

Table S1.

Test	Cow													
Erythrogram	1	2	3	4	5	6	7	8	9	10	11	12	13	Unit
Erythrocytes	9.15*	7.64*	10.4*	7.08	6.96	9.43*	8.07*	8.27*	9.97*	9.24*	5.61	8.44*	10.6*	x10 ¹² /L
Hemoglobin	149*	140*	144*	134*	122	155*	145*	139*	110	121	89	114	124*	g/L
Hematocrit	0.4*	0.39*	0.4*	0.389*	0.348*	0.418*	0.389*	0.400*	0.332*	0.320	0.241□	0.319	0.362*	L/L
MCV	43.5	51.2*	38.4	55.0*	50.2	44.3	48.2	48.4	33.3□	34.7□	43.0	37.9□	34.0□	fL
MCH	16.3	18.3	13.8	18.9	17.6	16.4	17.9	16.8	11.0□	13.1□	16.0	13.5□	11.7□	pg
MCHC	374	358	360	343	350	370	372	348	330□	378	371	357	343	g/L
RDW	19.2	21.4*	23.7*	19.1	23.4*	20.2*	22.1*	19.9*	25.6*	22.9*	20.4*	18.9	22.5*	%
Basophilic stippling	No	No	No	No	Yes – few	No	No	No	No	No	No	No	No	
Leukogram														Unit
Leukocytes	5.48□	17.4*	14.3	6.50	6.40	7.20	14.3*	5.60□	10.8*	9.10*	17.6*	8.30	12.8	x10 ⁹ /L
Neutrophils ^Δ	0.166*	8.53*	5.29	0.975	N/A	N/A	N/A	N/A	5.29*	3.19*	14.1*	N/A	3.97*	x10 ⁹ /L
Eosinophils	0.083	0.522	0.143	0.130	0.256	N/A	N/A	N/A	0.108	0.819	N/A	N/A	0.128	x10 ⁹ /L
Basophils	0.083	N/A	0.143*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	x10 ⁹ /L
Lymphocytes	2.16	8.18	7.87	2.47	3.33	N/A	N/A	N/A	4.75	4.91	1.58□	N/A	8.32	x10 ⁹ /L
Monocytes	0.332	0.174	0.858*	0.910*	0.448	N/A	N/A	N/A	0.648	0.091□	1.936*	N/A	0.384	x10 ⁹ /L
Thrombogram														Unit
Platelets	406	214□	805*	428	435	279	339	465	725*	776*	573	627	761*	x10 ⁹ /L
Clumped	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Estimate	Normal	Normal	Increased	Normal	Normal	Normal	Normal	Normal	Increased	Increased	Increased	Increased	Increased	
Plasma proteins														Unit
Total protein	93*	92*	80	80	88*	93*	56□	87	66□	64□	82	70	7	g/L
Fibrinogen	1	2	4	7*	4	3	4	10*	2	4	7*	4	5	g/L
TP:Fb														
Abbreviations: MVC = mean corpuscular volume, MCH = mean corpuscular hemoglobin, MCHC = mean corpuscular hemoglobin concentration, RDW = width; TP:Fb = total protein to fibrinogen ratio														
ΔSegmented (i.e., mature) neutrophils														

Table S2.

	Cow																	
Test	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Reference interval (units)
Sodium	140	139	144	143	142	142	140	151*	144	142	153*	140	144	144	139	141	149*	138-148 (mmol/L)
Potassium	3.6◻	5.5*	6.6*	4.9	5.2	5.6*	3.3◻	4.2	5.4*	5.2	4	4	4.6	3.8	4.5	4	4.1	3.7-5.3 (mmol/L)
Chloride	93	92	96	99	97	97	86◻	100	97	90◻	103	95	101	99	94	98	100	91-104 (mmol/L)
Bicarbonate	23	7.00◻	24	24	23	19	28	22	16◻	24	25	29	24	24	26	28	28	17-33 (mmol/L)
Anion gap	28	46*	31*	25	27	32*	29	33*	36*	33*	29	20	24	25	24	19	25	17-29 (mmol/L)
Calcium	2.52	3.01*	2.97*	2.56	2.81*	2.6	2.25	2.1◻	2.68*	2.78*	2.49	2.4	2.56	2.33	2.36	2.63*	2.76*	2.21-2.61 (mmol/L)
Phosphorous	2.36	1.86	2.03	2.34	1.82	2.71*	1.49	3.15*	2.27	1.03◻	1.51	2.73*	3.21*	2.45	2.53	0.68◻	1.51	1.45-2.59 (mmol/L)
Magnesium	0.8◻	0.85	0.89	0.97	0.97	0.95	0.78◻	0.75◻	0.94	1	0.67◻	0.9	0.7◻	0.79◻	0.81	0.93	0.91	0.81-1.13 (mmol/L)
Urea	8	8.40	8.4	4.7	8.5	5.6	3.4◻	6.1	10.1	8	9.3	3.5	4.9	2.7◻	3.9	6.6	6.9	3.5-10.3 (mmol/L)
Creatinine	134*	141*	175*	98	96*	101*	76	98*	<15◻	74	116*	85	66	111*	122*	35◻	110*	49-95 (mmol/L)
Glucose	6*	9.9*	5*	3.8	4.3	4.1	6.5*	6.5*	2.5	4.2	7.3*	5*	3.3	4.3	4.3	6.7*	4.5*	1.6-4.4 (mmol/L)
Total bilirubin	20.8*	2.1	3.7	1.1	8.3*	7.4*	3.3	11*	4.4	1.9	8.7*	11.9*	4.8	8.3*	12.4*	23.9*	9.5*	1.0-5.0 (mmol/L)
Direct bilirubin	7*	0.8	1.7	0.2	1.7	2	1.2	3.4*	0.3	0.4	2.4	3.3*	1.1	2.6	3.1*	1.5	2.8	0.0-3.0 (mmol/L)
Indirect bilirubin	13.8*	1.3	2*	0.9	6.6*	5.4*	2.1*	7.6*	4.1	1.5	6.3*	8.6*	3.7*	5.7	9.3*	22.4*	6.7*	0.0-1.5 (mmol/L)
GGT	18	22	15	13	8◻	13	20	20	0◻	0◻	17	8◻	7◻	16	22	0◻	12	12-39 (U/L)
GLDH	127*	49*	45*	11	22	14	35	138*	28	23	23	16	62*	22	27	38*	44*	7-36 (U/L)
AST	120	156*	105	109	150*	102	137*	132*	139*	215*	507*	71	78	228*	109	162*	71	42-131 (U/L)
CK	395*	592*	2875*	320	434*	839*	1621*	922*	730*	2377*	8911*	168	519*	2484*	662*	5605*	654*	64-344 (U/L)
Total protein	97*	90*	78	73	85	81	77	88*	79	71	75	66◻	61◻	59◻	69	70	88*	68-87 (g/L)
Albumin	38	39*	45*	36	39*	39*	36	40*	39*	37	37	36	40*	39*	34	37	41*	32-38 (g/L)
Globulin	59*	51	33	37	46	42	41	48	40	34	38	30◻	21◻	20◻	35	33	47	32-52 (g/L)
A:G ratio	0.64	0.76	1.36*	0.97	0.85	0.93	0.88	0.83	0.98	1.09	0.97	1.2*	1.9*	1.95*	0.97	1.12	0.87	0.55-1.19
Abbreviations: GGT = gamma-glutamyl transferase, GLDH = glutamate dehydrogenase , AST = aspartate aminotransferase, CK = creatinine kinase, A:G = albumin:globulin, N/A = not available,																		

Table S3.

Supplementary Table 3. Veterinarian-reported clinical signs of western Canadian cattle subsequently diagnosed with acute lead poisoning (2014-2024).			
Clinical sign	No. cases with histories for individual animals (%) <i>n</i> =82	No. cases with histories for multiple animals (%) <i>n</i> =118	Combined (%) <i>n</i> =200*
Blindness	49 (60)	53 (45)	102 (51)
Acute death	24 (29)	72 (61)	96 (48)
Tremors/seizures	21 (26)	26 (22)	47 (24)
Salivation/frothing	16 (20)	15 (13)	31 (16)
Abnormal mentation	14 (17)	18 (15)	32 (16)
Bruxism	13 (16)	8 (6.8)	21 (11)
Abnormal gait/ataxia	11 (13)	15 (13)	26 (13)
Down	11 (13)	13 (11)	24 (12)
Abnormal chewing and licking	8 (9.8)	5 (4.2)	13 (6.5)
Rumen stasis	8 (9.8)	1 (0.8)	9 (4.5)
Circling	7 (8.5)	17 (14)	24 (12)
Anorexia	7 (8.5)	9 (7.6)	16 (8)
Abnormal behaviour	6 (7.3)	8 (6.8)	14 (7.0)
Fever	5 (6.1)	5 (4.2)	10 (5.0)
Tachycardia	5 (6.1)	1 (0.8)	6 (3.0)
Head pressing	4 (4.9)	5 (4.2)	9 (4.5)
Found dead	5 (6.1)	32 (27.1)	37 (19)
Away from herd	4 (4.9)	6 (5.1)	10 (5.0)
Wandering	4 (4.9)	7 (5.9)	11 (5.5)
Vocalization	4 (4.9)	5 (4.2)	9 (4.5)
Intact pupillary light reflex	3 (3.7)	0 (-)	3 (1.5)
Failure to suckle dam (calves)	2 (2.4)	3 (2.5)	5 (2.5)
Opisthotonus	0 (-)	4 (3.4)	4 (2.0)
Respiratory difficulty	0 (-)	3 (2.5)	3 (1.5)
Tachypnea	0 (-)	2 (1.7)	2 (1.0)
Undefined/other neurologic signs**	15 (18)	13 (11)	28 (14)
*33 herd records did not provide pertinent history information **Undefined neurologic signs referred to instances where the veterinarian noted neurologic signs, but did not specify which. Other neurologic signs included head tilt, difficulty drinking, deaf, protruding tongue, mydriases, ventromedial strabismus, abnormal head carriage, and tongue weakness.			