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Supplementary Information

Evaluation of blood and synthetic matrix-matched calibrations using manual and inline sample preparation methods

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C. Derrick Quarles, Jr.*, Nick Bohlim, Kevin Wiederin, Nathan Saetveit, Patrick Sullivan

Elemental Scientific, Inc., 7277 World Communications Dr., Omaha, NE, USA

*Corresponding author email: derrick.quarles@icpms.com

Table S1. Response function and linearity for the blood matrix-matched calibration method using manual preparation.

				Blood Matrix-Matched Calibration Manual Preparation		
Element	**Measurement Mode**	**m/z**	**I.S.**	**Response Function**	**R^2**	**%RSE**
Mn	KED (He)	55	^{103}Rh	y = 266384 x + 118891	0.9999	0.35
Mn (MnO)	QQQ (O_2)	71	^{103}Rh	y = 3641 x + 21775	0.9987	0.44
Se	KED (He)	78	^{71}Ga	y = 21244 x + 86351	0.9999	1.6
Se (SeO)	QQQ (O_2)	96	^{71}Ga	y = 2373 x + 8543	0.9999	2.4
Cd	KED (He)	113	^{103}Rh	y = 41610 x + 11595	0.9996	0.41
Hg	KED (He)	202	^{193}Ir	y = 28011 x + 301	0.9986	0.22
Pb	KED (He)	208	^{193}Ir	y = 261227 x + 11803	0.9998	4.8

Table S2. Response function and linearity for the synthetic matrix-matched calibration method using manual preparation.

				Synthetic Matrix-Matched Calibration Manual Preparation		
Element	**Measurement Mode**	**m/z**	**I.S.**	**Response Function**	**R^2**	**%RSE**
Mn	KED (He)	55	^{103}Rh	y = 268947 x + 92319	0.9999	0.35
Mn (MnO)	QQQ (O_2)	71	^{103}Rh	y = 4015 x + 1187	0.9998	0.57
Se	KED (He)	78	^{71}Ga	y = 21594 x + 14611	0.9999	0.58
Se (SeO)	QQQ (O_2)	96	^{71}Ga	y = 2644 x + 325	0.9998	1.0
Cd	KED (He)	113	^{103}Rh	y = 42594 x + 13325	0.9999	0.30
Hg	KED (He)	202	^{193}Ir	y = 22668 x + 246	0.9999	0.21
Pb	KED (He)	208	^{193}Ir	y = 264238 x - 7318	0.9998	0.31

Table S3. Response function and linearity for the synthetic matrix-matched calibration method using inline preparation.

				Synthetic Matrix-Matched Calibration Inline Preparation		
Element	**Measurement Mode**	**m/z**	**I.S.**	**Response Function**	**R^2**	**%RSE**
Mn	KED (He)	55	^{103}Rh	y = 279475 x + 11731	0.9997	0.37
Mn (MnO)	QQQ (O_2)	71	^{103}Rh	y = 5086 x + 331	0.9996	0.48
Se	KED (He)	78	^{71}Ga	y = 23672 x + 9489	0.9996	0.58
Se (SeO)	QQQ (O_2)	96	^{71}Ga	y = 2562 x + 77	0.9999	1.1
Cd	KED (He)	113	^{103}Rh	y = 42903 x + 300	0.9998	0.23
Hg	KED (He)	202	^{193}Ir	y = 21341 x + 141	0.9996	0.50
Pb	KED (He)	208	^{193}Ir	y = 275458 x + 8234	0.9998	0.27

Table S4. Average blank intensity (cps) for the blood matrix-matched method and synthetic matrix-matched method for the two manually prepared methods.

			Blood Matrix-Matched Calibration	Synthetic Matrix-Matched Calibration
Element	**Measurement Mode**	**m/z**	**Blank Intensity (cps)**	**Blank Intensity (cps)**
Mn	KED (He)	55	114982	86729
Mn (MnO)	QQQ (O_2)	71	17312	1420
Se	KED (He)	78	83028	18077
Se (SeO)	QQQ (O_2)	96	8716	868
Cd	KED (He)	113	13384	14336
Hg	KED (He)	202	733	349
Pb	KED (He)	208	57049	28646

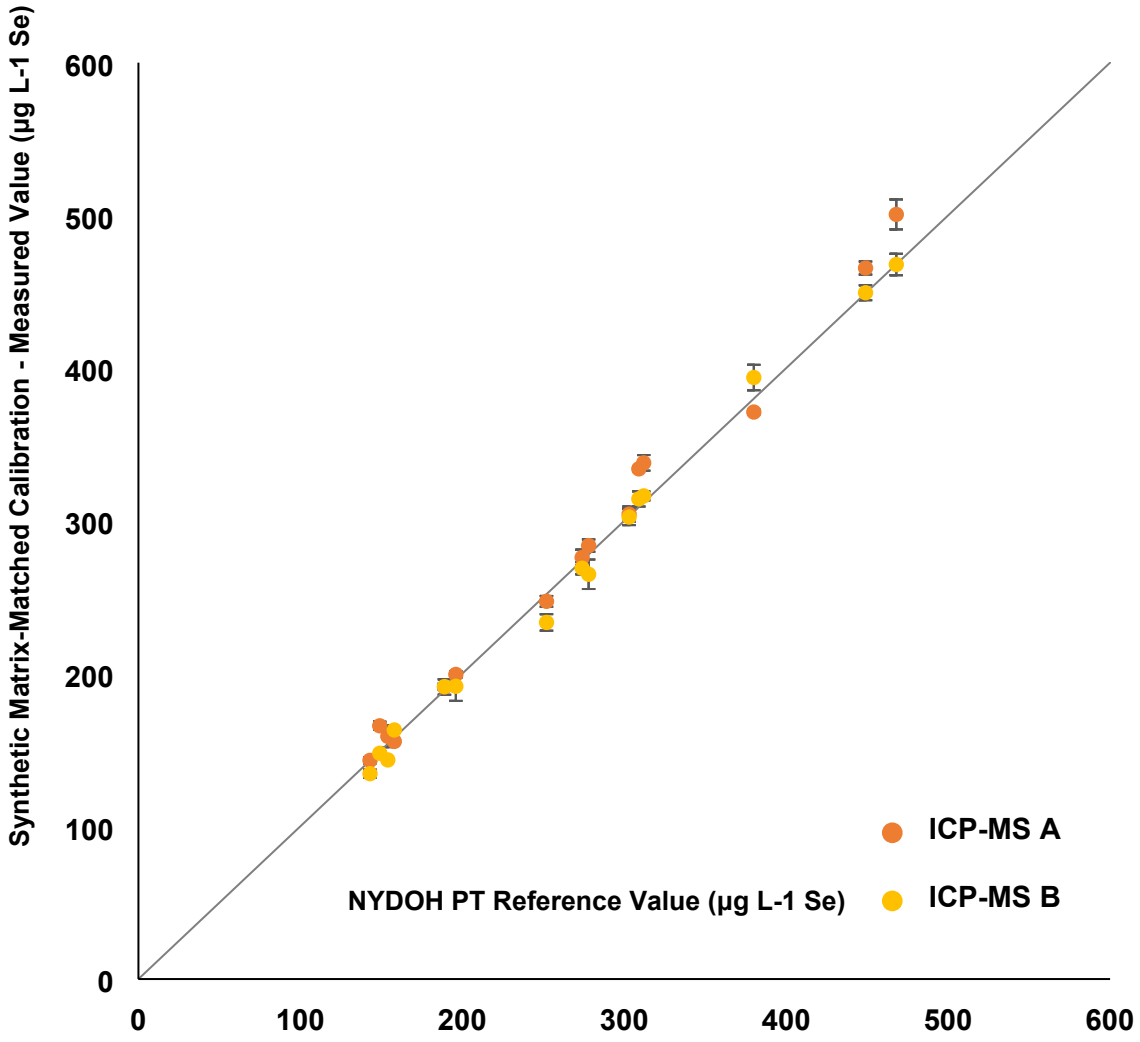

Figure S1. Linear regressions comparing the measured values of Se from the NYDOH PT samples to the target values for the synthetic matrix calibration with inline preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

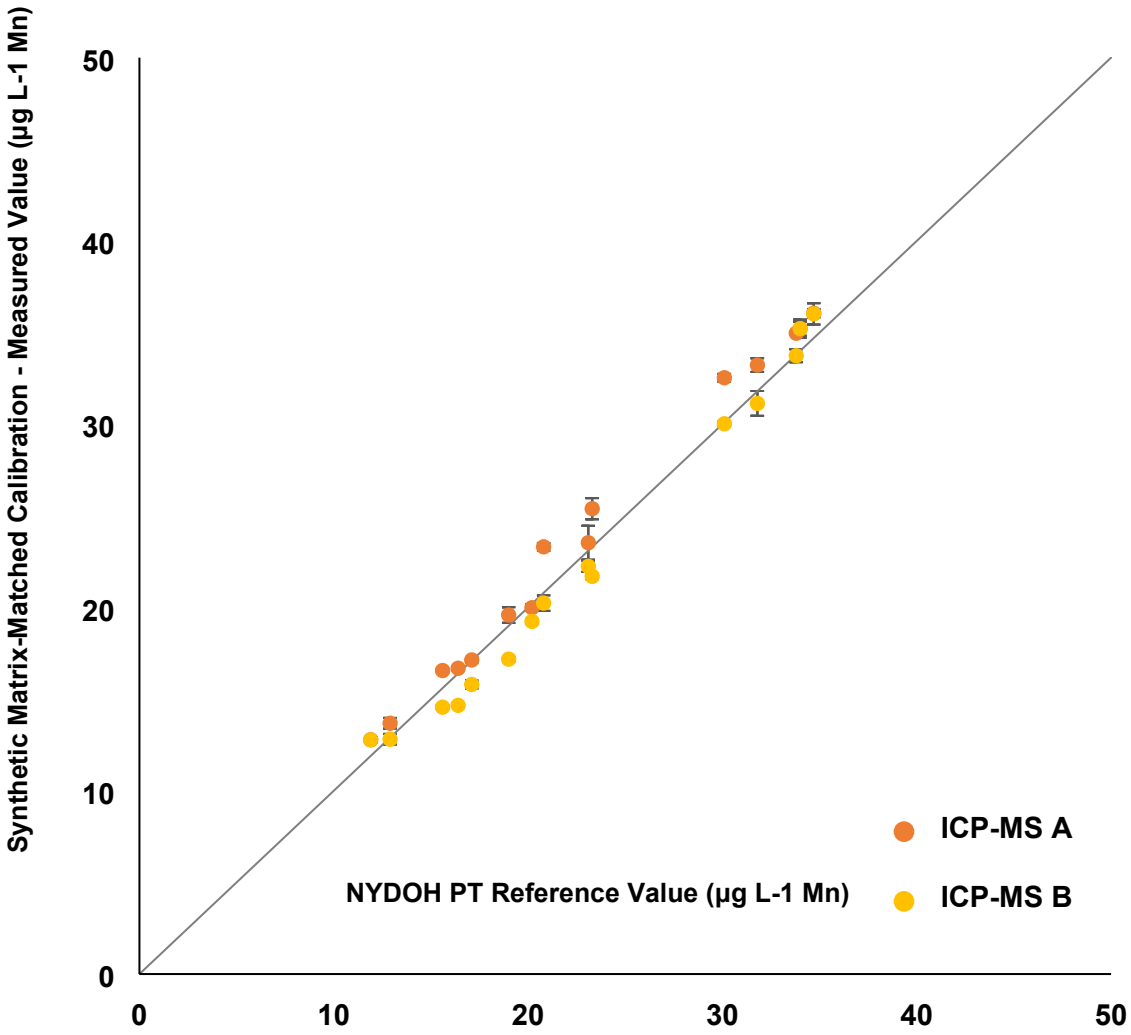

Figure S2. Linear regressions comparing the measured values of Mn from the NYDOH PT samples to the target values for the synthetic matrix calibration with inline preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

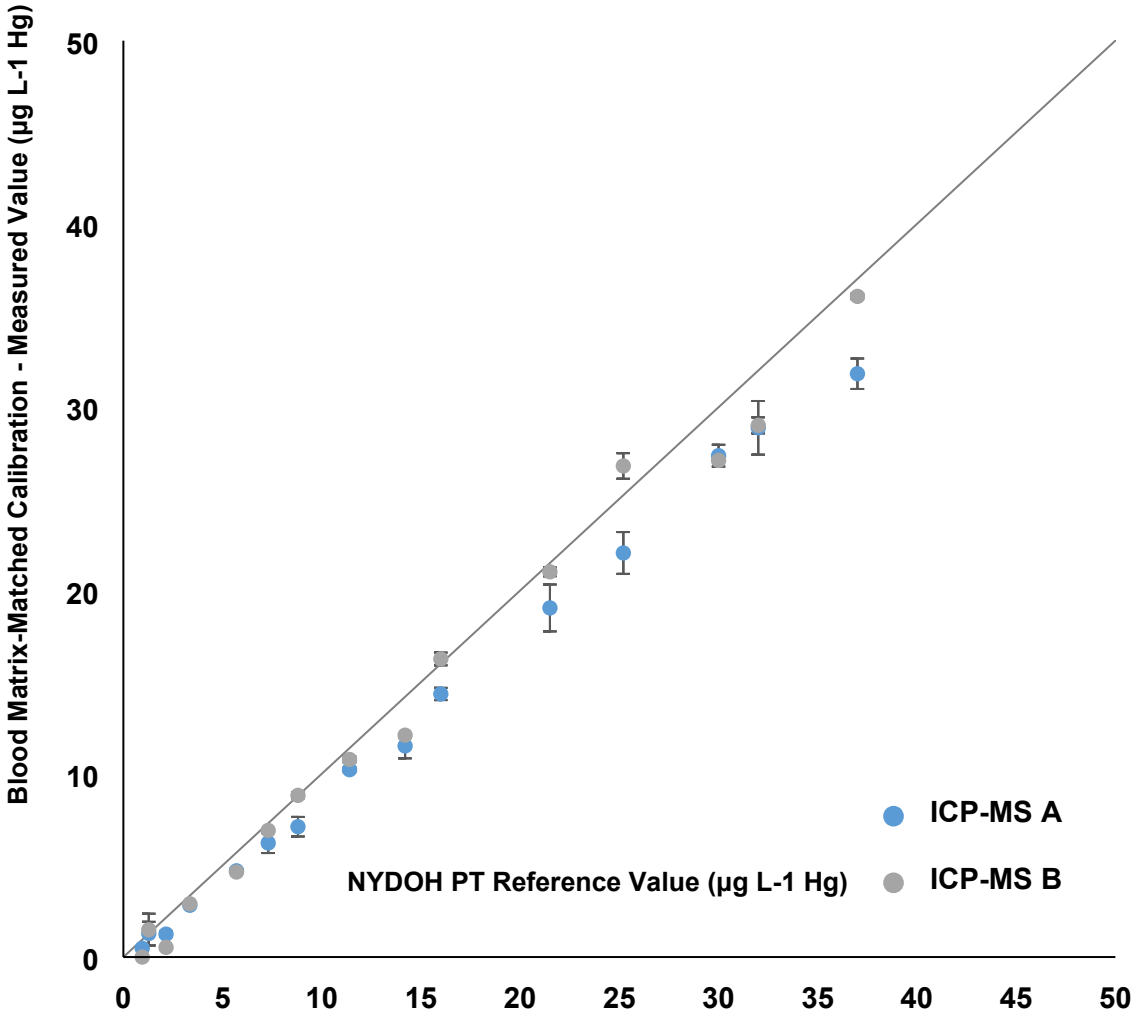

Figure S3. Linear regressions comparing the measured values of Hg from the NYDOH PT samples to the target values for the blood matrix calibration with manual preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

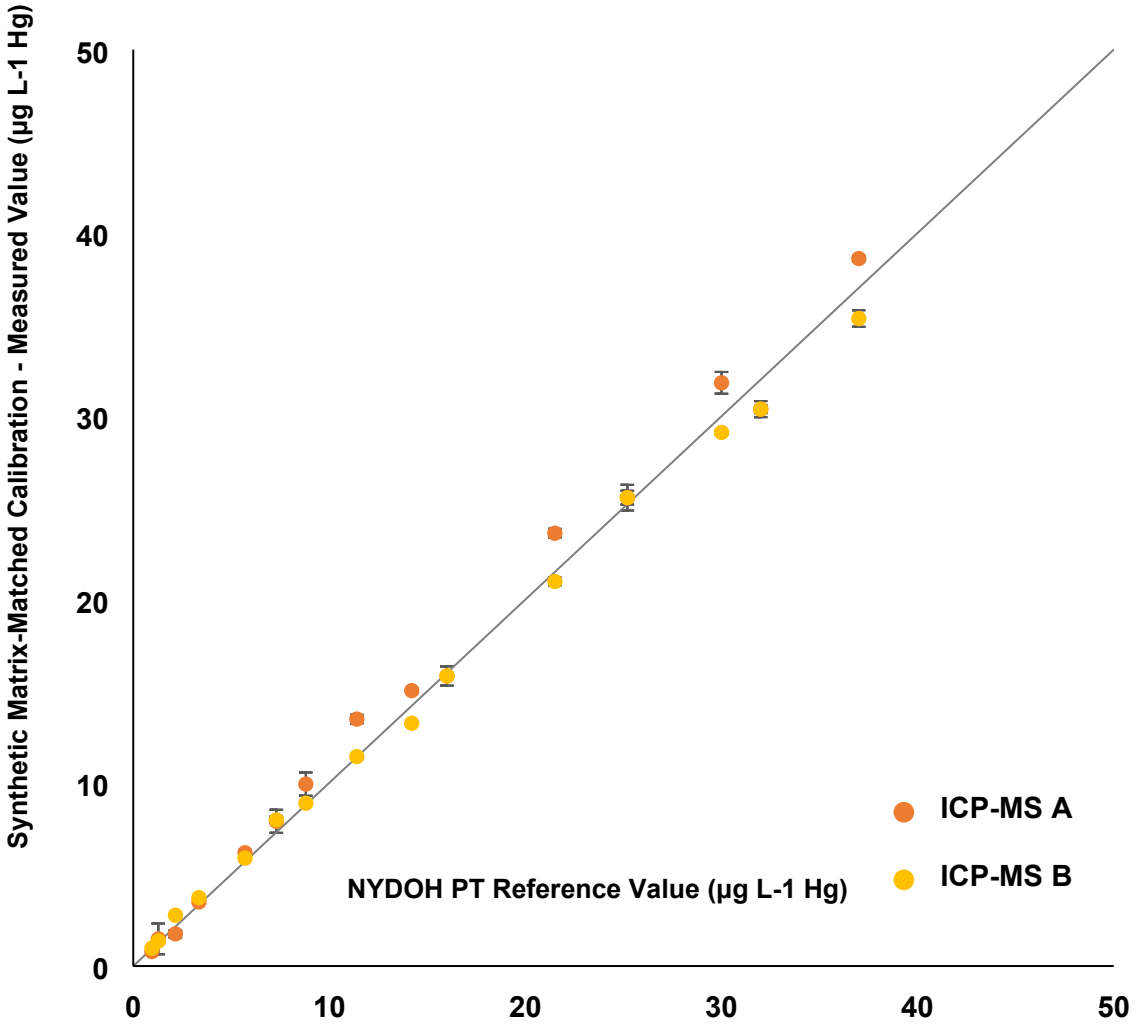

Figure S4. Linear regressions comparing the measured values of Hg from the NYDOH PT samples to the target values for the synthetic matrix calibration with manual preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

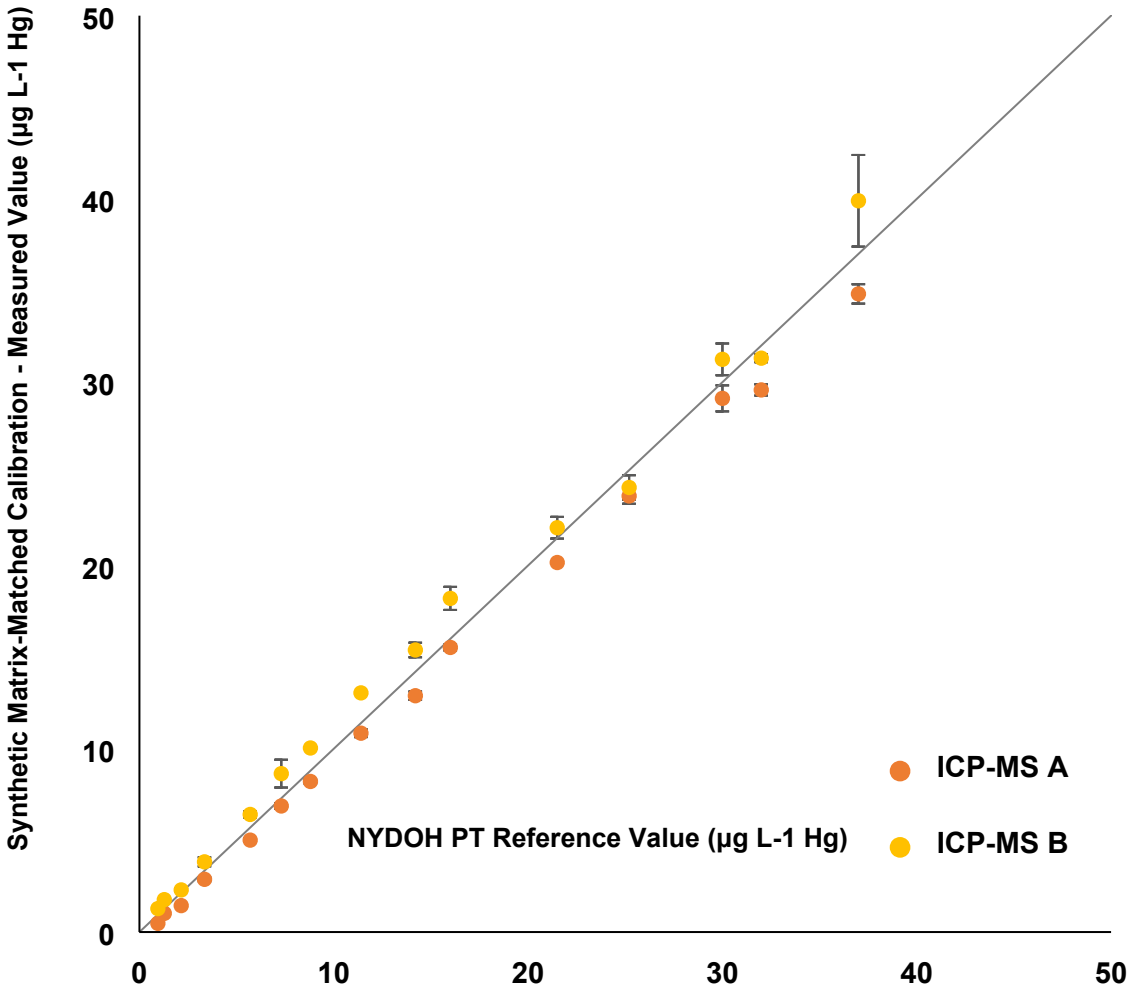

Figure S5. Linear regressions comparing the measured values of Hg from the NYDOH PT samples to the target values for the synthetic matrix calibration with inline preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

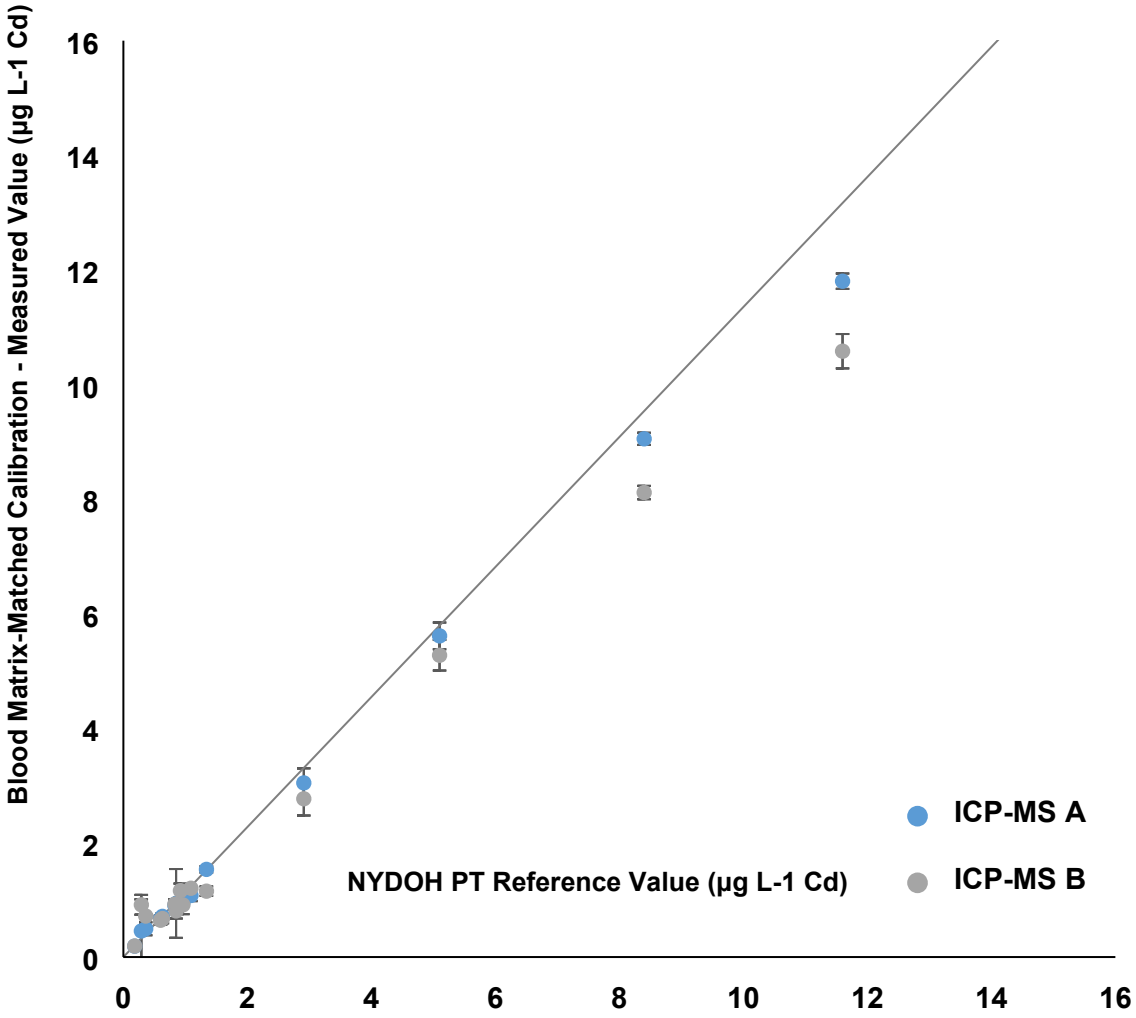

Figure S6. Linear regressions comparing the measured values of Cd from the NYDOH PT samples to the target values for the blood matrix calibration with manual preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

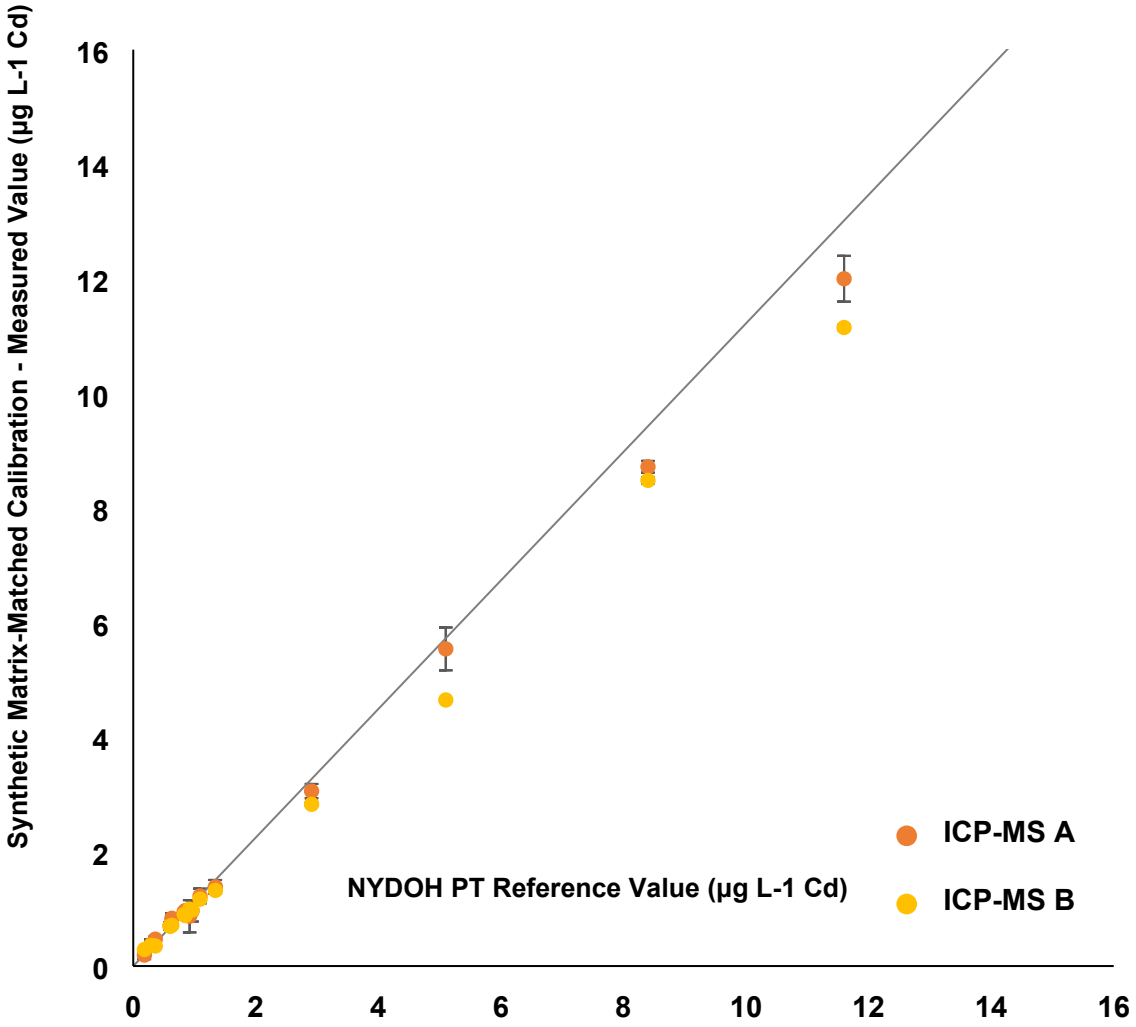

Figure S7. Linear regressions comparing the measured values of Hg from the NYDOH PT samples to the target values for the synthetic matrix calibration with manual preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

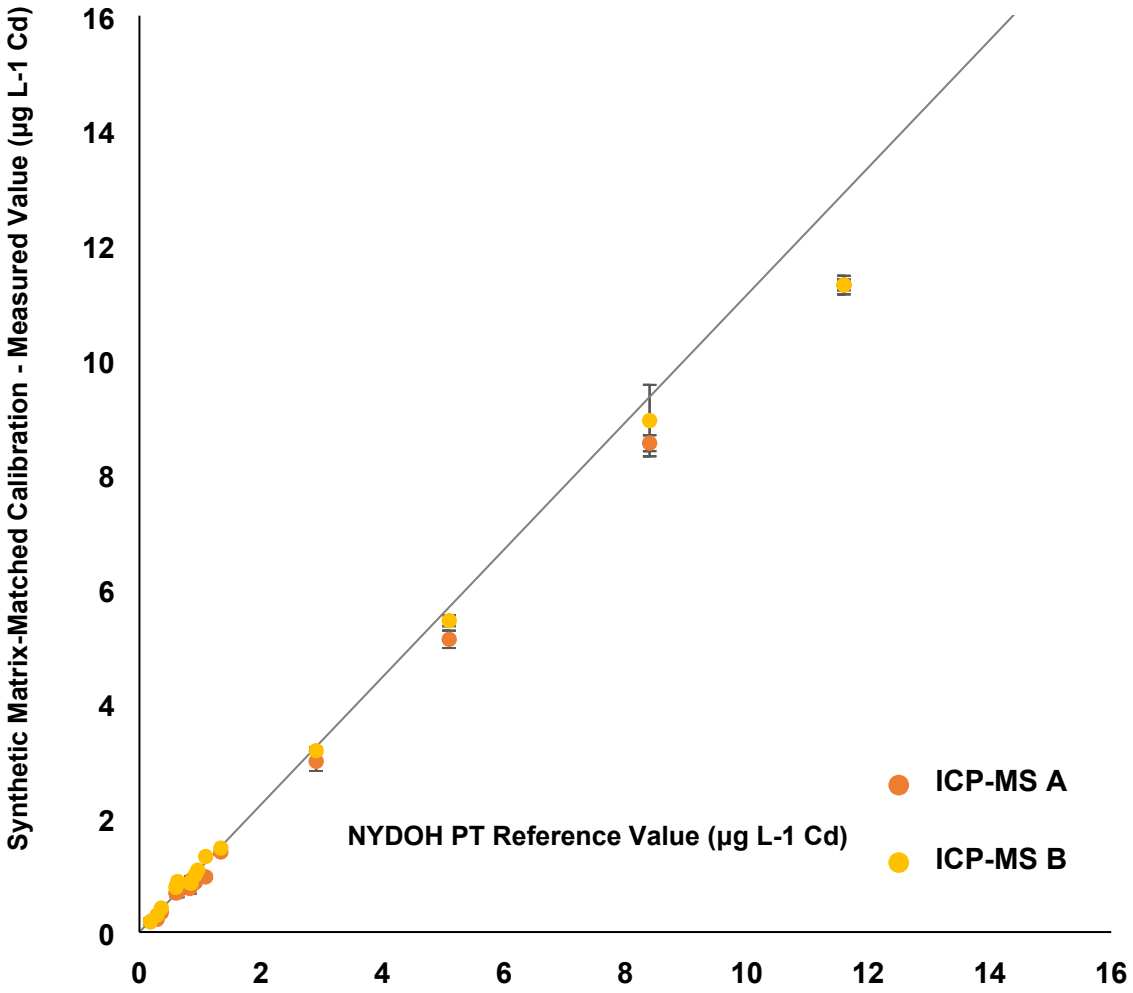

Figure S8. Linear regressions comparing the measured values of Hg from the NYDOH PT samples to the target values for the synthetic matrix calibration with inline preparation. Values reported are the average of 3 measurements from 2 different ICP-MS instruments (n = 6).

Table S5. Overall %BIAS to the target NYDOH PT sample values for the three methods evaluated.

Element	Overall %BIAS to PT Reference Values		
	Blood Matrix-Matched Calibration Manual preparation	**Synthetic Matrix-Matched Calibration Manual preparation**	**Synthetic Matrix-Matched Calibration Inline preparation**
Pb	7.9	3.1	3.7
Se	22	2.5	2.3
Cd	9.9	6.9	6.9
Hg	9.7	5.0	4.2
Mn	14	3.9	3.0

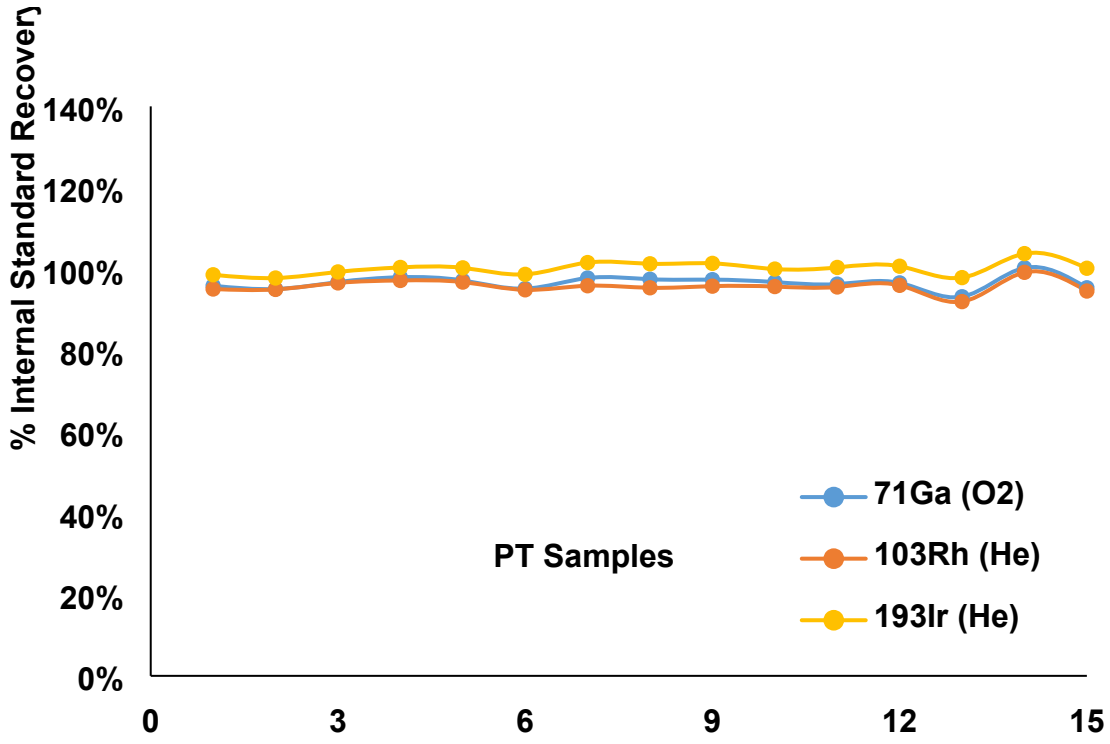

Figure S9. Displays the internal standard recovery (%) for Ga, Rh, and Ir for the blood matrix calibration (manual preparation) method used to analyze the NYDOH PT samples.

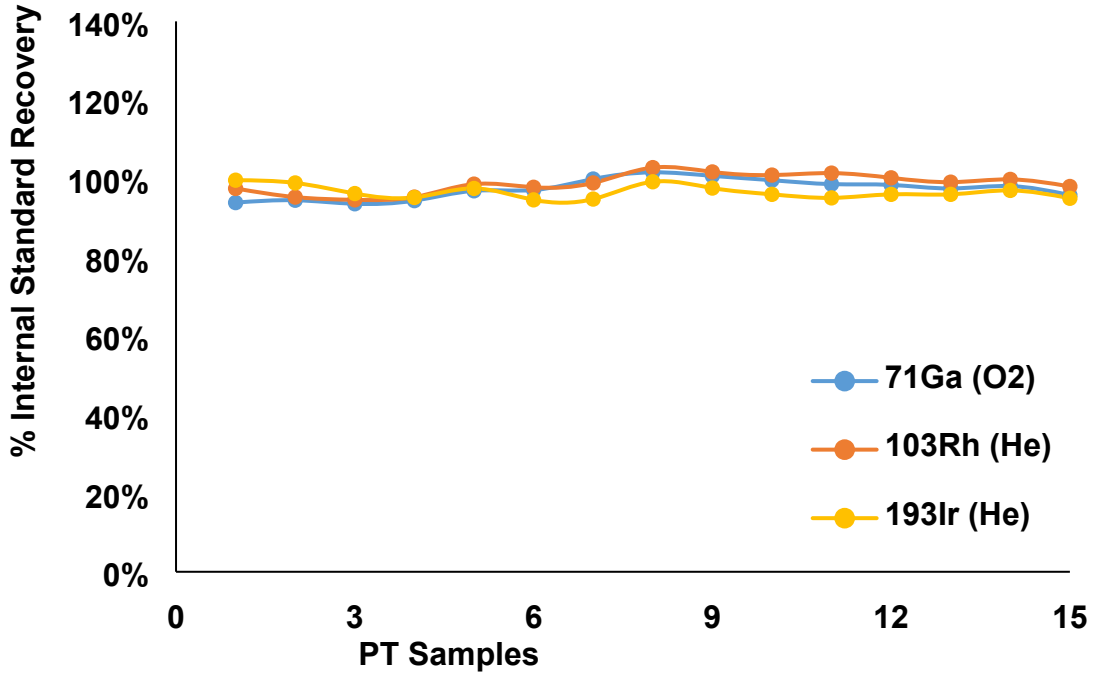

Figure S10. Displays the internal standard recovery (%) for Ga, Rh, and Ir for the synthetic matrix calibration (manual preparation) method used to analyze the NYDOH PT samples.

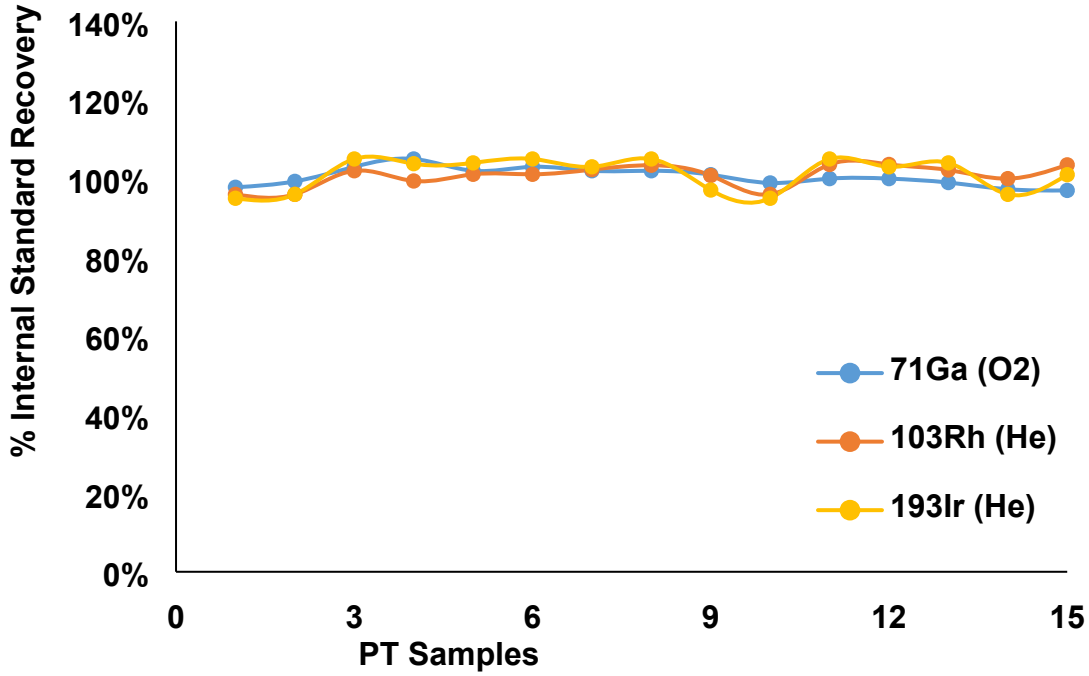

Figure S11. Displays the internal standard recovery (%) for Ga, Rh, and Ir for the synthetic matrix calibration (inline preparation) method used to analyze the NYDOH PT samples.