

Review of User Check for NMAM Method 9109 (Methamphetamine and Illicit Drugs, Precursors, and Adulterants on Wipes by Solid Phase Extraction)

User check samples were prepared by the NIOSH/DART laboratory in order to evaluate NMAM Method 9109 (Methamphetamine and Illicit Drugs, Precursors, and Adulterants on Wipes by Solid Phase Extraction). A total of twenty cotton gauze wipes (Curity, Lot No. 7436M07Z) were spiked with (+) methamphetamine hydrochloride and (1S,2S) – (+) –pseudoephedrine 98% and shipped to the NIOSH contract industrial hygiene laboratory (Bureau Veritas). The samples were analyzed for both compounds as well as for amphetamine, ephedrine, norephedrine, and MDMA. Only significant quantities of methamphetamine and pseudoephedrine were found on the cotton gauze samples except some minimal amounts of MDMA (between LOD and LOQ) were found on some cotton gauze wipes. The procedure followed by the laboratory was as given in the method.

The user check for NMAM 9109 was done in January 2008 (preparation on January 28, 2008) and the laboratory analysis was done on February 11, 2008.

The limit of detection (LOC) was 0.07 ug/wipe and the limit of quantitation (LOQ) was 0.22 ug/wipe for methamphetamine. The LOD was 0.3 ug/wipe and the LOQ was 0.95 ug/wipe for pseudoephedrine. The laboratory method blanks were none detected for both methamphetamine and pseudoephedrine. The laboratory control samples for methamphetamine recovery were acceptable except for one duplicate sample which was at 70% recovery which is below the limit of 80%. The relative percent difference (RPD) for one replicate analysis was outside the 20% limit at 25%. The blind spike samples were below the default limits of 80% at 57% to 68%. The replicate analyses were within the 20%RPD default limit. There was more variability in the analyses for the second compound, pseudoephedrine, than for methamphetamine.

The table below gives the laboratory data extracted from the laboratory report for methamphetamine:

Sample ID	Spiked Amt	Recovery Amt	% Recovery	Ave Recovery	RSD
Meth-NMAM-224	0.0 ug	ND	NA	-	-
Meth-NMAM-231	0.0 ug	ND	NA	-	-
Meth-NMAM-236	0.0 ug	ND	NA	-	-
Meth-NMAM-240	0.0 ug	ND	NA	0	0
Meth-NMAM-225	0.5 ug	0.41 ug	82	-	-
Meth-NMAM-226	0.5 ug	0.48 ug	96	-	-
Meth-NMAM-228	0.5 ug	0.50 ug	100	-	-
Meth-NMAM-235	0.5 ug	0.56 ug	112	98	13
Meth-NMAM-221	5.0 ug	4.6 ug	92	-	-
Meth-NMAM-233	5.0 ug	4.6 ug	92	-	-
Meth-NMAM-237	5.0 ug	4.7 ug	94	-	-
Meth-NMAM-238	5.0 ug	4.7 ug	94	93	7
Meth-NMAM-222	10.0 ug	11.0 ug	110	-	-
Meth-NMAM-227	10.0 ug	10.0 ug	100	-	-

Meth-NMAM-230	10.0 ug	10.0 ug	100	-	-
Meth-NMAM-234	10.0 ug	11.0 ug	110	105	7
Meth-NMAM-223	25.0 ug	28.0 ug	112	-	-
Meth-NMAM-229	25.0 ug	27.0 ug	108	-	-
Meth-NMAM-232	25.0 ug	27.0 ug	108	-	-
Meth-NMAM-239	25.0 ug	26.0 ug	104	108	3

The results from the above table give average recoveries of 98%, 93%, 105%, and 108% for the levels of 0.5 ug/wipe, 5.0 ug/wipe, 10.0 ug/wipe, and 25.0 ug/wipe. The relative standard deviations of all test samples ranged from 3% to 13%. All of the blanks were none detected (ND) which is good. Another set of four of the lowest level spikes were also sent and analyzed by the laboratory and the results were found to be very close to the first set.

A second compound, pseudoephedrine, was also spiked on the user check samples and analyzed at the same time as for methamphetamine. No table has been included because methamphetamine was the compound of interest. The recoveries for pseudoephedrine ranged from 86% to 110% at the four concentration levels but the RSD was much higher with values ranging from 13% to 33%.

Overall this last method user check for NMAM 9109 was excellent and the user check has been passed and is acceptable. It is my recommendation that the draft method 9109 be accepted and placed in the NMAM for publication.

Jensen H. Groff
 Research Chemist
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