



Verification Division
S/201/2000*
2 August 2000
Original: ENGLISH

NOTE BY THE DIRECTOR-GENERAL

**EVALUATION OF THE RESULTS OF THE
SIXTH OFFICIAL PROFICIENCY TEST**

1. The Director-General wishes to inform Member States of the results of the Sixth Official Proficiency Test, which was conducted by the Technical Secretariat (hereinafter the “Secretariat”) during the period 1 September 1999 to 11 January 2000. The test was conducted in accordance with the criteria adopted by the Conference of the States Parties at its First Session (C-I/DEC.62, 65 and 66, all dated 22 May 1997), and the Note by the Director-General, “Revised standard operating procedure for evaluation of the results of OPCW proficiency tests” (S/46/98, dated 21 April 1998), with the exception defined in “GC/MS(CI) requirements for the Sixth Official Proficiency Test”, which was provided to all participants before the test. A total of 24 laboratories, representing 21 Member States, participated in the test.
2. In accordance with the Note by the Director-General, “Designation of laboratories for the analysis of authentic samples: retention of designation status” (S/86/98, dated 17 November 1998), as of 1999, designated laboratories must demonstrate once a year that they have maintained their capabilities in a proficiency test organised by the Secretariat. In order to ensure a fair chance for all laboratories, for the sixth test, the Secretariat chose a test scenario and sample types as close as possible to those used in the fifth test. In 1999 the Secretariat conducted only one proficiency test.
3. Two laboratories were selected to assist the Secretariat: the Military Institute of Chemistry and Radiometry, Laboratory for CWC Verification, Republic of Poland, prepared the test samples, at no cost to the Organisation, and the Edgewood Chemical & Biological Forensic Analytical Centre, United States of America, evaluated the test results.
4. The preliminary evaluation of the Sixth Official Proficiency Test was discussed at a meeting between Secretariat staff and the test participants in The Hague on 25 November 1999. In accordance with C-I/DEC.65, the participants were given at least one week to comment on the preliminary evaluation, and 21 of the final 23

* Reissued in English only for technical reasons.

participating laboratories did so. Most of these comments focused on the spiking chemicals nos. 2 and 7. These comments were forwarded to the Edgewood Chemical & Biological Forensic Analytical Center for its consideration, and the Center submitted its final evaluation report to the Secretariat on 11 January 2000.

5. Spiking chemical no. 2 was not reported by any laboratory. An investigation by the sample preparation laboratory showed that this spiking chemical could no longer be detected two days after the samples were dispatched, and these findings were supported by the evaluating laboratory and the OPCW Laboratory on the basis of extensive tests. Three laboratories reported the presence of degradation compound 10, and a fourth laboratory reported degradation compound 14. These two compounds are the degradation products linked to spiking chemical no. 2. The identification of these two compounds could be used for scoring, in accordance with C-I/DEC.62, subparagraph 3(b): "Identification of a degradation product(s) instead of the spiking chemical will be positively scored (+1 point), if the original spiking chemical is no longer present".
6. Spiking chemical no. 2 was not a scheduled chemical. The inclusion of a non-scheduled chemical has never been disallowed by proficiency test rules; in fact, in the test plan instructions, the participating laboratories were requested to "analyse the samples for the presence of any scheduled chemicals **and/or their degradation/reaction products** that would enable the OPCW to conclude whether non-declared chemical warfare agents had been present in the samples, taking into account the characteristics of the sample itself". In reality, not all the degradation products of scheduled compounds are, in turn, scheduled compounds. Therefore, any compound that could lead to the conclusion that a CW agent had been present should have been reported, even if that compound was not a scheduled chemical.
7. The issue of the identification of the spiking chemicals was raised by a number of participants. Given the nature of the concerns expressed, the Director-General took the exceptional step of requesting the Scientific Advisory Board's temporary working group (SAB/TWG) on analytical procedures to address the test results at a meeting held on 13 and 14 January, 2000. After considering the relevant information, the SAB/TWG proposed that the four laboratories that indicated the original composition of the sample be awarded a positive score, and that those laboratories that did not report a degradation product linked to spiking chemical no. 2 should receive not a negative score, but a zero score.
8. Decomposition of chemicals is bound to happen in real situations, and this unexpected event probably made this sixth test more realistic than the previous ones. However, the decomposition of a spiking chemical poses a real problem for the Secretariat when rating laboratories, and degradation of the analytes should not occur in future tests. If, however, the unexpected decomposition of a spiking chemical is found to occur, the Secretariat and the evaluating laboratory should be informed as soon as possible so that the possible degradation products can be monitored using appropriate methods.
9. The report of the SAB/TWG and the draft evaluation report were provided to the participants on 15 March 2000 for information, pending a decision of the Conference

on the guidelines on the designation of laboratories. Following the decision on this matter by the Executive Council at its Twentieth Session (EC-XX/DEC.3, dated 28 June 2000), the final evaluation report has now been issued to all participating laboratories.

10. The principal results of the Sixth Official Proficiency Test can be summarised as follows:
 - (a) 20 of the 24 participating laboratories met the adopted criteria, and could be scored. Of the four laboratories that did not qualify for scoring, three reported false positive or irrelevant results, and one did not submit a report;
 - (b) of the 20 laboratories that met the criteria for scoring, none identified all of the deliberately introduced (spiked) chemicals in the test samples, or reported them with the required analytical data. However, two laboratories were granted a performance rating of “A” for detecting a direct degradation product of an absent spiking chemical; and
 - (c) in accordance with the criteria for the conduct of OPCW proficiency tests, the two laboratories that assisted the Secretariat in the preparation of test samples and in the evaluation of the results were credited with the maximum performance rating of “A”.
11. The final results for all participating laboratories, in accordance with the adopted criteria and the recommendations of the SAB/TWG, are presented in the table below. In the second column, the number of compounds correctly identified by each laboratory is shown in parentheses. Some of these identifications were not supported by the required data, however, and therefore could not be scored. The column headed “Rating” gives the rating to be used when comparing the performance of a laboratory in different proficiency tests. The column headed “Comments” lists any missing or incorrectly submitted data.
12. In accordance with the guidelines on the designation of laboratories (annex to EC-XX/DEC.3, paragraph 3), the Director-General will not select the following three laboratories to receive samples taken for off-site analysis until such time as they again meet the criteria specified in subparagraph 1(b) of the annex to EC-XX/DEC.3:
 - Laboratory of Analytical Chemistry Research, Institute of Chemical Defence, China;
 - GSRDC-4 Laboratory, Agency for Defence Development, Republic of Korea; and
 - Research Institute of Organic Syntheses, Centre of Ecology, Toxicology and Analytics (CETA), Czech Republic.
13. The participating laboratories are reminded that in the case of errors, false positives and false negatives, they should take immediate remedial action. Before the next test, each laboratory is required to submit to the Secretariat a full report stating the cause of the problem, and any remedial actions that have been taken. Any laboratory that fails to submit such a report, including details of remedial actions, will not be permitted to participate in the next proficiency test.

Table Final results of the Sixth Official Proficiency Test, in accordance with the adopted criteria (C-I/DEC.62 and C-I/DEC.65) and the recommendations of the SAB/TWG

Participant (Lab code)	Reported spiking chemicals	Score	Rating	Comments ²
Finland (5)	7 (7)	7	A	Seven chemicals identified
The Netherlands (7)	7 (7)	7	A	Seven chemicals identified
United States (Edgewood)	-	-	A	Evaluation of test results
Poland	-	-	A	Sample preparation
France (11)	6 (6)	6	B	Six chemicals identified
Germany (20)	6 (6)	6	B	Six chemicals identified
Russian Federation (16)	6 (6)	6	B	Six chemicals identified
Switzerland (21)	6 (6)	6	B	Six chemicals identified
Sweden (10)	6 (6)	5	B	Six chemicals identified
United Kingdom (8)	6 (6)	5	B	Six chemicals identified
China (14)	5 (5)	4	C	Five chemicals identified
India, VERTOX (15)	5 (5)	4	C	Five chemicals identified
Singapore (25)	5 (5)	4	C	Five chemicals identified
Czech Republic (19)	4 (5)	2	C	Five chemicals correctly reported, four chemicals identified (lack of supporting data for chemical 6)
Republic of Korea (17)	4 (5)	2	C	Five chemicals correctly reported, four chemicals identified (lack of supporting data for chemical 4)
Argentina (4)	3 (4)	0	C	Four chemicals correctly reported, three chemicals identified (lack of supporting data for chemical 6)
Belgium (9)	3 (5)	0	C	Five chemicals correctly reported, three chemicals identified (lack of supporting data for chemicals 1, 6)
India, ICT (18)	3 (4)	0	C	Four chemicals correctly reported, three chemicals identified (lack of supporting data for chemical 5)
Romania (22)	3 (5)	0	C	Five chemicals correctly reported, three chemicals identified (lack of supporting data for chemicals 1, 3)
India, IPFT (6)	2 (5)	-2	D	Five chemicals correctly reported, two chemicals identified (lack of supporting data for chemicals 3, 4, 5)
Iran (2)	2 (4)	-2	D	Four chemicals correctly reported, two chemicals identified (lack of supporting data for chemicals 1, 3)
Spain (23)	2 (2)	-2	D	Two chemicals identified
Greece (1)	0 (0)	-	Failure	No spiking chemical found. Irrelevant chemical reported
Italy (12)	4 (5)	-	Failure	False positive, because of reporting chemicals 4 and 5 in the soil sample
Japan (3)	5 (5)	-	Failure	Irrelevant chemical reported
India, NCL (24)	-	-	Failure	No report submitted

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The spiking chemicals were as follows:

soil: 1. Diethyl ethylphosphonate; 2. 1,5-Bis(2-hydroxyethylthio)-n-pentane;

water: 3. Ethylphosphonic acid; 4. Ethyldiethanolamine; 5. Methyl diethanolamine;

organic liquid: 6. 1,5-Bis(2-chloroethylthio)-n-pentane; 7. 2-Chlorovinyl dichloroarsine.