Table 1. Measured amounts of different solvents in inhaled air of the Forensic Laboratory Extraction Unit (ppm)

Analyte	First	Second	Third	Fourth	Fifth	sixth	Mean
Chloroform							
Day without sample extraction	0.018	0.002	0.012	0.006	0.067	0.026	0.021±0.013
Day with sample extraction	0.45	1.6	33.4	0.5	6.5	0.25	7.02±1.30
Diethyl ether							
Day without sample extraction	ND	0.003	0.3	0.005	ND	0.006	0.007±0.001
Day with sample extraction	26.6	0.31	0.8	65.9	1.2	104.7	33.25±4.30
Ammonia							
Day without sample extraction	0.3	ND	0.8	0.23	0.38	0.3	0.17±0.01
Day with sample extraction	3.64	2.35	0.66	1.47	13	0.69	3.63±0.47

Table 2. Time-weighted average (TWA) of the forensic laboratory staff exposure to different solvents and comparison with occupational exposure limit (ppm)

Analyte	TWA (daily)1	TWA (total)2	OEL-TWA3	OSHA-PEL4
Chloroform				
Day without sample extraction	0.021±0.013	2.22±0.40	10	2
Day with sample extraction	6.08±1.30			
Diethyl ether				
Day without sample extraction	0.007±0.001	30.1±0.50	400	400
Day with sample extraction	82.9±9.40			
Ammonia				
Day without sample extraction	0.21±0.09	1.42±0.23	25	50
Day with sample extraction	3.55±0.48			

1: TWA of solvent exposure (calculated for days with and without extraction separately)
2: TWA of solvent exposure (calculated for days with and without extraction in combination)
3: Solvent exposure limits (recommended by the Ministry of Health in the occupational exposure limits handbook)
4: Solvent exposure limits (recommended by the US occupational safety and health administration)

Table 3. Validation results for the measurement methods

Solvents	R2	LOD (ppb)	LOQ (ppb)	Recovery (%)	Coefficient of variation (percent)
Chloroform	0.992	0.37	1.23	91	4.2
Diethyl ether	0.996	0.66	2.18	89	6.1
Ammonia	0.992	4.	15.6	93	5.5

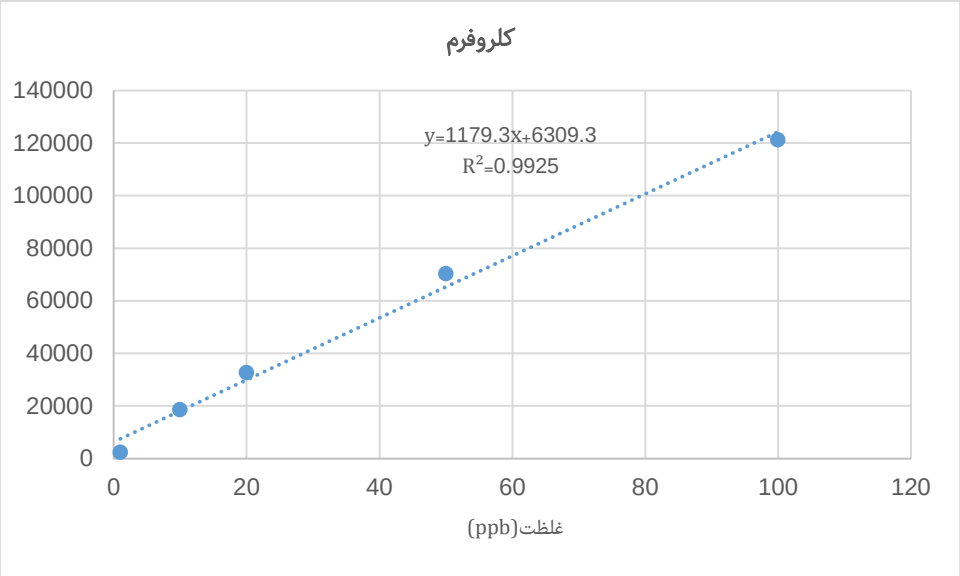

Figure 1. Calibration curve for chloroform measurement

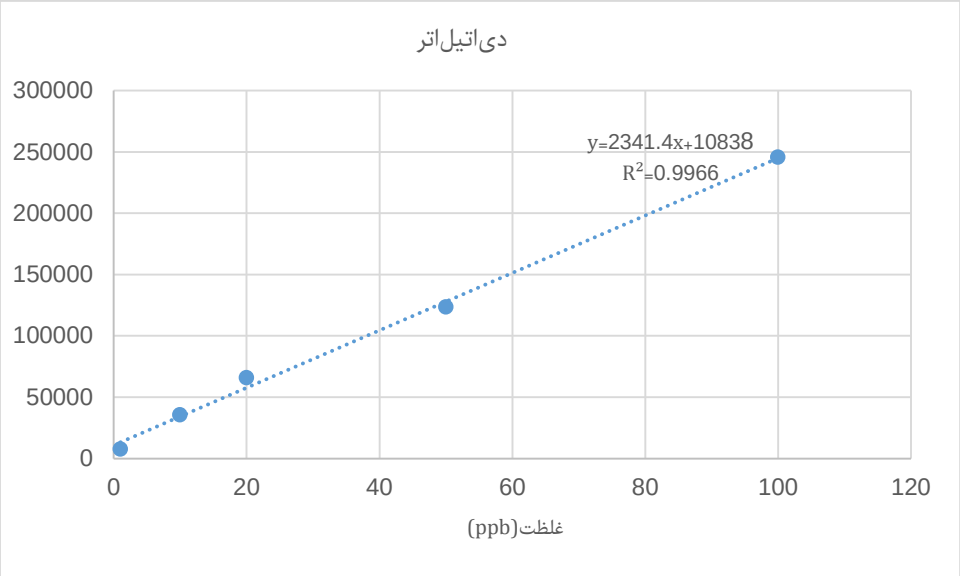

Figure 2. Calibration curve for diethyl ether measurement

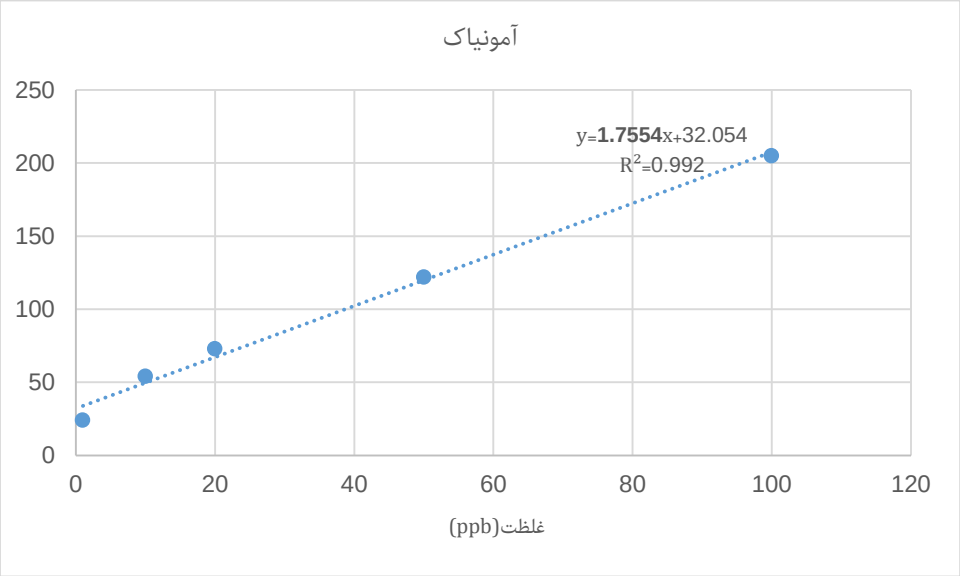

Figure 3. Calibration curve for ammonia measurement