

Analyses of uranium and fluoride in diammonium phosphate fertilizers marketed in India during 2021-2022

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Supporting Figures

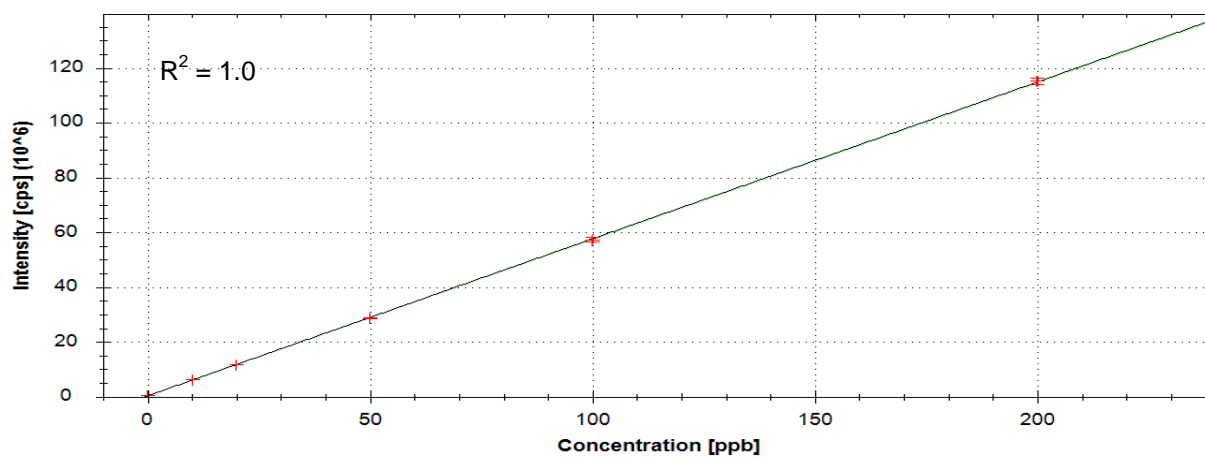


Figure S1. Calibration plot for uranium (ICP-MS, CSMCRI).

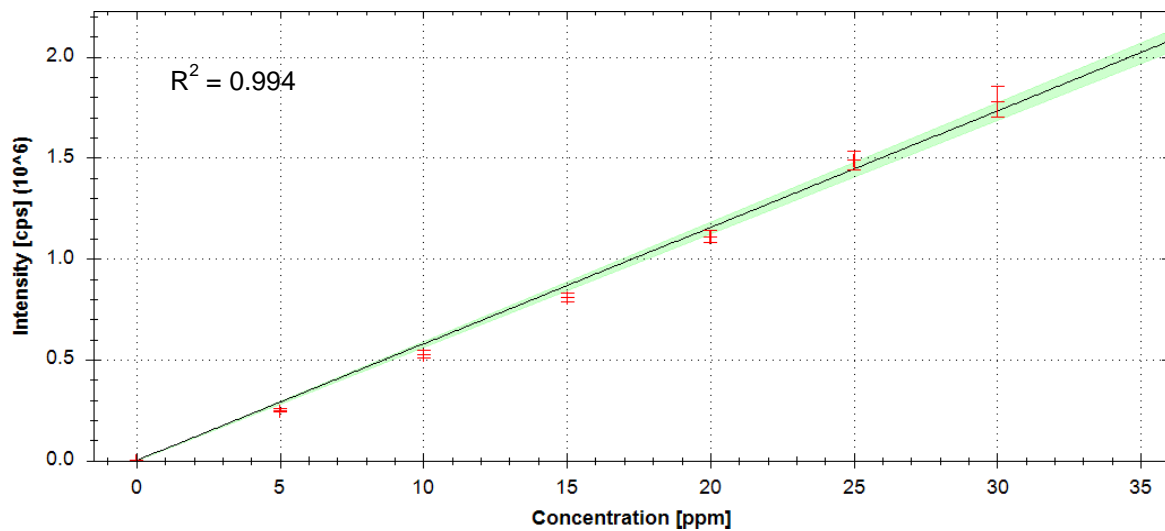


Figure S2. Calibration plot for phosphorus (ICP-MS, CSMCRI).

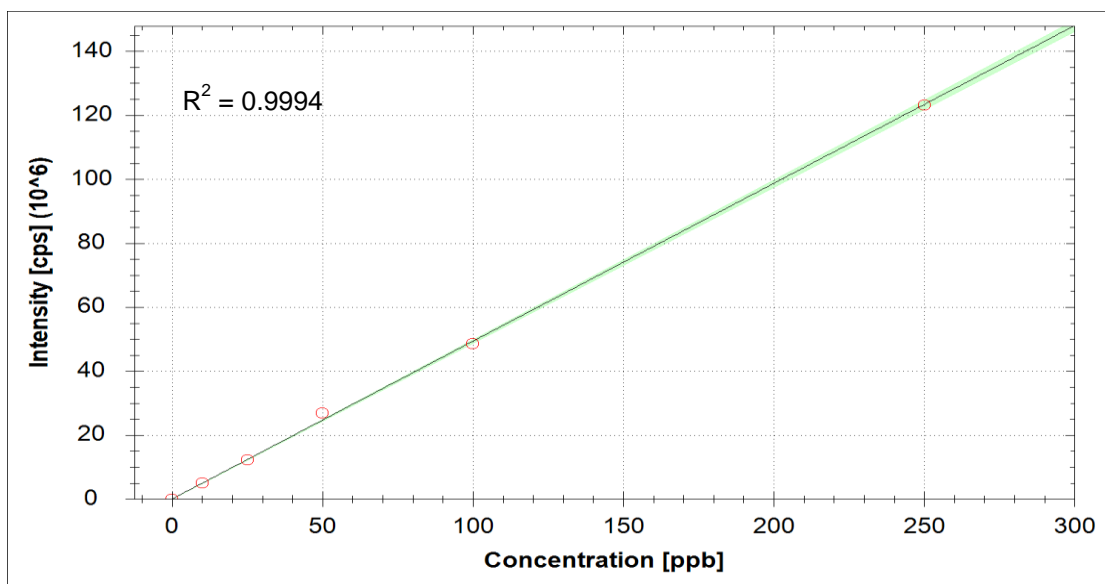


Figure S3. Calibration plot for uranium (ICP-MS, ICT).

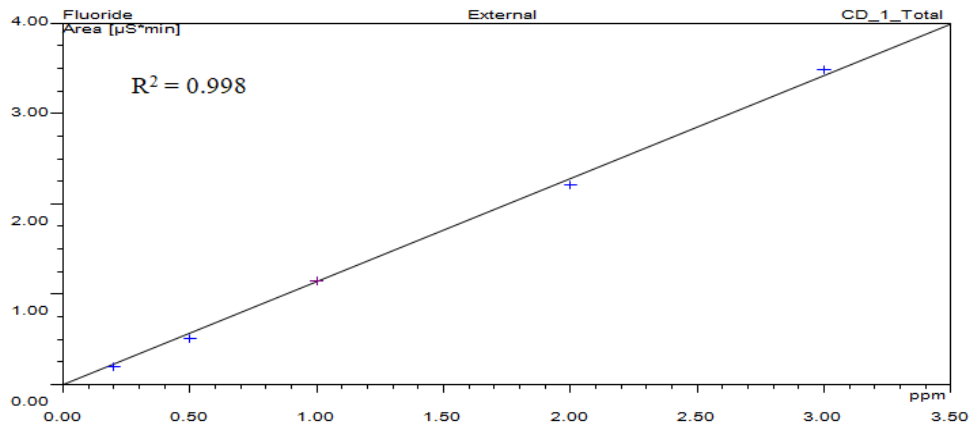


Figure S4. Calibration plot for fluoride (Ion chromatography, CSMCRI).

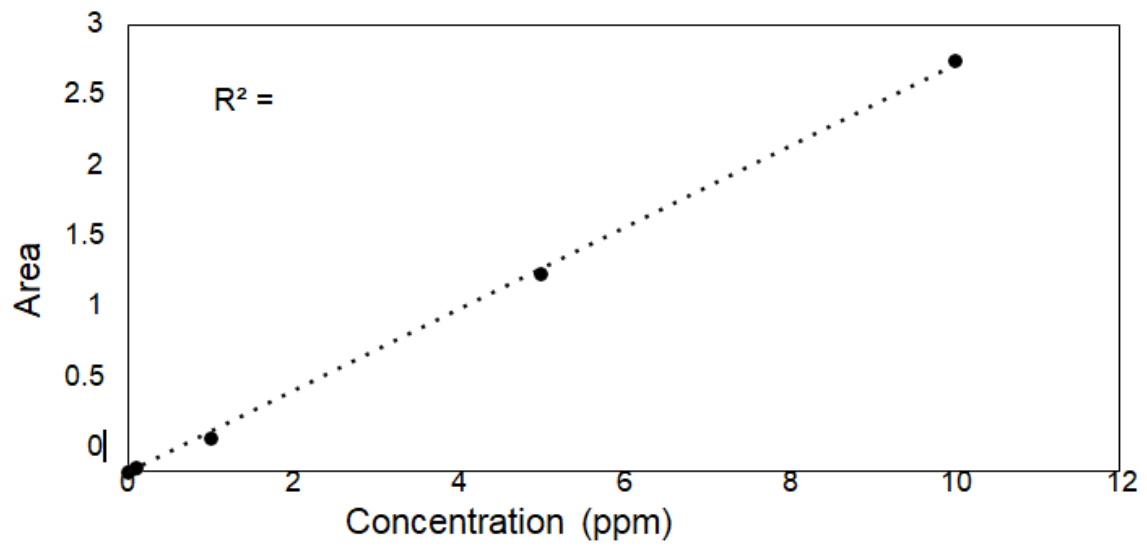


Figure S5. Calibration plot for fluoride (Ion chromatography, ICT).

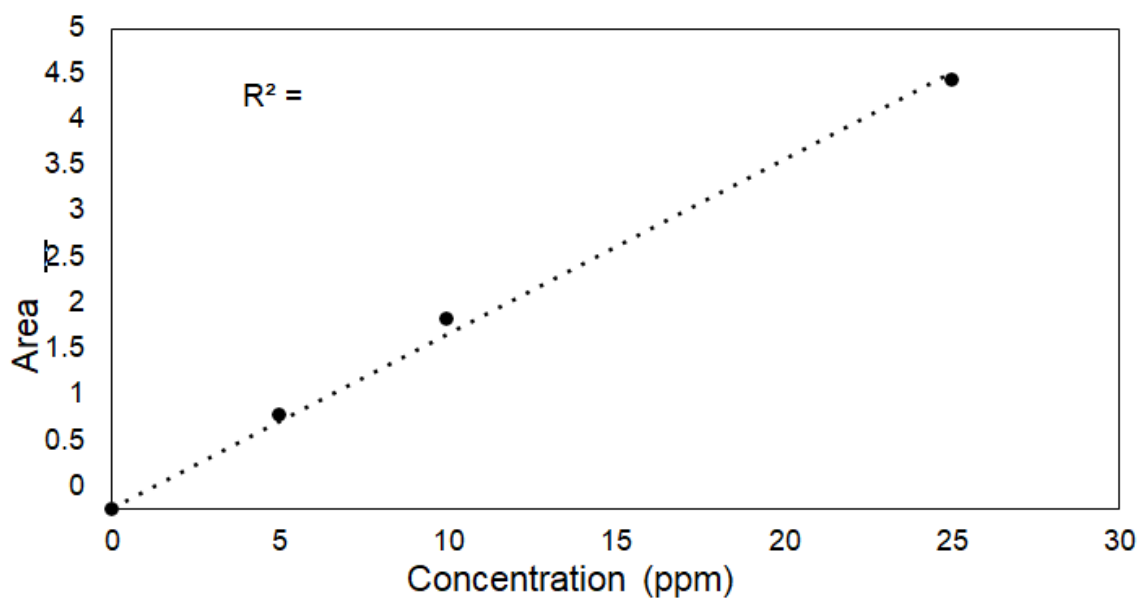


Figure S6. Calibration plot for Ammonium (Ion Chromatography ICT).

Supporting Tables

Table S1. Microwave digestion program for sample dissolution used in laser fluorimetry measurements.

Stage	Time (min.)	Power (W)	Internal Temperature (°C)	External Temperature (°C)	Pressure (bar)
Ramp	20	800	200	110	45.0
Hold	30	800	200	110	45.0
Cooling	50	0	40	35	1.2

Table S2. ICP-MS analyses of uranium in DAP4 without and with spiking with uranium standard.

	Unit	Value
Without spiking		
DAP4 concentration	g.L^{-1}	1.0
Instrument reading	$\mu\text{g.L}^{-1}$	200.10
Estimated concentration in DAP4	mg[U].kg^{-1}	200.1
With spiking		
Volume of above fertilizer solution taken	mL	9.5
Volume of $1000 \mu\text{g.L}^{-1}$ reference standard taken	mL	0.5
Total volume/ mL	mL	10.0
DAP concentration in spiked solution	g.L^{-1}	0.95
[U] contribution from DAP	$\mu\text{g.L}^{-1}$	190.10
[U] contribution from standard	$\mu\text{g.L}^{-1}$	50
Total reading as per computation	$\mu\text{g.L}^{-1}$	240.10
Actual instrument reading	$\mu\text{g.L}^{-1}$	246.42
U contribution from fertilizer after spiking	$\mu\text{g.L}^{-1}$	196.42
Estimated concentration in DAP4	mg[U].kg^{-1}	206.76
Deviation	%	+3.32
^a Analyses at ICT Mumbai (refer to calibration plot in Figure S3).		