



Chemistry Testing Limits



THE ISSUE:

Each laboratory test has a limit to the testing range outside of which the test cannot give a reliable result. Not much can be done for samples below that range. Samples with concentrations ABOVE that range may be diluted and if the diluted sample now has a concentration within the testing range, the assay result can be multiplied by the dilution factor to give the final amount. The process of dilution, however, can introduce error and not all assays remain accurate with higher levels of dilution.

THE SOLUTION:

The SUNY Upstate Core Laboratory has performed validations to determine the highest concentration that can be reliably measured through dilutions. The below table lists the highest concentration that can be reliably reported.

If testing at the highest dilution gives a result **higher** than this concentration, the lab will be reported as greater than the value listed below:

Analyte	Max result	Analyte	Max result	Analyte	Max result	Analyte	Max result	Analyte	Max result
Alpha-1 antitrypsin	11000 mg/dL	Blood urea nitrogen	336 mg/dL	Creatinine, serum	110 mg/dL	IgE	200000 IU/mL	Prolactin	20000 ng/mL
Acetaminophen	1000 µg/mL	Complement C3	10000 mg/dL	Creatinine, urine	1440 mg/dL	IgG	94000 mg/dL	Progesterone	600 ng/mL
Alpha fetoprotein	242000 ng/mL	Complement C4	2000 mg/dL	CRP (inflammatory)	15000 mg/L	IgM	5850 mg/dL	PSA	5000 ng/mL
Albumin	30 g/dL	Calcium	100 mg/dL	CRP-HS (cardiac)	300 mg/L	Lactate	75 mmol/L	Rheumatoid factor	650 IU/mL
ALC	0.98 g/dL	CA125	400000 U/mL	Cystatin C	150 mg/dL	LDH	2500 U/L	Strep O antibodies	3660 IU/mL
Alkaline phosphatase	6000 U/L	CA153	30000 U/mL	Estradiol	125000 pg/mL	LDL	25000 mg/dL	Total protein, serum	30 g/dL
ALT	35000 U/L	CA19-9	300000 U/mL	Iron	45000 µg/dL	Lipase, serum	3000 U/L	Total prot, urine/CSF	2000 mg/dL
Amylase	75000 U/L	Calcium, urine	125 mg/dL	Ferritin	100000 ng/mL	Lithium	150 mmol/L	Triglycerides	4250 mg/dL
AST	7000 U/L	CEA	100000 ng/mL	GGT	60000 U/L	Microalbumin	4400 mg/L	Troponin T	250 mg/dL
Beta2microglobulin	88 mg/L	Ceruloplasmin	2800 mg/dL	Glucose, serum/urine	1500 mg/dL	Magnesium, serum	8.6 mg/dL	Transferrin	10400 mg/dL
Beta HCG	900000 mIU/mL	Cholesterol	7500 mg/dL	Haptoglobin	28500 mg/dL	Magnesium, urine	50mg/dL	Uric acid	500 mg/dL
Betahydroxybutyrate	9 mmol/L	Creatinine kinase	100000 U/L	Homocysteine	250 µmol/L	Prealbumin	1600 mg/dL	Urine urea nitrogen	15000 mg/dL
Bilirubin, direct	20 mg/dL	CK-MB	4000 ng/mL	HDL	7500 mg/dL	Phosphate, serum	400 mg/dL		
Bilirubin, total	350 mg/dL	Cortisol	550 µg/dL	IgA	16000 mg/dL	Phosphate, urine	560 mg/dL		



Chemistry Testing Limits



THE ISSUE:

Each laboratory test has a limit to the testing range outside of which the test cannot give a reliable result. Not much can be done for samples below that range. Samples with concentrations ABOVE that range may be diluted and if the diluted sample now has a concentration within the testing range, the assay result can be multiplied by the dilution factor to give the final amount. The process of dilution, however, can introduce error and not all assays remain accurate with higher levels of dilution.

THE SOLUTION:

Testing in this table will be diluted until a final quantity can be determined (no maximal dilution):

Analyte	
Amikacin	Salicylate
DHEA, serum	Tegretol
Digoxin	Theophylline
Dilantin	Tobramycin
Gentamicin	Topiramate
Levetiracetam	Vancomycin
Methotrexate	Valproic Acid
Phenytoin	

Testing in this table is not diluted:

Analyte		
Ammonia	FSH	PTH
B12	Hemoglobin A1C	Sirolimus
Bicarbonate	Insulin	Sodium, serum/urine
BNP	Lamotrigine	T3
Chloride, serum/urine	LH	T4
Folate	Potassium, serum/urine	THC
Free T3	PSA, free	25OH - Vitamin D
Free T4		

For questions or concerns, please contact the Core Laboratory Chemistry Medical Director at elkinsm@upstate.edu