B.04	1	1111			A
28-4-0240	Butyl methylphosphonoselenochloridate	2.B.04	1	1260			A
28-4-0241	sec-Butyl methylphosphonoselenochloridate	2.B.04	1	1200	1205		A

OPCW Code	Chemical Name	Schedule	Column	RI(a)	RI(b)	RI(c)	Decision
28-4-0242	Phenyl methylphosphonoselenochloridate	2.B.04	1	1526			A
28-4-0243	Dimethyl methylphosphonoselenoate	2.B.04	1	1015			A
28-4-0244	Bis(methyl-d3) methylphosphonoselenoate	2.B.04	1	1011			A
28-4-0245	Diethyl methylphosphonoselenoate	2.B.04	1	1144			A
28-4-0246	Bis(ethyl-d5) methylphosphonoselenoate	2.B.04	1	1138			A
28-4-0247	Dipropyl methylphosphonoselenoate	2.B.04	1	1317			A
28-4-0248	Diisopropyl methylphosphonoselenoate	2.B.04	1	1193			A
28-4-0249	Bis(isopropyl-d7) methylphosphonoselenoate	2.B.04	1	1185			A
28-4-0250	Dibutyl methylphosphonoselenoate	2.B.04	1	1501			A
28-4-0251	Bis(sec-butyl) methylphosphonoselenoate	2.B.04	1	1387	1392		A
28-4-0253	Ethyl propyl methylphosphonoselenoate	2.B.04	1	1225			A
28-4-0254	Ethyl isopropyl methylphosphonoselenoate	2.B.04	1	1170			A
28-4-0255	sec-Butyl ethyl methylphosphonoselenoate	2.B.04	1	1263	1266		A
28-4-0256	Butyl propyl methylphosphonoselenoate	2.B.04	1	1407			A
28-4-0257	sec-Butyl propyl methylphosphonoselenoate	2.B.04	1	1351	1355		A
28-4-0258	Butyl isopropyl methylphosphonoselenoate	2.B.04	1	1350			A

TABLE 3: LIST OF APPROVED IR DATA OF SCHEDULED CHEMICALS

OPCW code	Chemical name	Schedule	Decision
04-1-0376v	Propyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0378v	Isobutyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0379v	Pentyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0380v	Hexyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0381v	Pinacolyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0382v	Cyclopentyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0383v	Cyclohexyl N,N-dimethylphosphoramidocyanidate	1.A.02	A
04-1-0384v	Methyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0385v	Ethyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0386v	Propyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0388v	sec-Butyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0389v	Pentyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0390v	Hexyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0391v	Pinacolyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0392v	Cyclopentyl N,N-diethylphosphoramidocyanidate	1.A.02	A
04-1-0393v	Cyclohexyl N,N-diethylphosphoramidocyanidate	1.A.02	A

Annex 2

**LIST OF DATA TO BE REMOVED FROM ANNEX 2 OF THE REPORT
OF THE FORTY-FOURTH MEETING OF THE VALIDATION GROUP
(S/1433/2016)**

OPCW Code(s)	Chemical Name
24-4-0040r	1,3-Bis(2-trimethylsilyloxyethylsulfinyl)propane
24-4-0028r	1,3-Bis(2-trimethylsilyloxyethylthio)propane
24-4-0034r	1,2-Bis(2-trimethylsilyloxyethylsulfinyl)ethane
24-4-0037r	1,2-Bis(2-trimethylsilyloxyethylsulfonyl)ether
24-4-0038r	Bis(2-trimethylsilyloxyethylsulfinyl)methane
24-4-0046r	Bis(2-trimethylsilyloxyethylsulfinylmethyl)ether
24-4-0047r	Bis(2-trimethylsilyloxyethylsulfonylmethyl)ether
24-4-0027r	Bis(2-trimethylsilyloxyethylthio)methane
24-4-0030r	1,5-Bis(2-trimethylsilyloxyethylthio)pentane
24-4-0042r	1,4-Bis(2-trimethylsilyloxyethylsulfinyl)butane
24-4-0043r 08-4-0158	1,4-Bis(2-trimethylsilyloxyethylsulfonyl)butane
24-4-0044r	1,5-Bis(2-trimethylsilyloxyethylsulfinyl)pentane
08-2-0082	Ethyl 2-methoxyethyl N,N-dimethylphosphoramidate
17-2-0111	2-(2-Chlorovinyl)-1,3,6,2-dioxathiarsocane

Annex 3

LIST OF MEMBERS OF THE VALIDATION GROUP¹

Name	Country	Address	Phone/Fax/E-Mail	Speciality
Christine Albarret**	France	DGA Maîtrise NRBC BP-3, 91710 Vert-le-Petit France	+33 1 69908224 +33 1 64935266 christine.albarret@intradef.gouv.fr	NMR
Armando Alcaraz*	United States of America	Lawrence Livermore National Laboratory Forensic Science Center P.O. Box 808, L-091 Livermore, CA 94551 United States of America	+1 925 423 6889 +1 925 423 9014 (fax) Alcaraz1@llnl.gov	MS, IR Coordinator of the IR subgroup
Roberto Martinez Alvarez	Spain	Facultad de Ciencias Químicas UCM 28040 Madrid	+34 91 394 4325 +34 91 394 4103 rma@ucm.es	MS, NMR
Mehran Babri*	Islamic Republic of Iran	Defence Chemical Research Lab (DCRL) P.O. Box 31585-1461 Karaj, Islamic Republic of Iran	+98 263 2313441 +98 263 2313447 (fax) dcl.mod@gmail.com	MS
Alexandre Bennett*	United Kingdom of Great Britain and Northern Ireland	Dstl, Porton Down Salisbury, Wiltshire, SP4 0JQ United Kingdom of Great Britain and Northern Ireland	+44 1980 955818 abennett@dstl.gov.uk	MS Coordinator of the MS subgroup

¹ An asterisk indicates that the evaluator was present at this meeting of the Group and a double asterisk indicates that the evaluator provided an evaluation but was unable to attend.

Name	Country	Address	Phone/Fax/E-Mail	Speciality
Jiří Čermák*	Czech Republic	Výzkumný ústav organických syntéz .a.s (Research Institute for Organic Syntheses) c.p. 296 53354 Rybitví Czech Republic	+420 724400614 jiri.cermak@vuos.com	MS
Brian Paul Mayer	United States of America	Lawrence Livermore National Laboratory 7000 East Avenue, L-091 Livermore, CA 94550 United States of America	+1 925 423 1128 mayer22@llnl.gov	NMR
Devendra K. Dubey	India	Defence R&D Establishment VERTOX Laboratory Jhansi Road Gwalior 474002 India	+91 751 223 3488 +91 751 234 1148 dkdubey@rediffmail.com	MS
Zdeňka Fabiánová*	Czech Republic	State Office for Nuclear Safety Division of Chemical Weapons Prohibition Senovážné nám. 9 110 00 Praha 1 Czech Republic	+420 226 514 372 +420 226 514 420 (fax) zdenka.fabianova@sujb.cz	IR
Vesa Häkkinen*	Finland	VERIFIN P.O. Box 55 00014 University of Helsinki Finland	+358 2 94150439 +358 2 94150437 (fax) vesa.hakkinen@helsinki.fi	MS
Karin Höjer Holmgren*	Sweden	FOI CBRN Defence and Security Cementvagen 20 SE-90182 Umeå Sweden	+46 90 106665 karin.hojer@foi.se	MS

Name	Country	Address	Phone/Fax/E-Mail	Speciality
James Jones	United Kingdom of Great Britain and Northern Ireland	Dstl, Porton Down Salisbury, Wiltshire, SP4 0JQ United Kingdom of Great Britain and Northern Ireland	+44 1980 614549 jtjones@dstl.gov.uk	NMR
Harri Koskela*	Finland	VERIFIN P.O. Box 55 00014 University of Helsinki Finland	+358 2941 50448 +358 2941 50437 (fax) harri.t.koskela@helsinki.fi	NMR
Shilei Liu*	China	Yangfang Town, Changping District P.O. Box 1043 102205, Beijing China	+86 10 69760259 liushilei402@263.net	MS
Damian Magiera*	Germany	Wehrwissenschaftliche Institut für Schutztechnologien - ABC-Schutz (WIS) 29633 Munster, Germany	+49 5192 136 402 +49 5192 136 355 (fax) damianmagiera@bundeswehr.org	NMR, IR Coordinator of the NMR subgroup
Gary Mallard*	United States of America	Teal Consulting Chevy Chase, MD 20815 United States of America	+1 301 656-0402 gary.mallard@gmail.com	Acting Coordinator of the GC subgroup
Urs Meier**	Switzerland	Spiez Laboratory CH-3700 Spiez Switzerland	+41 33228 1713 +41 33228 1402 urs.meier@babs.admin.ch	NMR
Mohammad Taghi Naseri	Islamic Republic of Iran	Defence Chemical Research Lab (DCRL) P.O. Box 31585-1461 Karaj, Islamic Republic of Iran	+98 263 2313441 +98 263 2313447 (fax) dcr.l.mod@gmail.com	GC
Daan Noort	Netherlands	TNO Defence, Security and Safety Lange Kleiweg 137 2288GJ Rijswijk The Netherlands	+31 888 661307 daan.noort@tno.nl	NMR

Name	Country	Address	Phone/Fax/E-Mail	Speciality
Deepak Pardasani	India	Defence Research & Development Establishment Gwalior, India	+91 751 2341148 +91 751 2233488 dkpardasani@drde.drdo.in	GC
Leo de Reuver*	Netherlands	TNO Defence, Security and Safety Lange Kleiweg 137 2288GJ Rijswijk The Netherlands	+31 88 8661339 leo.dereuver@tno.nl	GC
James Riches*	United Kingdom of Great Britain and Northern Ireland	Dstl, Porton Down Salisbury, Wiltshire, SP4 0JQ United Kingdom of Great Britain and Northern Ireland	+44 1980 952555 jriches@dstl.gov.uk	MS Chairperson of the Validation Group
Jijun Tang*	China	AMMS 27 Taiping Road, Haidian District, Beijing China	+8610 13810338946 tangjijun2012@163.com	GC
Dušan Treflík	Czech Republic	31st Regiment of radiological, chemical and biological defence of Liberec Osvoboditelu 1807, Uhersky Brod, 68801 Czech Republic	+420 777 255 274 dusan.treflik@seznam.cz	MS
Ferdinand Visser*	South Africa	PROTECHNIK P.O. Box 8855 Pretoria 0001 South Africa	+27 845173852 ferdiev@protechnik.co.za solly2@iburst.co.za	GC
Takeharu Wada*	Japan	Chemicals Evaluation and Research Institute 1600, Shimo-Takano, Sugito-machi Kitakatsushika-gun Saitama 345-0043, Japan	+81 480 37 2601 +81 480 37 2521 (fax) wada-takeharu@ceri.jp	GC

- - - - -