

**NOTE BY THE TECHNICAL SECRETARIAT****REPORT OF THE FORTY-THIRD MEETING OF THE VALIDATION GROUP FOR THE  
UPDATING OF THE OPCW CENTRAL ANALYTICAL DATABASE  
30 AND 31 MARCH 2016**

1. The Validation Group (hereinafter “the Group”) met on 30 and 31 March 2016 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 Martin Söderström (Finland)
Mass spectrometry (MS)	Mr Sten-Åke Fredriksson (Sweden)
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. This report of the Group’s Forty-Third Meeting presents the sets of validated analytical data of scheduled chemicals to be forwarded to the Director-General for appropriate action (Annex 1).
5. The Group accepted the resignation of Mr Josef Košata (Czech Republic) and thanked him for his contribution as an evaluator over many years.
6. The Group accepted the resignation of Mr Sten-Åke Fredriksson (Sweden) and thanked him for his long-standing contribution as an evaluator and coordinator of the MS Subgroup.



7. A list of OCAD data gaps was distributed to the Group following a request made at the previous meeting. This list will be used by the Technical Secretariat (hereinafter “the Secretariat”) to prioritise the acquisition of new data.
8. The Group discussed the classification of non-scheduled chemicals currently on the Validation Group Working Database (VGWD). A set of justification statements and categories for the VGWD data was discussed. A revised list will be forwarded to the Group for consideration at the next meeting.
9. The MS Subgroup discussed four sets of MS/MS data in detail. These will be submitted for formal evaluation at the next meeting following minor changes to the data format. Additionally, the Subgroup recommended that these requirements be reflected in the “Procedures for the Evaluation of Data to be Included in the OPCW Central Analytical Database” (S/969/2011, dated 2 November 2011).
10. The NMR Subgroup has tested and agreed to an electronic format for NMR spectra. The Subgroup recommended that changes to the procedures for the evaluation of data be included in the OCAD (S/969/2011).
11. The Group discussed the naming of a group of trivalent phosphorus chemicals. It was agreed that these chemicals would be named in accordance with the IUPAC<sup>1</sup> naming rule, which classifies these chemicals as phosphines. The Group also discussed the naming of isotopically-labelled chemicals, and recommended that the naming rules be updated by the Secretariat with some relevant examples.
12. The Group discussed the spectrum of OCAD data entry 09-2-0176. It was agreed that this data would be resubmitted to the MS Subgroup.
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 28 and 29 September 2016. The evaluators agreed to send their evaluation reports to the appointed coordinators no later than 14 September 2016, and agreed to come to the meeting prepared to finalise the evaluation of the analytical data referred to in the previous paragraph.
15. Annex 2 to this report lists the evaluators.

Annexes:

- Annex 1: Lists of Approved Data Recommended for Inclusion in the OPCW Central Analytical Database
- Annex 2: List of Members of the Validation Group

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<sup>1</sup> IUPAC = International Union of Pure and Applied Chemistry.

**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” and “B” means “accepted subject to minor corrections”.

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

<b>OPCW Code</b>	<b>Chemical Name</b>	<b>Schedule</b>	<b>Decision</b>
04-1-0356v	3,5-Dimethylcyclohexyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A
04-1-0357v	4-tert-Butylcyclohexyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	A

**TABLE 2: LIST OF APPROVED MS DATA OF SCHEDULED CHEMICALS**

<b>OPCW Code</b>	<b>Chemical Name</b>	<b>Schedule</b>	<b>Decision</b>
04-2-0565	4-tert-Butylcyclohexyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	B
04-2-0566	1-Ethylpropyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	B
04-2-0567	1,1,2-Trimethylpropyl S-2-diethylaminoethyl isopropylphosphonothiolate	1.A.03	B
07-2-3436	Methyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3437	Methyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3438	Methyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3439	Methyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3440	Methyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3441	Methyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3442	Ethyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3443	Ethyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3444	Ethyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3445	Ethyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3446	Ethyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A

<b>OPCW Code</b>	<b>Chemical Name</b>	<b>Schedule</b>	<b>Decision</b>
07-2-3447	Ethyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3448	Propyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3449	Propyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3450	Propyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3451	Propyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3452	Propyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3453	Propyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3454	Isopropyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3455	Isopropyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3456	Isopropyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3457	Isopropyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3458	Isopropyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3459	Isopropyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3460	Butyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3461	Butyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3462	Butyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3463	Butyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3464	Butyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3465	Butyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3466a	sec-Butyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3466b	sec-Butyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3467a	sec-Butyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A

OPCW Code	Chemical Name	Schedule	Decision
07-2-3467b	sec-Butyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3468a	sec-Butyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3468b	sec-Butyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3469a	sec-Butyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3470a	sec-Butyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3470b	sec-Butyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3472	Isobutyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3473	Isobutyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3474	Isobutyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3475	Isobutyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3476	Isobutyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3477	Isobutyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3478	Cyclohexyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3479	Cyclohexyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3480	Cyclohexyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3481	Cyclohexyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3482	Cyclohexyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3483	Cyclohexyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3484a	Pinacolyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3484b	Pinacolyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3485a	Pinacolyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3485b	Pinacolyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A

<b>OPCW Code</b>	<b>Chemical Name</b>	<b>Schedule</b>	<b>Decision</b>
07-2-3486a	Pinacolyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3486b	Pinacolyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3487a	Pinacolyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3487b	Pinacolyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3488b	Pinacolyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3489a	Pinacolyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
07-2-3489b	Pinacolyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	A
16-2-0228r	Ethyl 2-isopropoxyethyl propylphosphonate	2.B.04	A
28-2-0110ar	1-Methylbutyl N,N-dimethyl-P-methylphosphonamidothionate	2.B.04	A
28-2-0177	Chloro(ethylthio)methylphosphine	2.B.04	B
28-2-0178	Chloro(isopropylthio)methylphosphine	2.B.04	B
28-2-0179	Chloro(propylthio)methylphosphine	2.B.04	B
28-2-0182	Butylthio(chloro)methylphosphine	2.B.04	B
28-2-0183	Chloro(pentylthio)methylphosphine	2.B.04	B
28-2-0184	Chloro(hexylthio)methylphosphine	2.B.04	B
28-2-0185	Bis(ethylthio)methylphosphine	2.B.04	B
28-2-0186	Bis(ethylthio)methyl-d3-phosphine	2.B.04	B
28-2-0187	Bis(propylthio)methylphosphine	2.B.04	B
28-2-0189	Bis(isopropylthio)methylphosphine	2.B.04	B
28-2-0190	Bis(sec-butylthio)methylphosphine	2.B.04	B
28-2-0191	Bis(sec-butylthio)methyl-d3-phosphine	2.B.04	B
28-2-0192	Bis(pentylthio)methylphosphine	2.B.04	B
28-2-0193	Bis(hexylthio)methylphosphine	2.B.04	B
28-2-0194	Ethylthio(propylthio)methylphosphine	2.B.04	B
28-2-0195	sec-Butylthio(ethylthio)methylphosphine	2.B.04	B
28-2-0196	sec-Butylthio(ethylthio)methyl-d3-phosphine	2.B.04	B
28-2-0197	Ethylthio(pentylthio)methylphosphine	2.B.04	B
28-2-0198	Ethylthio(pentylthio)methyl-d3-phosphine	2.B.04	B
28-2-0199	sec-Butylthio(propylthio)methylphosphine	2.B.04	B
28-2-0200	sec-Butylthio(propylthio)methyl-d3-phosphine	2.B.04	B
28-2-0201	Pentylthio(propylthio)methylphosphine	2.B.04	B

**TABLE 3: 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	Name	Schedule	Column	RI(a)	RI(b)	Decision
07-4-3299	Methyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1545		A
07-4-3300	Methyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1626		A
07-4-3301	Methyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1624		A
07-4-3302	Methyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1687		A
07-4-3303	Methyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1673		A
07-4-3304	Methyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1746		A
07-4-3305	Ethyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1592		A
07-4-3306	Ethyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1674		A
07-4-3307	Ethyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1672		A
07-4-3308	Ethyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1731		A
07-4-3309	Ethyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1714		A
07-4-3310	Ethyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1786		A
07-4-3311	Propyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1681		A
07-4-3312	Propyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1760		A
07-4-3313	Propyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1763		A
07-4-3314	Propyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1817		A
07-4-3315	Propyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1803		A
07-4-3316	Propyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1873		A
07-4-3317	Isopropyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1600		A
07-4-3318	Isopropyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1679		A
07-4-3319	Isopropyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1681		A
07-4-3320	Isopropyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1737		A
07-4-3321	Isopropyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1722		A
07-4-3322	Isopropyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1791		A
07-4-3323	Butyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1776		A
07-4-3324	Butyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1853		A

OPCW Code	Name	Schedule	Column	RI(a)	RI(b)	Decision
07-4-3325	Butyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1855		A
07-4-3326	Butyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1911		A
07-4-3327	Butyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1895		A
07-4-3328	Butyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1965		A
07-4-3329	sec-Butyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1694	1700	A
07-4-3330	sec-Butyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1771	1776	A
07-4-3331	sec-Butyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1773	1779	A
07-4-3332	sec-Butyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1827	1832	A
07-4-3333	sec-Butyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1812	1817	A
07-4-3334	sec-Butyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1880	1885	A
07-4-3335	Isobutyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1728		A
07-4-3336	Isobutyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1805		A
07-4-3337	Isobutyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1807		A
07-4-3338	Isobutyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1861		A
07-4-3339	Isobutyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1845		A
07-4-3340	Isobutyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1914		A
07-4-3341	Cyclohexyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	2022		A
07-4-3342	Cyclohexyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	2100		A
07-4-3343	Cyclohexyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	2102		A
07-4-3344	Cyclohexyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	2157		A
07-4-3345	Cyclohexyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	2145		A
07-4-3346	Cyclohexyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	2213		A
07-4-3347	Pinacolyl S-2-N-ethyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1812	1829	A
07-4-3348	Pinacolyl S-2-N-methyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1889	1906	A
07-4-3349	Pinacolyl S-2-N-isopropyl-N-methylaminoethyl ethylphosphonothiolate	1.A.03	2	1889	1907	A
07-4-3350	Pinacolyl S-2-N-ethyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1946	1964	A
07-4-3351	Pinacolyl S-2-N-ethyl-N-isopropylaminoethyl ethylphosphonothiolate	1.A.03	2	1933	1945	A
07-4-3352	Pinacolyl S-2-N-isopropyl-N-propylaminoethyl ethylphosphonothiolate	1.A.03	2	1995	2011	A



OPCW Code	Name	Schedule	Column	RI(a)	RI(b)	Decision
28-4-0180	Chloro(ethylthio)methylphosphine	2.B.04	1	952		B
28-4-0181	Chloro(isopropylthio)methylphosphine	2.B.04	1	999		B
28-4-0182	Chloro(propylthio)methylphosphine	2.B.04	1	1055		B
28-4-0183	sec-Butylthio(chloro)methylphosphine	2.B.04	1	1107		B
28-4-0184	sec-Butylthio(chloro)methyl-d3-phosphine	2.B.04	1	1102		B
28-4-0185	Butylthio(chloro)methylphosphine	2.B.04	1	1156		B
28-4-0186	Chloro(pentylthio)methylphosphine	2.B.04	1	1251		B
28-4-0187	Chloro(hexylthio)methylphosphine	2.B.04	1	1360		B
28-4-0188	Bis(ethylthio)methylphosphine	2.B.04	1	1200		B
28-4-0189	Bis(ethylthio)methyl-d3-phosphine	2.B.04	1	1197		B
28-4-0190	Bis(propylthio)methylphosphine	2.B.04	1	1380		B
28-4-0191	Bis(propylthio)methyl-d3-phosphine	2.B.04	1	1378		B
28-4-0192	Bis(isopropylthio)methylphosphine	2.B.04	1	1271		B
28-4-0193	Bis(sec-butylthio)methylphosphine	2.B.04	1	1467		B
28-4-0194	Bis(sec-butylthio)methyl-d3-phosphine	2.B.04	1	1463		B
28-4-0195	Bis(pentylthio)methylphosphine	2.B.04	1	1769		B
28-4-0196	Bis(hexylthio)methylphosphine	2.B.04	1	1973		B
28-4-0197	Ethylthio(propylthio)methylphosphine	2.B.04	1	1283		B
28-4-0198	sec-Butylthio(ethylthio)methylphosphine	2.B.04	1	1330		B
28-4-0199	sec-Butylthio(ethylthio)methyl-d3-phosphine	2.B.04	1	1321		B
28-4-0200	Ethylthio(pentylthio)methylphosphine	2.B.04	1	1498		B
28-4-0201	Ethylthio(pentylthio)methyl-d3-phosphine	2.B.04	1	1492		B
28-4-0202	sec-Butylthio(propylthio)methylphosphine	2.B.04	1	1427		B
28-4-0203	sec-Butylthio(propylthio)methyl-d3-phosphine	2.B.04	1	1424		B
28-4-0204	Pentylthio(propylthio)methylphosphine	2.B.04	1	1581		B

## Annex 2

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