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CALCULATED DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER, ZINC, CADMIUM, AND LEAD IN 16 LAKES OF NORTHERN ITALY

by

M.F. BAUDOUIN and P. SCOPPA

1974

Joint Nuclear Research Centre
Ispra Establishment - Italy

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ABSTRACT

A pH-dependent model developed for seawater has been adapted to the speciation of Cu, Zn, Cd and Pb in freshwaters. The model was used to calculate the degree of interaction between each of the metal ions and the anions Cl^-, $SO_4^=$, HCO_3^-, $CO_3^=$ and OH^-, as a function of pH in sixteen lakes of Northern Italy.

The results are given in 64 tables and 16 figures. The calculations showed that the metals examined can be complexed to a considerable extent and that the distribution of the chemical species of the metals varies greatly with changes of pH and water composition. A few examples of the implications of this approach in biological studies on freshwater organisms are given.

KEYWORDS

LAKES
ITALY
COPPER
ZINC
CADMIUM
LEAD
DISTRIBUTION
POLLUTION
QUANTITATIVE ANALYSIS
DIAGRAMS
TABLES
PH VALUE
CHEMICAL REACTIONS
ANIONS
CHLORIDES
SULFATES
CARBONATES
HYDROXIDES
COPPER COMPOUNDS
CADMIUM COMPOUNDS
LEAD COMPOUNDS
ZINC COMPOUNDS
CATIONS

A better knowledge of the physico-chemical state of metals in the freshwater environment is necessary for an understanding of a large number of experimental results obtained from biological research on living organisms, such as those concerning the uptake and toxicity of heavy metals.

In this report we used an ion association model to estimate the short range interactions between some heavy metal ions and the major anions present in freshwaters. Furthermore, the effect of pH changes on the distribution of the chemical species of each metal has been taken into consideration.

The pH-dependent model used for the calculations is essentially an adaptation to freshwater of the model recently constructed by Zirino and Yamamoto (1972) for seawater. Therefore, we report only some fundamental characteristics of the approach and minor modifications introduced because of the low salt content in freshwater.

Copper, zinc, cadmium, and lead are considered to be in the divalent state. Interactions between these cations and anions are assumed to result only in the formation of mono-, di-, tri-, and tetra-ligand complexes. However, in the freshwater environment tri- and tetra-ligand complexes resulted to have a negligible influence on the percent distribution of the chemical species of the heavy metals taken into consideration. Polynuclear complexes, mixed-ligand complexes, and organic chelates are not included in the model.

(°) This publication is contribution N° 901 of the Directorate-General XII of the Commission of the European Communities: Biology Programme.

In thermodynamic equilibrium conditions, the concentrations of free metal ion and complexes can be obtained as the percent of total metal concentration by using appropriate expressions, derived from a series of mass balance equations. These expressions contain activity coefficients, metal and ligand concentrations, and overall formation constants of the complexes.

Activity coefficients for the metal ions and their complexes were calculated from a modification of the Debye-Huckel expression (Long, 1961), which may be used with reasonable accuracy because total ionic strength is generally very low in the freshwater environment.

Hydroxide ion activity was obtained directly from pH. HCO_3^- and $CO_3^=$ concentrations were calculated from titration alkalinity, which was assumed to remain constant over the entire pH range considered. Concentrations of unassociated anions were calculated taking into account the interactions with calcium and magnesium ions, while association with alkaline cations resulted to be negligible.

Stability constants were obtained from Sillen and Martell (1964) and from the Zirino and Yamamoto (1972) model.

The chemical characteristics of the lakes examined were those reported by Vollenweider (1965).

A programme for the desk top calculator Hewlett-Packard mod. 9820A, equipped with a peripheral control block mod. 11220A, was prepared. Input data are titration alkalinity, total concentrations of chlorides, sulphates, calcium, magnesium, and sodium+potassium. Ionic strength and activity coefficients are calculated at first; at a preset initial pH value anion concentrations are corrected for interactions with alkaline earth ions, then association with the heavy metal cation is calculated on the basis of the stability constants of the complexes formed. The percent distribution of the chemical species of the metal examined is printed by an output typewriter mod. 9861A and/or recorded by a mod. 9862A calculator plotter.

When the first cycle is completed, the pH is increased by a definite increment and a new cycle begins. The calculator repeats this procedure several times until the preset final pH value is reached.

Scanning of the pH range from 6 to 9 with increments of 0.05 pH units takes about 30 minutes.

RESULTS

We used this model for investigating the percent distribution of the chemical species of copper, zinc, cadmium and lead in sixteen lakes of Northern Italy. The results of the calculations are presented in numerical and graphical form. Table headings and curve identification symbols have been added to the tables and figures as they were given by the calculator.

In general these results show that:

Copper - The distribution of copper species exhibits a strong pH-dependency. At an average freshwater pH of 7.5 copper is complexed to a considerable extent with hydroxide and carbonate ions. Only a small fraction of the total metal remains as free copper ion.

Zinc - At acidic pH values a large percentage of zinc is present as the free ion. However, as the pH increases association with hydroxide ions occurs until at pH 8.0 about 90% of the total zinc is present as $Zn(OH)_2^\circ$.

Cadmium - Unlike that which occurs in seawater, cadmium undergoes less complexation than the other metals examined. At the average pH of lake water the predominant species is the free ion. At higher pHs, its percentage rapidly decreases because of association with carbonate and hydroxide ions.

Lead - It can be assumed that in the freshwater environment less than 10% of the total lead is generally present in the form of free ion. Between pH 7 and 9 lead is mainly complexed with carbonate ions.

Chloride complexes are not formed to any appreciable extent in lake water.

Sulphate complexes represent only a few percent of the total metal concentration and can be considered as negligible.

Hydroxide complexes are responsible for most of the associated copper and zinc.

Carbonate complexes are the predominant associated species of cadmium and lead.

pH changes normally encountered in lake water have important effects on the distribution of the chemical species of each metal.
As an example, the effect of pH variations on the percentages of total metal concentrations present as free ions in the epilimnion of Lago Maggiore is represented in the following table:

LAGO MAGGIORE (Vollenweider, 1965)		Free ions as % of total metal concentration			
		Cu^{++}	Zn^{++}	Cd^{++}	Pb^{++}
Average pH range:	7.5	4.09	50.56	69.82	2.76
	8.0	0.54	12.36	47.83	0.92
Extreme pH values:	6.6	39.37	85.63	85.47	16.52
	8.75	0.02	0.50	14.51	0.18

Chemical composition of lake water has a tremendous influence on the distribution of the chemical species of the four metals examined. A comparison between the percentages of total metals present as free ions in lakes of different pHs and salt content is given below:

LAKE CHARACTERISTICS (Vollenweider, 1965)	Free ions as % of total metal concentration			
	Cu^{++}	Zn^{++}	Cd^{++}	Pb^{++}
MERGOZZO Conductivity: 45 µS Average pH: 7.1	19.55	84.15	90.96	15.43
MAGGIORE Conductivity: 135 µS Average pH: 7.75	1.58	28.67	59.91	1.60
LUGANO Conductivity: 231 µS Average pH: 7.75	1.23	23.82	37.51	0.59
ANNONE O. Conductivity: 301 µS Average pH: 8.5	0.06	1.57	11.01	0.11

Implication to environmental studies

A few examples of how the results obtained can provide an insight into chemical and biological processes occurring in freshwater organisms will be given.

- Similarly to what happens in seawater, a significant fraction of the metals which forms complexes with hydroxide ions should be expected to be in the colloidal state or adsorbed to particulate surfaces. These phenomena are favoured at the epilimnion, where the pH is relatively high. When such particles sink in the hypolimnion and in the sediment interface, where the pH is considerably lower, free metal ions can be released in solution. As a consequence of this, the percentage of total metal concentration present as the free ion will increase with depth and, therefore, the intensity of its biological effects will show a vertical distribution as well.

- Information on the percent distribution of the chemical species of the metals in freshwaters can be very useful in understanding the uptake of such elements byfreshwater organisms. Taking into consideration such distribution, a better understanding of uptake mechanisms and more reliable concentration factors should be obtained.

- It is well known that water composition and pH affect to a remarkable extent the toxicity of heavy metals to freshwater organisms. Studies to correlate toxicity levels with water characteristics will take advantage of the information concerning the distribution of the chemical species of toxic metals. This approach should be very useful for a better evaluation of the risk represented by the increasing concentrations of heavy metals in the freshwater environment.
  A better knowledge of the distribution of the metal chemical species should help not only for these purposes, which are more related to our present studies, but also for many other investigations in the field of environmental protection.

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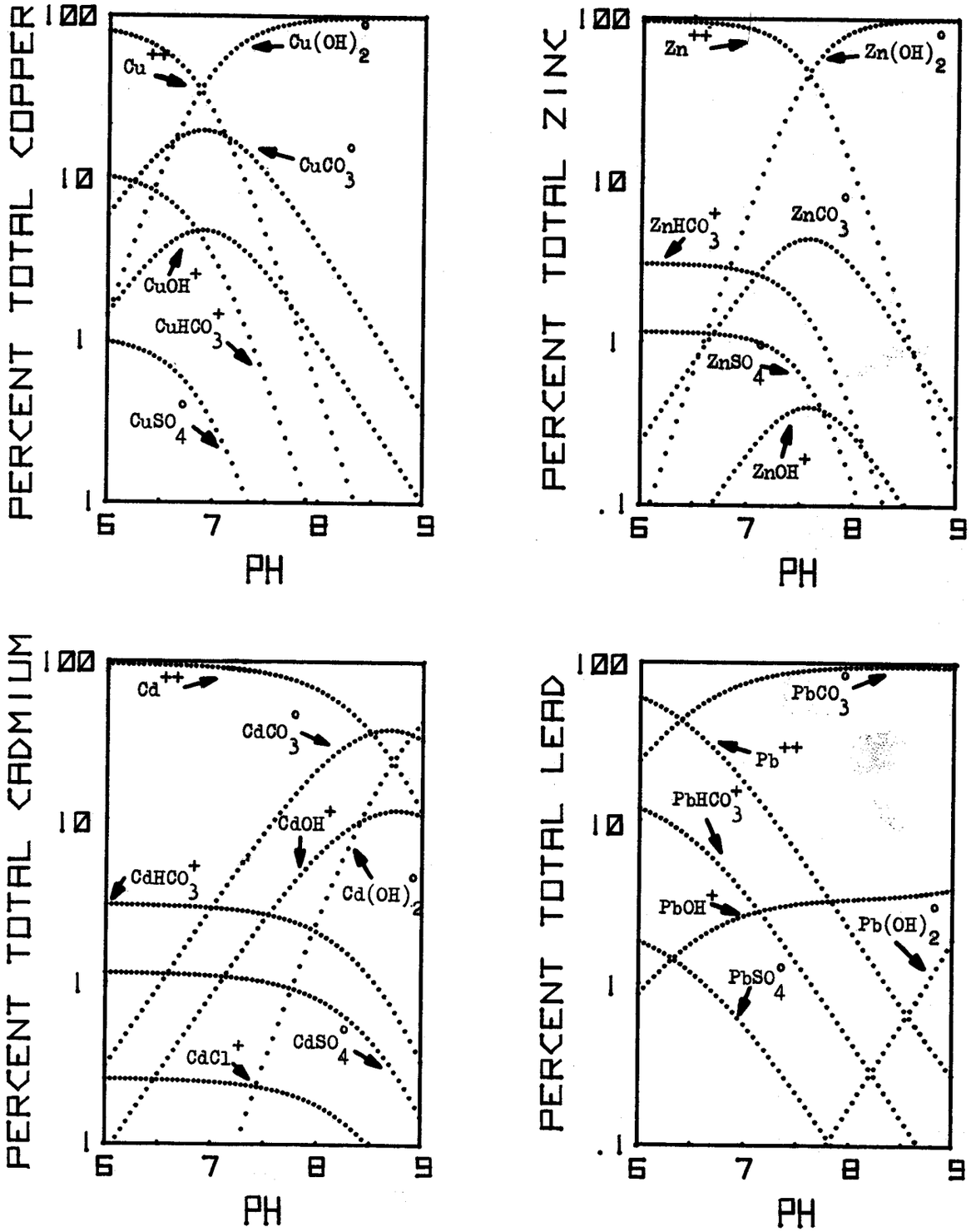
LAGO MERGOZZO



LAGO MERGOZZO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	79.84	.98	1.46	1.41	10.30	6.01	.00
6.10	77.71	.95	1.78	2.18	10.01	7.36	.00
6.20	74.99	.92	2.17	3.33	9.66	8.94	.00
6.30	71.55	.88	2.60	5.04	9.21	10.73	.00
6.40	67.25	.82	3.08	7.50	8.65	12.69	.00
6.50	62.00	.76	3.57	10.96	7.97	14.73	.00
6.60	55.79	.68	4.05	15.63	7.17	16.67	.00
6.70	48.72	.60	4.45	21.64	6.26	18.33	.00
6.80	41.10	.50	4.73	28.93	5.28	19.45	.00
6.90	33.37	.41	4.83	37.23	4.28	19.88	.00
7.00	26.04	.32	4.74	46.04	3.34	19.51	.01
7.10	19.55	.24	4.48	54.78	2.51	18.43	.01
7.20	14.17	.17	4.09	62.93	1.82	16.81	.01
7.30	9.96	.12	3.62	70.14	1.28	14.87	.01
7.40	6.83	.08	3.13	76.24	.87	12.83	.01
7.50	4.60	.06	2.65	81.26	.59	10.85	.01
7.60	3.04	.04	2.21	85.28	.39	9.03	.01
7.70	1.99	.02	1.82	88.47	.25	7.43	.01
7.80	1.29	.02	1.49	90.98	.16	6.05	.01
7.90	.83	.01	1.21	92.94	.11	4.90	.01
8.00	.53	.01	.97	94.47	.07	3.94	.01
8.10	.34	.00	.78	95.66	.04	3.15	.01
8.20	.22	.00	.63	96.60	.03	2.51	.01
8.30	.14	.00	.50	97.33	.02	2.00	.01
8.40	.09	.00	.40	97.91	.01	1.58	.01
8.50	.06	.00	.32	98.36	.01	1.25	.01
8.60	.04	.00	.26	98.71	.00	.98	.01
8.70	.02	.00	.20	98.99	.00	.77	.01
8.80	.01	.00	.16	99.22	.00	.60	.01
8.90	.01	.00	.13	99.39	.00	.46	.01
9.00	.01	.00	.10	99.53	.00	.36	.01

LAGO MERGOZZO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	95.40	.01	1.17	.02	.07	3.09	.24
6.10	95.30	.01	1.17	.03	.10	3.08	.31
6.20	95.17	.01	1.16	.03	.16	3.08	.38
6.30	94.97	.01	1.16	.04	.26	3.07	.48
6.40	94.70	.01	1.16	.05	.41	3.06	.61
6.50	94.32	.01	1.15	.07	.65	3.05	.76
6.60	93.76	.01	1.15	.09	1.02	3.03	.95
6.70	92.96	.01	1.14	.11	1.61	3.00	1.18
6.80	91.79	.01	1.12	.13	2.51	2.96	1.47
6.90	90.09	.01	1.10	.16	3.91	2.91	1.82
7.00	87.64	.01	1.07	.20	6.03	2.82	2.23
7.10	84.15	.01	1.03	.24	9.17	2.71	2.69
7.20	79.29	.01	.97	.29	13.70	2.55	3.19
7.30	72.81	.00	.89	.33	19.94	2.34	3.68
7.40	64.61	.00	.79	.37	28.04	2.08	4.11
7.50	54.96	.00	.67	.40	37.81	1.76	4.40
7.60	44.56	.00	.55	.41	48.58	1.43	4.48
7.70	34.36	.00	.42	.40	59.38	1.10	4.34
7.80	25.28	.00	.31	.37	69.23	.81	4.01
7.90	17.85	.00	.22	.33	77.48	.57	3.56
8.00	12.20	.00	.15	.28	83.93	.39	3.05
8.10	8.14	.00	.10	.24	88.72	.26	2.55
8.20	5.33	.00	.07	.19	92.15	.17	2.09
8.30	3.45	.00	.04	.16	94.55	.11	1.69
8.40	2.22	.00	.03	.13	96.21	.07	1.35
8.50	1.42	.00	.02	.10	97.35	.04	1.08
8.60	.90	.00	.01	.08	98.13	.03	.85
8.70	.57	.00	.01	.07	98.67	.02	.67
8.80	.36	.00	.00	.05	99.05	.01	.52
8.90	.23	.00	.00	.04	99.32	.01	.40
9.00	.14	.00	.00	.03	99.51	.00	.31

LAGO MERGOZZO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

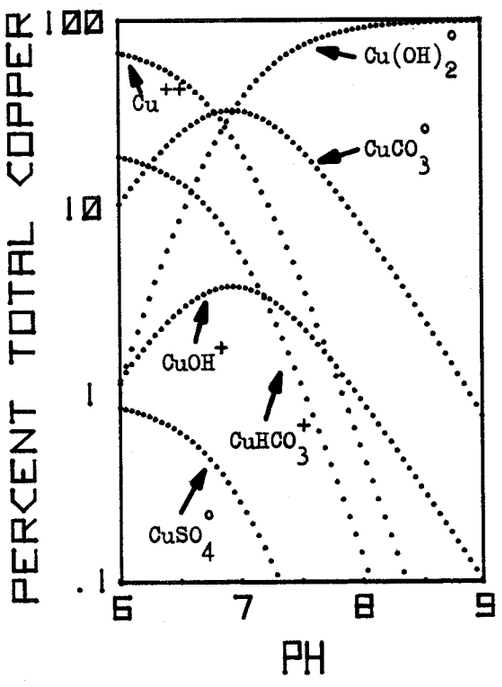
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	95.11	.25	1.16	.09	.00	3.08	.31
6.10	95.02	.25	1.16	.11	.00	3.08	.38
6.20	94.90	.25	1.16	.14	.00	3.07	.48
6.30	94.75	.25	1.16	.17	.00	3.06	.61
6.40	94.56	.25	1.16	.22	.00	3.06	.76
6.50	94.32	.25	1.15	.27	.00	3.05	.96
6.60	94.02	.25	1.15	.34	.01	3.04	1.20
6.70	93.64	.25	1.15	.43	.01	3.02	1.50
6.80	93.17	.25	1.14	.54	.01	3.01	1.88
6.90	92.59	.25	1.13	.67	.02	2.99	2.35
7.00	91.86	.24	1.12	.84	.03	2.96	2.94
7.10	90.96	.24	1.11	1.05	.05	2.93	3.66
7.20	89.84	.24	1.10	1.30	.08	2.89	4.55
7.30	88.47	.24	1.08	1.61	.12	2.85	5.63
7.40	86.78	.23	1.06	1.99	.19	2.79	6.95
7.50	84.74	.23	1.04	2.45	.30	2.72	8.53
7.60	82.27	.22	1.01	2.99	.46	2.64	10.41
7.70	79.33	.21	.97	3.63	.70	2.54	12.62
7.80	75.86	.20	.93	4.37	1.07	2.42	15.15
7.90	71.83	.19	.88	5.21	1.60	2.29	18.01
8.00	67.22	.18	.82	6.14	2.37	2.13	21.14
8.10	62.06	.16	.76	7.14	3.47	1.96	24.45
8.20	56.41	.15	.69	8.17	5.00	1.77	27.82
8.30	50.37	.13	.62	9.18	7.08	1.57	31.05
8.40	44.12	.12	.54	10.12	9.82	1.36	33.92
8.50	37.82	.10	.46	10.92	13.34	1.15	36.19
8.60	31.69	.08	.39	11.52	17.72	.95	37.64
8.70	25.93	.07	.32	11.87	22.97	.77	38.08
8.80	20.69	.06	.25	11.92	29.06	.60	37.42
8.90	16.11	.04	.20	11.68	35.85	.45	35.67
9.00	12.23	.03	.15	11.17	43.14	.33	32.95

LAGO MERGOZZO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	60.42	.06	1.86	.87	.00	12.35	24.44
6.10	56.72	.06	1.74	1.03	.00	11.58	28.86
6.20	52.66	.06	1.62	1.21	.00	10.75	33.71
6.30	48.31	.05	1.49	1.40	.00	9.85	38.91
6.40	43.75	.05	1.35	1.59	.00	8.92	44.34
6.50	39.11	.04	1.20	1.79	.00	7.97	49.88
6.60	34.50	.04	1.06	1.99	.00	7.03	55.38
6.70	30.05	.03	.92	2.18	.01	6.12	60.69
6.80	25.85	.03	.79	2.36	.01	5.26	65.70
6.90	21.98	.02	.68	2.53	.01	4.47	70.31
7.00	18.50	.02	.57	2.68	.01	3.76	74.46
7.10	15.43	.02	.47	2.81	.02	3.14	78.12
7.20	12.76	.01	.39	2.93	.02	2.59	81.29
7.30	10.48	.01	.32	3.03	.03	2.13	84.00
7.40	8.56	.01	.26	3.11	.04	1.74	86.28
7.50	6.96	.01	.21	3.18	.05	1.41	88.18
7.60	5.63	.01	.17	3.25	.06	1.14	89.74
7.70	4.55	.00	.14	3.30	.08	.92	91.01
7.80	3.66	.00	.11	3.34	.10	.74	92.04
7.90	2.94	.00	.09	3.38	.13	.59	92.86
8.00	2.36	.00	.07	3.42	.17	.47	93.51
8.10	1.89	.00	.06	3.45	.21	.38	94.00
8.20	1.52	.00	.05	3.49	.27	.30	94.37
8.30	1.22	.00	.04	3.52	.34	.24	94.64
8.40	.98	.00	.03	3.56	.43	.19	94.80
8.50	.79	.00	.02	3.60	.55	.15	94.88
8.60	.63	.00	.02	3.66	.71	.12	94.86
8.70	.51	.00	.02	3.72	.91	.10	94.75
8.80	.42	.00	.01	3.79	1.16	.08	94.54
8.90	.34	.00	.01	3.89	1.50	.06	94.21
9.00	.28	.00	.01	4.00	1.94	.05	93.72

LAGO MONATE


PERCENT TOTAL COPPER
100
10
1
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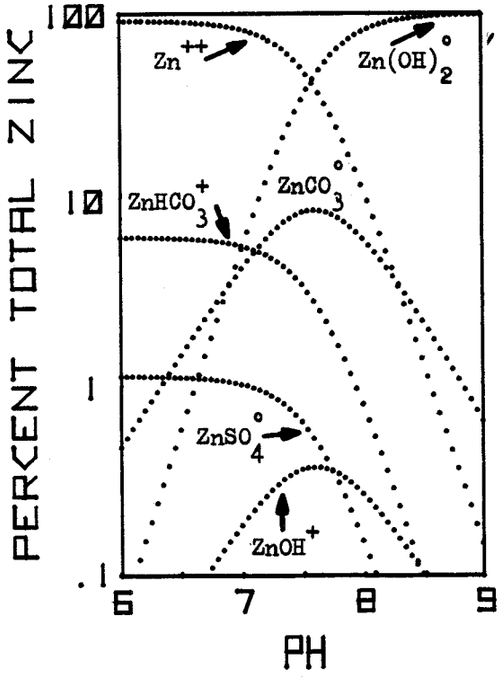
CuCO3°
CuOH+
CuHCO3+
CuSO4°
6
7
8
9
PH


PERCENT TOTAL ZINC
100
10
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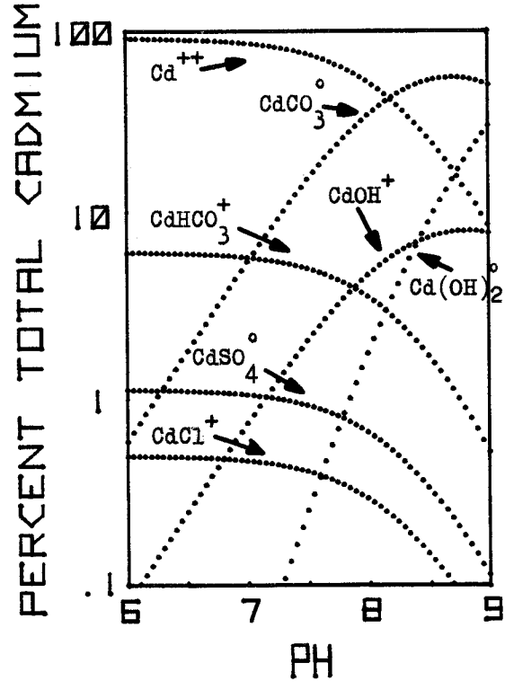
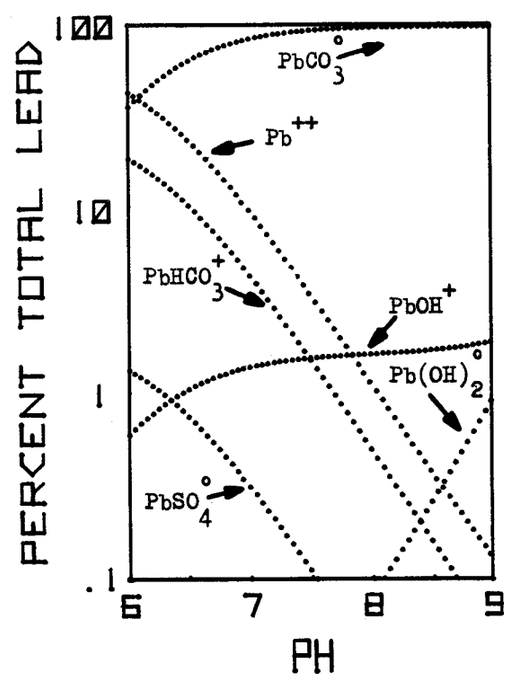
.1
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
6
7
8
9
PH


PERCENT TOTAL CADMIUM
100
10
1
.1
Cd++
CdCO3°
CdOH+
CdHCO3+
Cd(OH)2°
CdSO4°
CdCl+
6
7
8
9
PH


PERCENT TOTAL LEAD
100
10
1
.1
PbCO3°
Pb++
PbHCO3+
PbOH+
Pb(OH)2°
PbSO4°
6
7
8
9
PH

LAGO MONATE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	67.58	.85	1.20	1.15	18.69	10.53	.00
6.10	65.17	.82	1.46	1.76	18.01	12.78	.00
6.20	62.24	.78	1.75	2.67	17.20	15.36	.00
6.30	58.73	.74	2.08	3.99	16.22	18.24	.00
6.40	54.59	.69	2.43	5.88	15.07	21.34	.00
6.50	49.81	.63	2.79	8.50	13.75	24.51	.00
6.60	44.46	.56	3.14	12.02	12.27	27.53	.01
6.70	38.68	.49	3.44	16.57	10.67	30.14	.01
6.80	32.67	.41	3.66	22.19	9.01	32.04	.01
6.90	26.73	.34	3.77	28.77	7.37	33.00	.02
7.00	21.16	.27	3.75	36.10	5.83	32.87	.02
7.10	16.20	.20	3.62	43.81	4.46	31.67	.02
7.20	12.03	.15	3.38	51.53	3.31	29.57	.03
7.30	8.67	.11	3.07	58.90	2.39	26.83	.03
7.40	6.10	.08	2.72	65.66	1.68	23.73	.04
7.50	4.20	.05	2.36	71.65	1.15	20.55	.04
7.60	2.84	.04	2.01	76.82	.78	17.48	.04
7.70	1.89	.02	1.68	81.19	.52	14.64	.04
7.80	1.25	.02	1.40	84.82	.34	12.12	.05
7.90	.82	.01	1.15	87.81	.22	9.94	.05
8.00	.53	.01	.94	90.25	.14	8.09	.05
8.10	.34	.00	.76	92.22	.09	6.53	.05
8.20	.22	.00	.62	93.81	.06	5.25	.05
8.30	.14	.00	.50	95.08	.04	4.20	.05
8.40	.09	.00	.40	96.10	.02	3.34	.05
8.50	.06	.00	.32	96.92	.01	2.64	.05
8.60	.04	.00	.25	97.57	.01	2.09	.05
8.70	.02	.00	.20	98.08	.01	1.64	.05
8.80	.01	.00	.16	98.50	.00	1.28	.04
8.90	.01	.00	.13	98.83	.00	.99	.04
9.00	.01	.00	.10	99.09	.00	.76	.04

LAGO MONATE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	91.88	.01	1.16	.02	.06	6.38	.49
6.10	91.73	.01	1.16	.03	.10	6.37	.61
6.20	91.53	.01	1.15	.03	.15	6.35	.77
6.30	91.26	.01	1.15	.04	.24	6.33	.96
6.40	90.90	.01	1.15	.05	.38	6.31	1.20
6.50	90.41	.01	1.14	.06	.60	6.27	1.51
6.60	89.73	.01	1.13	.08	.94	6.22	1.88
6.70	88.79	.01	1.12	.10	1.48	6.15	2.34
6.80	87.48	.01	1.10	.12	2.31	6.06	2.91
6.90	85.65	.01	1.08	.15	3.59	5.93	3.58
7.00	83.11	.01	1.05	.19	5.52	5.75	4.37
7.10	79.61	.01	1.00	.22	8.37	5.51	5.27
7.20	74.88	.01	.94	.27	12.48	5.18	6.24
7.30	68.71	.01	.87	.31	18.15	4.75	7.20
7.40	61.05	.01	.77	.34	25.56	4.22	8.05
7.50	52.13	.01	.66	.37	34.60	3.60	8.64
7.60	42.54	.01	.54	.38	44.74	2.93	8.87
7.70	33.10	.00	.42	.37	55.17	2.27	8.67
7.80	24.59	.00	.31	.35	64.97	1.69	8.09
7.90	17.55	.00	.22	.31	73.47	1.20	7.24
8.00	12.11	.00	.15	.27	80.37	.83	6.27
8.10	8.15	.00	.10	.23	85.68	.55	5.29
8.20	5.38	.00	.07	.19	89.63	.36	4.37
8.30	3.50	.00	.04	.16	92.51	.23	3.56
8.40	2.26	.00	.03	.13	94.57	.15	2.86
8.50	1.45	.00	.02	.10	96.05	.09	2.28
8.60	.92	.00	.01	.08	97.12	.06	1.81
8.70	.59	.00	.01	.07	97.88	.04	1.42
8.80	.37	.00	.00	.05	98.43	.02	1.11
8.90	.24	.00	.00	.04	98.84	.01	.86
9.00	.15	.00	.00	.03	99.14	.01	.67

LAGO MONATE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

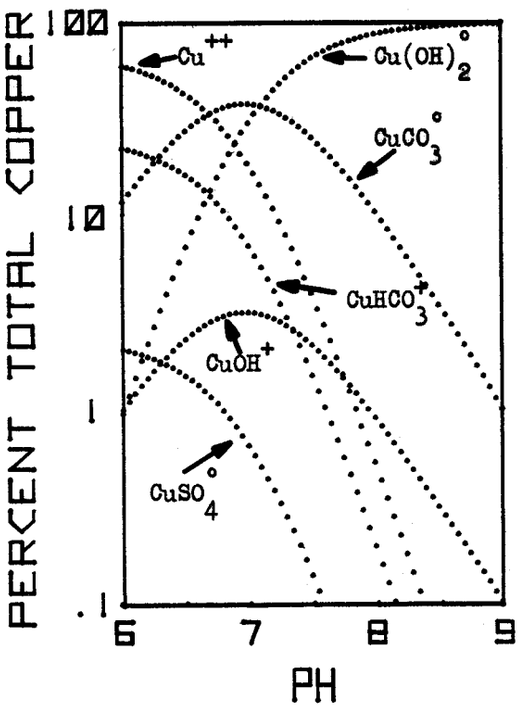
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	91.31	.51	1.15	.08	.00	6.34	.61
6.10	91.15	.51	1.15	.10	.00	6.33	.76
6.20	90.95	.51	1.15	.13	.00	6.31	.96
6.30	90.70	.50	1.14	.16	.00	6.29	1.20
6.40	90.38	.50	1.14	.20	.00	6.27	1.51
6.50	89.98	.50	1.13	.25	.00	6.24	1.89
6.60	89.49	.50	1.13	.32	.00	6.20	2.36
6.70	88.87	.49	1.12	.40	.01	6.16	2.95
6.80	88.10	.49	1.11	.49	.01	6.10	3.69
6.90	87.16	.48	1.10	.62	.02	6.04	4.59
7.00	85.99	.48	1.08	.76	.03	5.95	5.70
7.10	84.57	.47	1.07	.95	.05	5.85	7.05
7.20	82.84	.46	1.04	1.17	.07	5.73	8.69
7.30	80.75	.45	1.02	1.43	.11	5.58	10.66
7.40	78.27	.43	.99	1.75	.17	5.40	12.99
7.50	75.34	.42	.95	2.12	.26	5.20	15.72
7.60	71.93	.40	.91	2.55	.39	4.95	18.87
7.70	68.04	.38	.86	3.03	.58	4.68	22.43
7.80	63.68	.35	.80	3.57	.86	4.37	26.37
7.90	58.88	.33	.74	4.16	1.26	4.03	30.60
8.00	53.73	.30	.68	4.78	1.83	3.66	35.03
8.10	48.33	.27	.61	5.41	2.61	3.28	39.49
8.20	42.83	.24	.54	6.04	3.66	2.89	43.81
8.30	37.36	.21	.47	6.63	5.06	2.50	47.76
8.40	32.08	.18	.40	7.16	6.89	2.13	51.16
8.50	27.09	.15	.34	7.62	9.22	1.78	53.80
8.60	22.52	.13	.28	7.97	12.15	1.46	55.50
8.70	18.41	.10	.23	8.20	15.74	1.17	56.15
8.80	14.81	.08	.19	8.31	20.06	.92	55.64
8.90	11.71	.07	.15	8.27	25.15	.71	53.95
9.00	9.11	.05	.11	8.10	30.99	.53	51.11

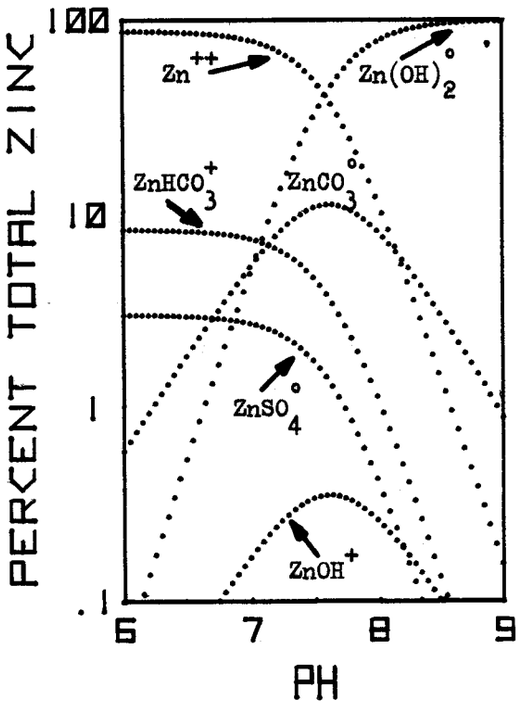
LAGO MONATE

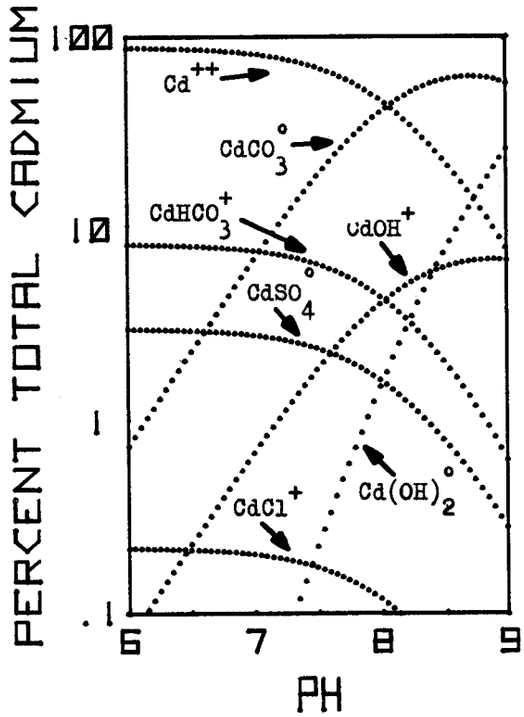
% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

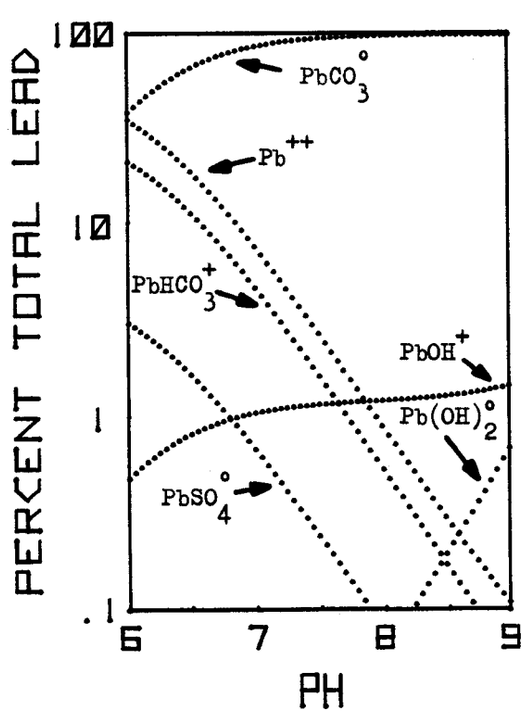
pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	43.05	.10	1.36	.61	.00	18.87	36.02
6.10	39.33	.09	1.24	.70	.00	17.23	41.41
6.20	35.47	.08	1.12	.79	.00	15.53	47.01
6.30	31.57	.07	1.00	.89	.00	13.82	52.65
6.40	27.73	.06	.88	.98	.00	12.14	58.21
6.50	24.05	.05	.76	1.07	.00	10.52	63.54
6.60	20.61	.05	.65	1.16	.00	9.01	68.52
6.70	17.46	.04	.55	1.23	.00	7.64	73.08
6.80	14.65	.03	.46	1.30	.00	6.40	77.15
6.90	12.18	.03	.39	1.36	.01	5.32	80.72
7.00	10.05	.02	.32	1.42	.01	4.39	83.80
7.10	8.23	.02	.26	1.46	.01	3.60	86.42
7.20	6.71	.01	.21	1.50	.01	2.93	88.62
7.30	5.44	.01	.17	1.53	.01	2.37	90.45
7.40	4.40	.01	.14	1.56	.02	1.92	91.96
7.50	3.55	.01	.11	1.58	.02	1.54	93.19
7.60	2.85	.01	.09	1.60	.03	1.24	94.18
7.70	2.29	.01	.07	1.62	.04	.99	94.99
7.80	1.83	.00	.06	1.63	.05	.79	95.63
7.90	1.47	.00	.05	1.64	.06	.63	96.14
8.00	1.18	.00	.04	1.66	.08	.51	96.54
8.10	.94	.00	.03	1.67	.10	.40	96.85
8.20	.75	.00	.02	1.68	.13	.32	97.09
8.30	.60	.00	.02	1.70	.16	.26	97.26
8.40	.48	.00	.02	1.72	.21	.20	97.37
8.50	.39	.00	.01	1.74	.26	.16	97.43
8.60	.31	.00	.01	1.76	.34	.13	97.45
8.70	.25	.00	.01	1.79	.43	.10	97.41
8.80	.21	.00	.01	1.83	.56	.08	97.32
8.90	.17	.00	.01	1.88	.72	.06	97.17
9.00	.14	.00	.00	1.93	.93	.05	96.94

LAGO MAGGIORE









LAGO MAGGIORE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	60.63	2.10	1.03	.98	23.00	12.25	.00
6.10	58.30	2.02	1.25	1.49	22.11	14.82	.00
6.20	55.51	1.92	1.50	2.25	21.05	17.77	.00
6.30	52.23	1.81	1.77	3.35	19.80	21.04	.00
6.40	48.42	1.68	2.07	4.93	18.35	24.55	.01
6.50	44.12	1.53	2.37	7.11	16.72	28.15	.01
6.60	39.37	1.36	2.66	10.06	14.91	31.62	.01
6.70	34.31	1.19	2.92	13.89	12.99	34.68	.02
6.80	29.11	1.01	3.12	18.68	11.02	37.03	.02
6.90	24.00	.83	3.24	24.41	9.08	38.41	.03
7.00	19.19	.66	3.26	30.93	7.26	38.65	.03
7.10	14.88	.52	3.19	38.03	5.63	37.72	.04
7.20	11.21	.39	3.02	45.37	4.23	35.73	.05
7.30	8.21	.28	2.78	52.66	3.10	32.91	.06
7.40	5.86	.20	2.50	59.60	2.21	29.55	.07
7.50	4.09	.14	2.20	65.99	1.54	25.96	.07
7.60	2.81	.10	1.90	71.70	1.05	22.36	.08
7.70	1.89	.07	1.61	76.68	.71	18.95	.08
7.80	1.26	.04	1.35	80.93	.47	15.85	.09
7.90	.83	.03	1.12	84.52	.31	13.10	.09
8.00	.54	.02	.92	87.49	.20	10.73	.09
8.10	.35	.01	.75	89.94	.13	8.71	.10
8.20	.23	.01	.61	91.95	.08	7.03	.10
8.30	.15	.01	.49	93.57	.05	5.63	.10
8.40	.09	.00	.40	94.89	.03	4.49	.10
8.50	.06	.00	.32	95.94	.02	3.56	.09
8.60	.04	.00	.26	96.79	.01	2.81	.09
8.70	.02	.00	.21	97.47	.01	2.20	.09
8.80	.02	.00	.16	98.02	.01	1.71	.09
8.90	.01	.00	.13	98.45	.00	1.33	.08
9.00	.01	.00	.10	98.79	.00	1.02	.07

LAGO MAGGIORE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	87.90	.01	3.04	.02	.06	8.38	.60
6.10	87.73	.01	3.04	.02	.09	8.36	.76
6.20	87.51	.01	3.03	.03	.14	8.34	.95
6.30	87.22	.01	3.02	.04	.22	8.31	1.19
6.40	86.84	.01	3.01	.05	.34	8.27	1.49
6.50	86.32	.01	2.99	.06	.54	8.22	1.87
6.60	85.63	.01	2.97	.07	.85	8.15	2.33
6.70	84.68	.01	2.93	.09	1.33	8.06	2.90
6.80	83.39	.01	2.89	.11	2.08	7.93	3.59
6.90	81.61	.01	2.83	.14	3.23	7.76	4.43
7.00	79.19	.00	2.74	.17	4.97	7.52	5.40
7.10	75.89	.00	2.63	.20	7.54	7.21	6.52
7.20	71.50	.00	2.48	.24	11.26	6.79	7.72
7.30	65.82	.00	2.28	.28	16.43	6.24	8.94
7.40	58.78	.00	2.04	.32	23.26	5.57	10.04
7.50	50.56	.00	1.75	.34	31.71	4.78	10.86
7.60	41.64	.00	1.44	.35	41.39	3.93	11.24
7.70	32.74	.00	1.13	.35	51.58	3.08	11.11
7.80	24.60	.00	.85	.33	61.42	2.31	10.48
7.90	17.74	.00	.61	.30	70.20	1.66	9.48
8.00	12.36	.00	.43	.26	77.52	1.15	8.28
8.10	8.38	.00	.29	.23	83.30	.78	7.03
8.20	5.57	.00	.19	.19	87.70	.51	5.84
8.30	3.64	.00	.13	.16	90.97	.33	4.77
8.40	2.36	.00	.08	.13	93.37	.21	3.85
8.50	1.52	.00	.05	.10	95.12	.14	3.07
8.60	.97	.00	.03	.08	96.39	.09	2.43
8.70	.62	.00	.02	.07	97.33	.05	1.91
8.80	.39	.00	.01	.05	98.01	.03	1.49
8.90	.25	.00	.01	.04	98.52	.02	1.16
9.00	.16	.00	.01	.03	98.90	.01	.89

LAGO MAGGIORE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

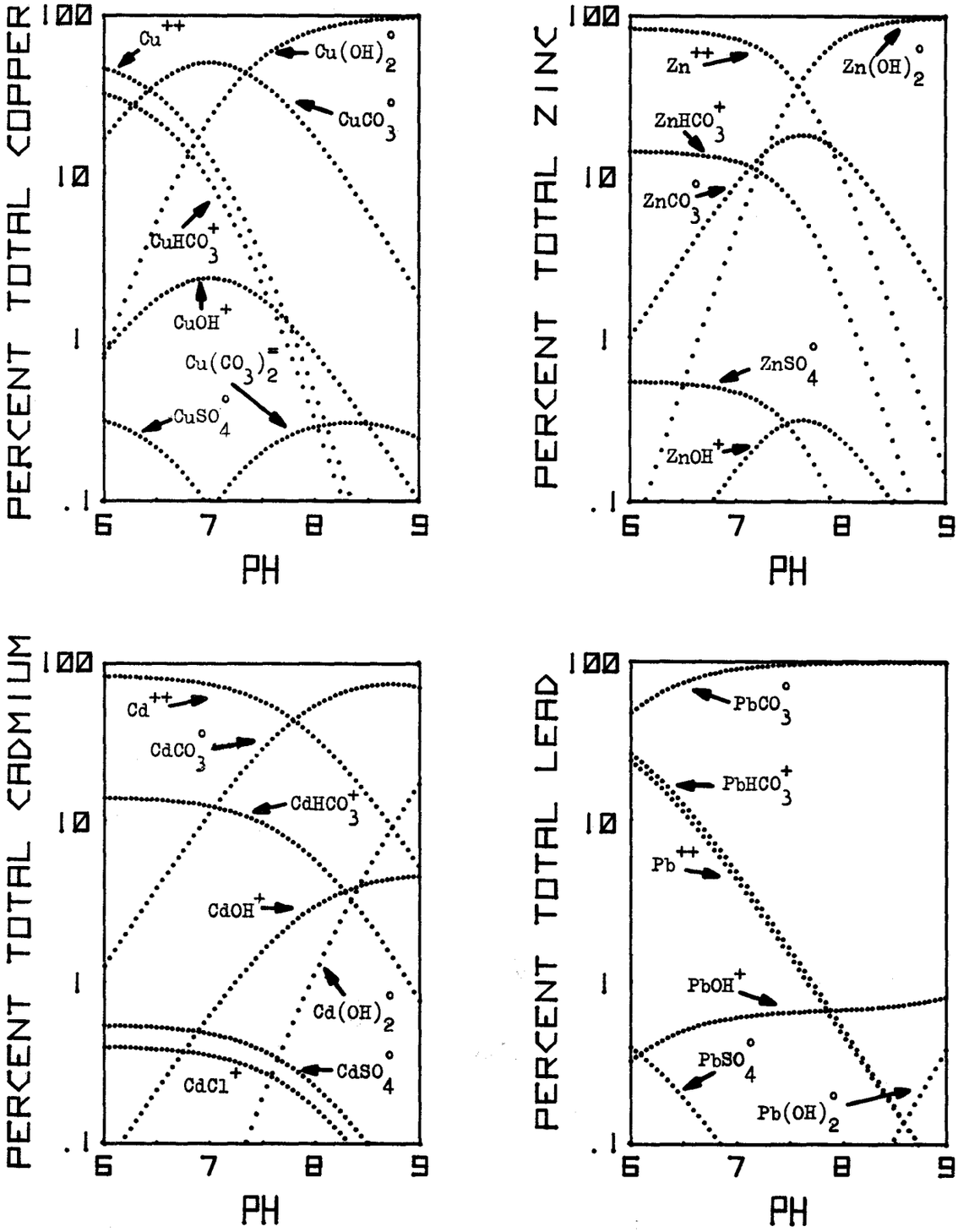
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	87.57	.22	3.03	.07	.00	8.35	.75
6.10	87.39	.22	3.03	.09	.00	8.33	.95
6.20	87.15	.22	3.02	.12	.00	8.30	1.19
6.30	86.86	.22	3.01	.15	.00	8.27	1.49
6.40	86.50	.22	3.00	.19	.00	8.23	1.87
6.50	86.04	.22	2.98	.23	.00	8.19	2.34
6.60	85.47	.21	2.96	.29	.00	8.13	2.93
6.70	84.76	.21	2.94	.36	.01	8.06	3.65
6.80	83.89	.21	2.91	.45	.01	7.98	4.55
6.90	82.82	.21	2.87	.56	.02	7.87	5.66
7.00	81.50	.20	2.82	.69	.03	7.74	7.00
7.10	79.91	.20	2.77	.86	.04	7.59	8.64
7.20	77.98	.20	2.70	1.05	.06	7.40	10.61
7.30	75.68	.19	2.62	1.29	.10	7.18	12.95
7.40	72.97	.18	2.53	1.56	.15	6.91	15.70
7.50	69.82	.17	2.42	1.88	.22	6.60	18.88
7.60	66.20	.17	2.29	2.25	.34	6.25	22.50
7.70	62.15	.16	2.15	2.65	.50	5.85	26.54
7.80	57.68	.14	2.00	3.10	.74	5.42	30.92
7.90	52.87	.13	1.83	3.58	1.07	4.95	35.56
8.00	47.83	.12	1.66	4.08	1.54	4.46	40.32
8.10	42.66	.11	1.48	4.58	2.17	3.96	45.04
8.20	37.52	.09	1.30	5.07	3.03	3.46	49.53
8.30	32.52	.08	1.13	5.53	4.16	2.97	53.60
8.40	27.79	.07	.96	5.95	5.64	2.51	57.07
8.50	23.43	.06	.81	6.31	7.53	2.09	59.77
8.60	19.48	.05	.67	6.61	9.93	1.71	61.55
8.70	15.98	.04	.55	6.83	12.91	1.37	62.31
8.80	12.94	.03	.45	6.96	16.57	1.09	61.97
8.90	10.34	.03	.36	7.00	20.98	.84	60.45
9.00	8.15	.02	.28	6.94	26.20	.64	57.77

LAGO MAGGIORE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	35.87	.04	3.12	.48	.00	21.57	38.92
6.10	32.56	.03	2.83	.55	.00	19.57	44.45
6.20	29.16	.03	2.54	.62	.00	17.53	50.12
6.30	25.78	.03	2.24	.69	.00	15.49	55.77
6.40	22.50	.02	1.96	.76	.00	13.51	61.25
6.50	19.39	.02	1.69	.83	.00	11.64	66.43
6.60	16.52	.02	1.44	.89	.00	9.92	71.23
6.70	13.92	.01	1.21	.94	.00	8.35	75.56
6.80	11.62	.01	1.01	.99	.00	6.97	79.39
6.90	9.62	.01	.84	1.03	.00	5.77	82.72
7.00	7.91	.01	.69	1.07	.01	4.74	85.58
7.10	6.46	.01	.56	1.10	.01	3.87	87.99
7.20	5.26	.01	.46	1.13	.01	3.15	90.00
7.30	4.26	.00	.37	1.15	.01	2.55	91.67
7.40	3.44	.00	.30	1.17	.01	2.05	93.03
7.50	2.76	.00	.24	1.18	.02	1.65	94.14
7.60	2.22	.00	.19	1.19	.02	1.32	95.04
7.70	1.78	.00	.16	1.21	.03	1.06	95.77
7.80	1.43	.00	.12	1.22	.04	.85	96.35
7.90	1.14	.00	.10	1.23	.05	.68	96.81
8.00	.92	.00	.08	1.24	.06	.54	97.17
8.10	.73	.00	.06	1.25	.07	.43	97.45
8.20	.59	.00	.05	1.26	.09	.34	97.67
8.30	.47	.00	.04	1.27	.12	.27	97.82
8.40	.38	.00	.03	1.29	.15	.22	97.93
8.50	.31	.00	.03	1.30	.20	.17	98.00
8.60	.25	.00	.02	1.32	.25	.14	98.02
8.70	.20	.00	.02	1.35	.32	.11	98.00
8.80	.16	.00	.01	1.38	.42	.09	97.94
8.90	.13	.00	.01	1.43	.54	.07	97.82
9.00	.11	.00	.01	1.48	.70	.05	97.65

LAGO GHIRLA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7
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9
PH
Cu++
Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
Cu(CO3)2=
CuSO4°
PERCENT TOTAL ZINC
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
PERCENT TOTAL CADMIUM
Cd++
CdCO3°
CdHCO3+
CdOH+
Cd(OH)2°
CdSO4°
CdCl+
PERCENT TOTAL LEAD
PbCO3°
PbHCO3+
Pb++
PbOH+
PbSO4°
Pb(OH)2°

LAGO GHIRLA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	47.66	.31	.81	.77	32.96	17.49	.00
6.10	45.31	.30	.97	1.15	31.33	20.93	.00
6.20	42.61	.28	1.15	1.72	29.46	24.77	.01
6.30	39.56	.26	1.34	2.53	27.35	28.95	.01
6.40	36.19	.24	1.54	3.67	25.01	33.34	.01
6.50	32.55	.21	1.75	5.23	22.49	37.74	.02
6.60	28.74	.19	1.94	7.32	19.85	41.94	.03
6.70	24.85	.16	2.11	10.03	17.16	45.64	.04
6.80	21.02	.14	2.25	13.44	14.51	48.59	.05
6.90	17.37	.11	2.34	17.60	11.99	50.52	.07
7.00	14.01	.09	2.38	22.50	9.66	51.27	.08
7.10	11.03	.07	2.35	28.07	7.60	50.77	.10
7.20	8.47	.06	2.28	34.17	5.83	49.07	.13
7.30	6.35	.04	2.15	40.63	4.37	46.30	.15
7.40	4.66	.03	1.99	47.24	3.20	42.71	.17
7.50	3.35	.02	1.80	53.77	2.30	38.57	.20
7.60	2.36	.02	1.59	60.05	1.62	34.15	.22
7.70	1.63	.01	1.39	65.91	1.12	29.70	.24
7.80	1.11	.01	1.19	71.24	.76	25.43	.26
7.90	.75	.00	1.01	75.98	.51	21.47	.27
8.00	.50	.00	.85	80.12	.34	17.91	.29
8.10	.33	.00	.70	83.68	.22	14.77	.30
8.20	.21	.00	.58	86.69	.14	12.07	.30
8.30	.14	.00	.47	89.21	.09	9.78	.31
8.40	.09	.00	.38	91.29	.06	7.87	.31
8.50	.06	.00	.31	93.01	.04	6.28	.30
8.60	.04	.00	.25	94.41	.02	4.98	.30
8.70	.02	.00	.20	95.55	.01	3.92	.29
8.80	.02	.00	.16	96.47	.01	3.07	.28
8.90	.01	.00	.13	97.21	.01	2.38	.26
9.00	.01	.00	.10	97.81	.00	1.83	.25

LAGO GHIRLA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	83.78	.01	.55	.02	.05	14.55	1.04
6.10	83.52	.01	.55	.02	.08	14.51	1.31
6.20	83.20	.01	.55	.03	.13	14.45	1.64
6.30	82.78	.01	.54	.04	.21	14.37	2.05
6.40	82.24	.01	.54	.04	.32	14.28	2.57
6.50	81.54	.01	.53	.06	.51	14.15	3.20
6.60	80.62	.01	.53	.07	.80	13.99	3.99
6.70	79.42	.01	.52	.08	1.25	13.78	4.94
6.80	77.84	.01	.51	.10	1.94	13.50	6.10
6.90	75.77	.01	.50	.13	2.99	13.14	7.47
7.00	73.07	.01	.48	.16	4.57	12.66	9.06
7.10	69.56	.01	.46	.19	6.89	12.05	10.85
7.20	65.09	.01	.43	.22	10.22	11.26	12.78
7.30	59.54	.01	.39	.25	14.81	10.29	14.70
7.40	52.92	.01	.35	.28	20.87	9.14	16.43
7.50	45.43	.01	.30	.31	28.39	7.83	17.73
7.60	37.48	.00	.25	.32	37.12	6.45	18.38
7.70	29.63	.00	.19	.32	46.51	5.09	18.26
7.80	22.46	.00	.15	.30	55.87	3.85	17.37
7.90	16.37	.00	.11	.28	64.56	2.79	15.89
8.00	11.54	.00	.08	.25	72.13	1.96	14.04
8.10	7.92	.00	.05	.21	78.42	1.34	12.06
8.20	5.32	.00	.03	.18	83.45	.89	10.12
8.30	3.51	.00	.02	.15	87.38	.58	8.35
8.40	2.29	.00	.02	.12	90.41	.38	6.79
8.50	1.48	.00	.01	.10	92.71	.24	5.45
8.60	.95	.00	.01	.08	94.46	.15	4.34
8.70	.61	.00	.00	.07	95.80	.10	3.43
8.80	.39	.00	.00	.05	96.82	.06	2.68
8.90	.25	.00	.00	.04	97.59	.04	2.08
9.00	.16	.00	.00	.03	98.18	.02	1.60

LAGO GHIRLA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

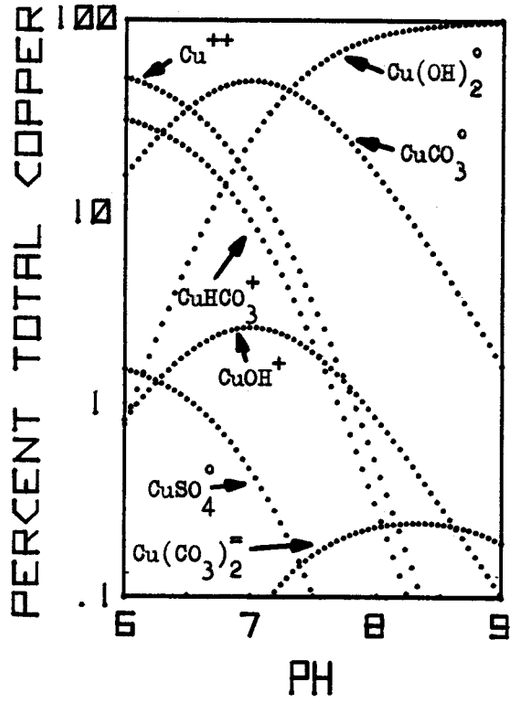
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{*}$	$CdCO_3^{\circ}$
6.00	83.22	.40	.55	.07	.00	14.46	1.30
6.10	82.93	.40	.54	.09	.00	14.40	1.63
6.20	82.56	.40	.54	.11	.00	14.34	2.05
6.30	82.11	.40	.54	.14	.00	14.26	2.56
6.40	81.54	.39	.53	.17	.00	14.15	3.20
6.50	80.83	.39	.53	.22	.00	14.03	4.00
6.60	79.96	.39	.52	.27	.00	13.87	4.98
6.70	78.89	.38	.52	.34	.01	13.69	6.18
6.80	77.59	.37	.51	.42	.01	13.45	7.65
6.90	76.00	.37	.50	.51	.02	13.17	9.43
7.00	74.10	.36	.49	.63	.02	12.84	11.57
7.10	71.83	.35	.47	.77	.04	12.44	14.11
7.20	69.16	.33	.45	.93	.06	11.97	17.09
7.30	66.08	.32	.43	1.12	.08	11.42	20.54
7.40	62.56	.30	.41	1.34	.13	10.80	24.46
7.50	58.64	.28	.38	1.58	.19	10.11	28.82
7.60	54.35	.26	.36	1.84	.28	9.36	33.56
7.70	49.76	.24	.33	2.12	.40	8.55	38.60
7.80	44.99	.22	.30	2.41	.57	7.71	43.81
7.90	40.14	.19	.26	2.71	.81	6.85	49.03
8.00	35.34	.17	.23	3.00	1.13	6.01	54.12
8.10	30.72	.15	.20	3.29	1.56	5.19	58.89
8.20	26.38	.13	.17	3.55	2.12	4.43	63.22
8.30	22.39	.11	.15	3.80	2.86	3.73	66.98
8.40	18.81	.09	.12	4.01	3.80	3.10	70.07
8.50	15.65	.08	.10	4.21	5.01	2.54	72.41
8.60	12.91	.06	.08	4.37	6.56	2.06	73.96
8.70	10.56	.05	.07	4.50	8.50	1.65	74.66
8.80	8.58	.04	.06	4.60	10.95	1.31	74.45
8.90	6.92	.03	.05	4.67	14.00	1.02	73.30
9.00	5.54	.03	.04	4.71	17.77	.79	71.13

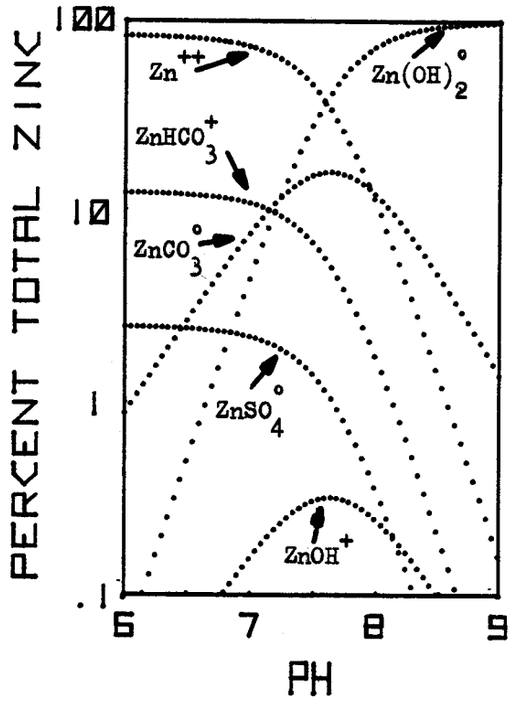
LAGO GHIRLA

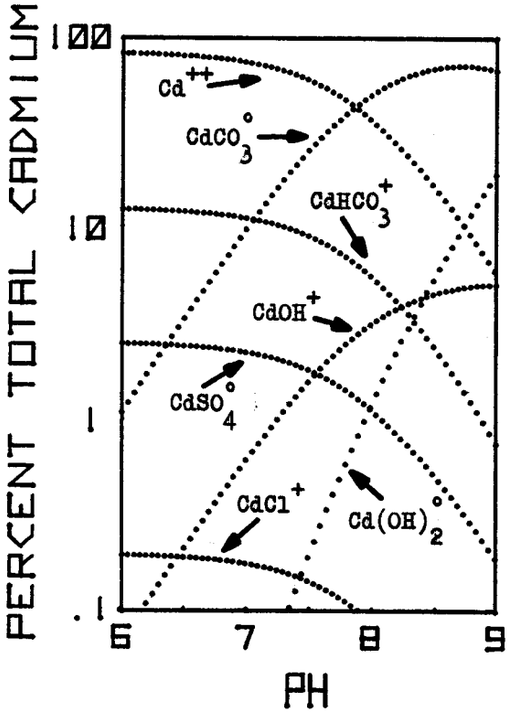
% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

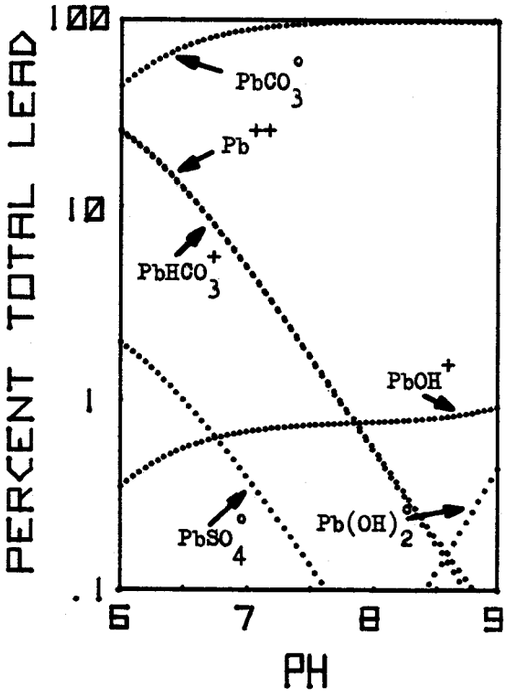
pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	24.40	.05	.40	.33	.00	26.74	48.08
6.10	21.68	.04	.36	.37	.00	23.76	53.79
6.20	19.02	.04	.31	.41	.00	20.84	59.38
6.30	16.47	.03	.27	.44	.00	18.05	64.74
6.40	14.10	.03	.23	.48	.00	15.44	69.73
6.50	11.93	.02	.20	.51	.00	13.06	74.28
6.60	10.00	.02	.16	.54	.00	10.94	78.34
6.70	8.30	.02	.14	.56	.00	9.09	81.89
6.80	6.84	.01	.11	.58	.00	7.49	84.96
6.90	5.61	.01	.09	.60	.00	6.13	87.56
7.00	4.57	.01	.08	.61	.00	4.99	89.74
7.10	3.70	.01	.06	.63	.00	4.04	91.55
7.20	2.99	.01	.05	.64	.00	3.27	93.05
7.30	2.41	.00	.04	.65	.01	2.63	94.27
7.40	1.94	.00	.03	.65	.01	2.11	95.26
7.50	1.55	.00	.03	.66	.01	1.69	96.06
7.60	1.24	.00	.02	.67	.01	1.35	96.70
7.70	1.00	.00	.02	.67	.02	1.08	97.22
7.80	.80	.00	.01	.68	.02	.86	97.63
7.90	.64	.00	.01	.68	.03	.69	97.96
8.00	.51	.00	.01	.69	.03	.55	98.22
8.10	.41	.00	.01	.69	.04	.43	98.42
8.20	.33	.00	.01	.70	.05	.35	98.57
8.30	.26	.00	.00	.70	.07	.28	98.69
8.40	.21	.00	.00	.71	.08	.22	98.77
8.50	.17	.00	.00	.72	.11	.17	98.82
8.60	.14	.00	.00	.73	.14	.14	98.85
8.70	.11	.00	.00	.75	.18	.11	98.85
8.80	.09	.00	.00	.77	.23	.09	98.82
8.90	.07	.00	.00	.79	.30	.07	98.76
9.00	.06	.00	.00	.82	.39	.05	98.67

LAGO GARLATE









LAGO GARLATE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

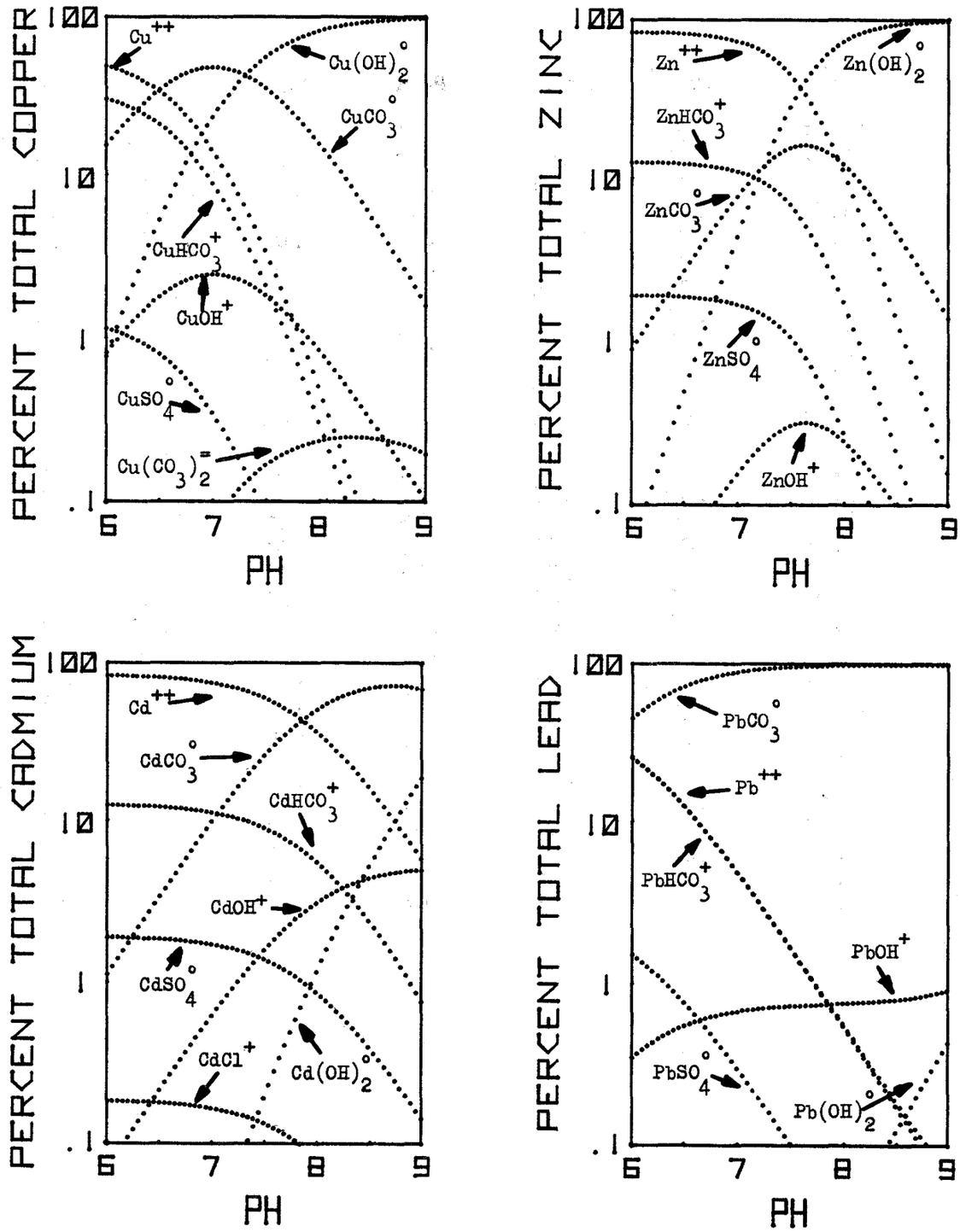
pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	50.24	1.53	.84	.79	30.66	15.93	.00
6.10	47.94	1.46	1.01	1.20	29.25	19.13	.00
6.20	45.27	1.38	1.20	1.79	27.62	22.74	.01
6.30	42.22	1.29	1.41	2.64	25.75	26.69	.01
6.40	38.80	1.18	1.63	3.85	23.66	30.87	.01
6.50	35.06	1.07	1.85	5.51	21.37	35.12	.02
6.60	31.08	.95	2.07	7.75	18.95	39.19	.02
6.70	26.98	.82	2.26	10.66	16.44	42.81	.03
6.80	22.88	.70	2.41	14.33	13.94	45.70	.04
6.90	18.94	.58	2.51	18.79	11.53	47.59	.06
7.00	15.28	.47	2.55	24.03	9.30	48.31	.07
7.10	12.01	.37	2.52	29.93	7.30	47.78	.09
7.20	9.20	.28	2.43	36.34	5.59	46.04	.11
7.30	6.88	.21	2.29	43.05	4.17	43.28	.13
7.40	5.02	.15	2.10	49.81	3.04	39.73	.15
7.50	3.59	.11	1.89	56.40	2.17	35.68	.16
7.60	2.51	.08	1.67	62.63	1.52	31.41	.18
7.70	1.73	.05	1.45	68.35	1.04	27.17	.20
7.80	1.17	.04	1.24	73.50	.71	23.14	.21
7.90	.79	.02	1.04	78.01	.47	19.44	.22
8.00	.52	.02	.87	81.91	.31	16.14	.23
8.10	.34	.01	.72	85.22	.20	13.26	.24
8.20	.22	.01	.59	88.01	.13	10.80	.24
8.30	.14	.00	.48	90.32	.08	8.73	.25
8.40	.09	.00	.39	92.22	.05	7.00	.24
8.50	.06	.00	.31	93.77	.03	5.58	.24
8.60	.04	.00	.25	95.04	.02	4.41	.24
8.70	.02	.00	.20	96.06	.01	3.47	.23
8.80	.02	.00	.16	96.89	.01	2.71	.22
8.90	.01	.00	.13	97.55	.01	2.10	.21
9.00	.01	.00	.10	98.08	.00	1.61	.19

LAGO GARLATE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	83.65	.00	2.55	.02	.05	12.82	.90
6.10	83.43	.00	2.55	.02	.08	12.79	1.13
6.20	83.15	.00	2.54	.03	.13	12.74	1.42
6.30	82.78	.00	2.53	.03	.20	12.68	1.77
6.40	82.30	.00	2.51	.04	.32	12.61	2.22
6.50	81.67	.00	2.49	.05	.50	12.51	2.77
6.60	80.84	.00	2.47	.07	.78	12.38	3.45
6.70	79.76	.00	2.43	.08	1.23	12.21	4.29
6.80	78.31	.00	2.39	.10	1.91	11.98	5.30
6.90	76.40	.00	2.33	.13	2.95	11.69	6.51
7.00	73.86	.00	2.25	.16	4.52	11.29	7.91
7.10	70.53	.00	2.15	.19	6.84	10.78	9.51
7.20	66.23	.00	2.02	.22	10.18	10.11	11.23
7.30	60.82	.00	1.86	.25	14.81	9.28	12.97
7.40	54.27	.00	1.66	.29	20.95	8.27	14.56
7.50	46.76	.00	1.43	.31	28.61	7.11	15.77
7.60	38.70	.00	1.18	.32	37.53	5.88	16.39
7.70	30.66	.00	.94	.32	47.12	4.64	16.31
7.80	23.26	.00	.71	.31	56.66	3.51	15.54
7.90	16.96	.00	.52	.28	65.48	2.55	14.21
8.00	11.95	.00	.36	.25	73.10	1.79	12.54
8.10	8.18	.00	.25	.22	79.37	1.22	10.76
8.20	5.49	.00	.17	.18	84.34	.81	9.01
8.30	3.62	.00	.11	.15	88.17	.53	7.42
8.40	2.36	.00	.07	.12	91.08	.34	6.02
8.50	1.52	.00	.05	.10	93.28	.22	4.83
8.60	.98	.00	.03	.08	94.93	.14	3.84
8.70	.63	.00	.02	.07	96.18	.09	3.02
8.80	.40	.00	.01	.05	97.12	.05	2.36
8.90	.25	.00	.01	.04	97.83	.03	1.83
9.00	.16	.00	.00	.03	98.37	.02	1.41

LAGO COMO


PERCENT TOTAL COPPER
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.1
6
7
8
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PH
Cu++
Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
CuSO4°
Cu(CO3)2=
PERCENT TOTAL ZINC
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
PERCENT TOTAL CADMIUM
Cd++
CdCO3°
CdHCO3+
CdOH+
CdSO4°
CdCl+
Cd(OH)2°
PERCENT TOTAL LEAD
PbCO3°
Pb++
PbHCO3+
PbOH+
PbSO4°
Pb(OH)2°

LAGO COMO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	50.01	1.17	.84	.79	31.01	16.17	.00
6.10	47.69	1.12	1.00	1.19	29.57	19.41	.00
6.20	45.00	1.05	1.19	1.78	27.90	23.06	.01
6.30	41.94	.98	1.40	2.64	25.99	27.04	.01
6.40	38.51	.90	1.62	3.84	23.86	31.26	.01
6.50	34.77	.81	1.84	5.49	21.54	35.52	.02
6.60	30.80	.72	2.05	7.71	19.08	39.61	.02
6.70	26.72	.63	2.24	10.59	16.54	43.24	.03
6.80	22.65	.53	2.39	14.23	14.02	46.13	.04
6.90	18.74	.44	2.49	18.66	11.59	48.02	.06
7.00	15.11	.35	2.53	23.85	9.35	48.73	.07
7.10	11.88	.28	2.50	29.71	7.34	48.20	.09
7.20	9.10	.21	2.41	36.09	5.62	46.46	.11
7.30	6.80	.16	2.27	42.76	4.20	43.68	.13
7.40	4.97	.12	2.09	49.49	3.06	40.12	.15
7.50	3.55	.08	1.88	56.08	2.19	36.05	.17
7.60	2.49	.06	1.66	62.31	1.53	31.76	.19
7.70	1.72	.04	1.44	68.06	1.05	27.49	.20
7.80	1.17	.03	1.23	73.22	.71	23.43	.22
7.90	.78	.02	1.04	77.77	.48	19.69	.23
8.00	.52	.01	.87	81.70	.31	16.36	.24
8.10	.34	.01	.72	85.04	.20	13.45	.25
8.20	.22	.01	.59	87.85	.13	10.95	.25
8.30	.14	.00	.48	90.19	.09	8.85	.25
8.40	.09	.00	.39	92.11	.05	7.10	.25
8.50	.06	.00	.31	93.68	.03	5.66	.25
8.60	.04	.00	.25	94.97	.02	4.48	.24
8.70	.02	.00	.20	96.00	.01	3.52	.24
8.80	.02	.00	.16	96.84	.01	2.75	.23
8.90	.01	.00	.13	97.52	.01	2.13	.21
9.00	.01	.00	.10	98.06	.00	1.63	.20

LAGO COMO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	83.96	.00	1.97	.02	.05	13.08	.92
6.10	83.73	.00	1.96	.02	.08	13.04	1.15
6.20	83.44	.00	1.96	.03	.13	12.99	1.45
6.30	83.06	.00	1.95	.03	.20	12.93	1.82
6.40	82.57	.00	1.94	.04	.32	12.85	2.27
6.50	81.93	.00	1.92	.05	.50	12.75	2.84
6.60	81.09	.00	1.90	.07	.79	12.62	3.53
6.70	79.98	.00	1.87	.08	1.23	12.44	4.39
6.80	78.51	.00	1.84	.10	1.92	12.21	5.42
6.90	76.56	.00	1.79	.13	2.97	11.90	6.65
7.00	73.98	.00	1.73	.16	4.54	11.49	8.09
7.10	70.61	.00	1.65	.19	6.87	10.96	9.71
7.20	66.26	.00	1.55	.22	10.22	10.28	11.46
7.30	60.80	.00	1.43	.26	14.87	9.42	13.23
7.40	54.21	.00	1.27	.29	21.01	8.39	14.83
7.50	46.67	.00	1.09	.31	28.66	7.21	16.05
7.60	38.59	.00	.90	.32	37.56	5.95	16.67
7.70	30.55	.00	.72	.32	47.13	4.70	16.58
7.80	23.17	.00	.54	.31	56.64	3.56	15.78
7.90	16.88	.00	.40	.28	65.43	2.58	14.43
8.00	11.89	.00	.28	.25	73.03	1.81	12.73
8.10	8.15	.00	.19	.22	79.29	1.23	10.92
8.20	5.46	.00	.13	.18	84.26	.82	9.15
8.30	3.60	.00	.08	.15	88.09	.54	7.53
8.40	2.35	.00	.06	.12	91.01	.35	6.11
8.50	1.52	.00	.04	.10	93.22	.22	4.90
8.60	.97	.00	.02	.08	94.89	.14	3.90
8.70	.62	.00	.01	.07	96.14	.09	3.07
8.80	.40	.00	.01	.05	97.09	.05	2.40
8.90	.25	.00	.01	.04	97.81	.03	1.86
9.00	.16	.00	.00	.03	98.36	.02	1.43

LAGO COMO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

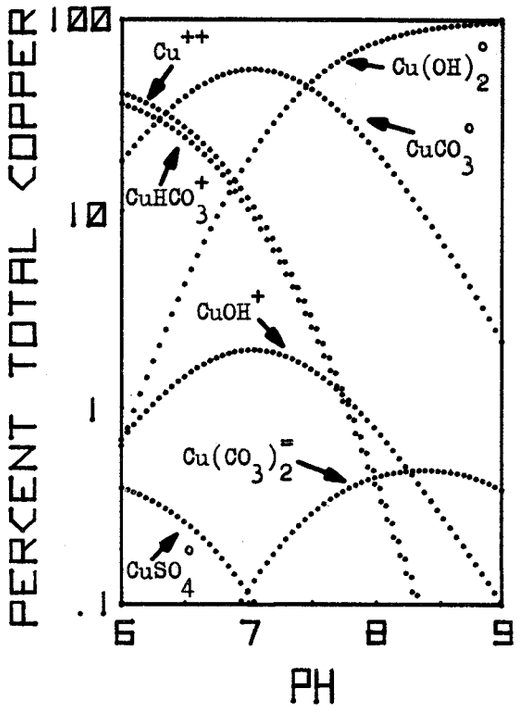
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	83.61	.19	1.96	.07	.00	13.02	1.15
6.10	83.35	.18	1.95	.09	.00	12.98	1.45
6.20	83.02	.18	1.95	.11	.00	12.93	1.81
6.30	82.61	.18	1.94	.14	.00	12.86	2.27
6.40	82.10	.18	1.92	.17	.00	12.78	2.84
6.50	81.46	.18	1.91	.22	.00	12.68	3.55
6.60	80.68	.18	1.89	.27	.00	12.55	4.43
6.70	79.71	.18	1.87	.34	.01	12.40	5.50
6.80	78.53	.17	1.84	.42	.01	12.21	6.82
6.90	77.08	.17	1.81	.51	.02	11.98	8.43
7.00	75.34	.17	1.77	.63	.02	11.70	10.37
7.10	73.26	.16	1.72	.77	.04	11.37	12.68
7.20	70.79	.16	1.66	.94	.06	10.98	15.42
7.30	67.91	.15	1.59	1.14	.09	10.53	18.60
7.40	64.60	.14	1.51	1.36	.13	10.00	22.25
7.50	60.87	.13	1.43	1.61	.19	9.41	26.35
7.60	56.74	.13	1.33	1.90	.28	8.76	30.87
7.70	52.28	.12	1.23	2.20	.41	8.05	35.72
7.80	47.57	.11	1.11	2.52	.60	7.30	40.80
7.90	42.72	.09	1.00	2.85	.85	6.53	45.96
8.00	37.86	.08	.89	3.18	1.19	5.76	51.04
8.10	33.11	.07	.78	3.50	1.65	5.01	55.88
8.20	28.60	.06	.67	3.80	2.26	4.30	60.31
8.30	24.40	.05	.57	4.08	3.06	3.63	64.20
8.40	20.58	.05	.48	4.34	4.09	3.03	67.43
8.50	17.19	.04	.40	4.56	5.41	2.50	69.90
8.60	14.22	.03	.33	4.75	7.10	2.03	71.54
8.70	11.66	.03	.27	4.90	9.22	1.63	72.29
8.80	9.48	.02	.22	5.02	11.89	1.29	72.08
8.90	7.65	.02	.18	5.10	15.20	1.01	70.85
9.00	6.11	.01	.14	5.13	19.26	.77	68.56

LAGO COMO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	26.37	.02	1.55	.35	.00	25.92	45.79
6.10	23.56	.02	1.39	.39	.00	23.15	51.49
6.20	20.77	.02	1.22	.44	.00	20.41	57.15
6.30	18.08	.02	1.06	.48	.00	17.76	62.61
6.40	15.54	.01	.91	.52	.00	15.26	67.75
6.50	13.21	.01	.78	.56	.00	12.97	72.48
6.60	11.11	.01	.65	.59	.00	10.91	76.73
6.70	9.26	.01	.55	.62	.00	9.09	80.48
6.80	7.65	.01	.45	.64	.00	7.51	83.73
6.90	6.28	.01	.37	.66	.00	6.16	86.51
7.00	5.13	.00	.30	.68	.00	5.03	88.85
7.10	4.17	.00	.25	.70	.00	4.08	90.80
7.20	3.37	.00	.20	.71	.01	3.30	92.41
7.30	2.72	.00	.16	.72	.01	2.66	93.73
7.40	2.19	.00	.13	.73	.01	2.14	94.81
7.50	1.76	.00	.10	.74	.01	1.71	95.68
7.60	1.41	.00	.08	.74	.01	1.37	96.38
7.70	1.13	.00	.07	.75	.02	1.09	96.94
7.80	.90	.00	.05	.76	.02	.87	97.39
7.90	.72	.00	.04	.76	.03	.70	97.75
8.00	.58	.00	.03	.77	.04	.55	98.03
8.10	.46	.00	.03	.77	.05	.44	98.25
8.20	.37	.00	.02	.78	.06	.35	98.42
8.30	.30	.00	.02	.79	.07	.28	98.54
8.40	.24	.00	.01	.80	.09	.22	98.63
8.50	.19	.00	.01	.81	.12	.18	98.69
8.60	.16	.00	.01	.82	.16	.14	98.71
8.70	.13	.00	.01	.84	.20	.11	98.71
8.80	.10	.00	.01	.87	.26	.09	98.68
8.90	.08	.00	.00	.89	.34	.07	98.61
9.00	.07	.00	.00	.93	.44	.06	98.50

LAGO GANNA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7
8
9
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Cu++
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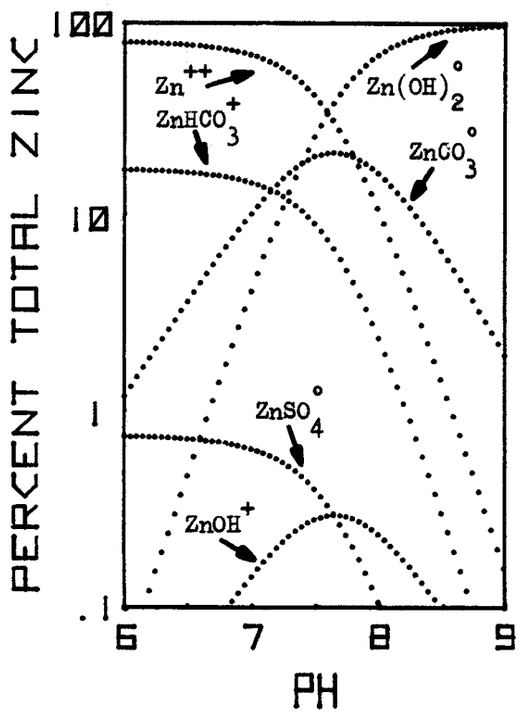
CuCO3°
CuHCO3+
CuOH+
Cu(CO3)2=
CuSO4°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ZnHCO3+
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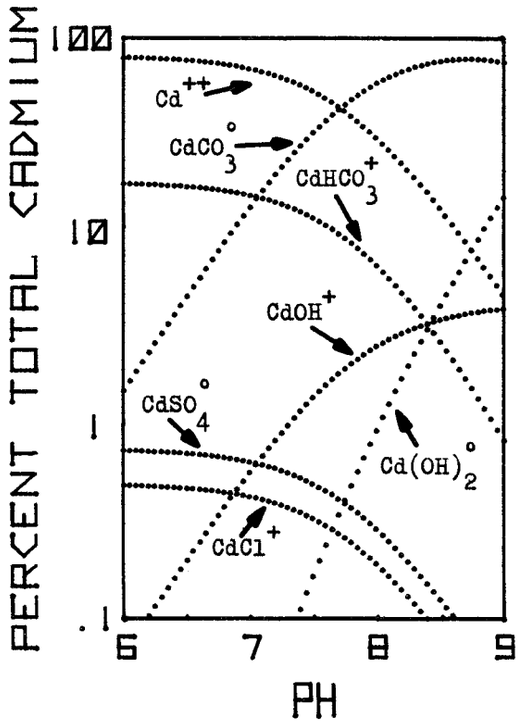
ZnSO4°
ZnOH+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9
PH
Cd++
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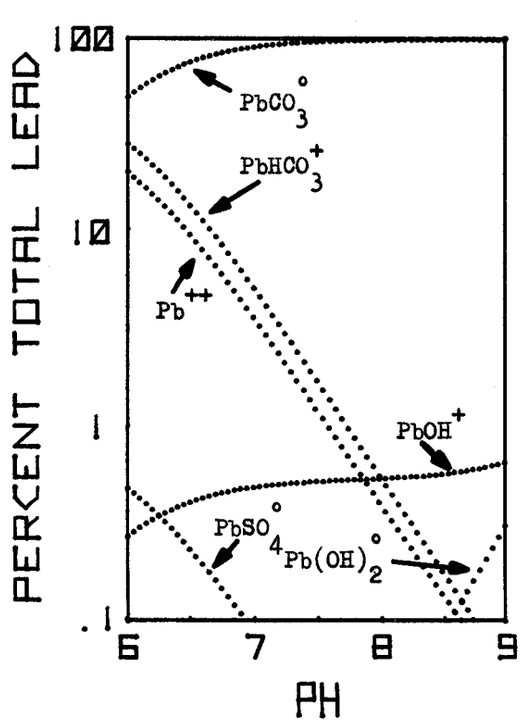
CdOH+
CdSO4°
Cd(OH)2°
CdCl+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10
1
.1
6
7
8
9
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PbCO3°
PbHCO3+
Pb++
PbOH+
PbSO4°
Pb(OH)2°

LAGO GANNA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^\circ$	$CuOH^+$	$Cu(OH)_2^\circ$	$CuHCO_3^+$	$CuCO_3^\circ$	$Cu(CO_3)_2^{--}$
6.00	42.10	.40	.70	.66	37.04	19.10	.00
6.10	39.91	.38	.83	.99	35.10	22.78	.01
6.20	37.41	.35	.98	1.47	32.90	26.88	.01
6.30	34.61	.33	1.15	2.15	30.44	31.31	.01
6.40	31.56	.30	1.32	3.11	27.75	35.94	.02
6.50	28.32	.27	1.49	4.42	24.89	40.59	.03
6.60	24.96	.23	1.65	6.17	21.93	45.02	.04
6.70	21.57	.20	1.79	8.46	18.95	48.97	.05
6.80	18.27	.17	1.91	11.35	16.04	52.19	.07
6.90	15.14	.14	2.00	14.91	13.29	54.43	.09
7.00	12.27	.12	2.04	19.16	10.77	55.53	.12
7.10	9.73	.09	2.03	24.07	8.53	55.39	.15
7.20	7.55	.07	1.98	29.58	6.61	54.02	.18
7.30	5.72	.05	1.90	35.56	5.01	51.54	.22
7.40	4.25	.04	1.77	41.85	3.72	48.12	.26
7.50	3.09	.03	1.62	48.26	2.70	44.01	.30
7.60	2.21	.02	1.46	54.59	1.92	39.47	.33
7.70	1.55	.01	1.29	60.68	1.35	34.76	.37
7.80	1.07	.01	1.12	66.37	.93	30.11	.40
7.90	.73	.01	.96	71.57	.63	25.69	.43
8.00	.49	.00	.81	76.20	.42	21.62	.45
8.10	.32	.00	.68	80.27	.28	17.98	.47
8.20	.21	.00	.56	83.77	.18	14.79	.48
8.30	.14	.00	.46	86.74	.12	12.05	.49
8.40	.09	.00	.38	89.23	.08	9.73	.49
8.50	.06	.00	.31	91.30	.05	7.80	.49
8.60	.04	.00	.25	93.01	.03	6.19	.48
8.70	.02	.00	.20	94.41	.02	4.88	.47
8.80	.02	.00	.16	95.55	.01	3.82	.45
8.90	.01	.00	.13	96.47	.01	2.96	.42
9.00	.01	.00	.10	97.22	.00	2.27	.39

LAGO GANNA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	80.21	.01	.75	.02	.05	17.73	1.23
6.10	79.93	.01	.75	.02	.08	17.66	1.55
6.20	79.57	.01	.75	.03	.12	17.58	1.94
6.30	79.12	.01	.74	.03	.19	17.48	2.43
6.40	78.53	.01	.74	.04	.30	17.34	3.03
6.50	77.78	.01	.73	.05	.47	17.17	3.78
6.60	76.81	.01	.72	.06	.74	16.96	4.69
6.70	75.56	.01	.71	.08	1.15	16.68	5.81
6.80	73.94	.01	.70	.10	1.79	16.31	7.16
6.90	71.84	.01	.68	.12	2.75	15.84	8.75
7.00	69.15	.01	.65	.14	4.20	15.24	10.60
7.10	65.72	.01	.62	.17	6.32	14.48	12.68
7.20	61.42	.01	.58	.20	9.37	13.52	14.90
7.30	56.16	.01	.53	.23	13.58	12.35	17.14
7.40	49.97	.01	.47	.26	19.14	10.97	19.17
7.50	43.01	.01	.40	.28	26.12	9.43	20.74
7.60	35.65	.01	.34	.30	34.31	7.80	21.60
7.70	28.37	.00	.27	.30	43.27	6.19	21.59
7.80	21.68	.00	.20	.29	52.40	4.72	20.70
7.90	15.94	.00	.15	.26	61.08	3.46	19.10
8.00	11.34	.00	.11	.24	68.85	2.45	17.02
8.10	7.84	.00	.07	.21	75.47	1.68	14.72
8.20	5.30	.00	.05	.18	80.90	1.13	12.44
8.30	3.53	.00	.03	.15	85.23	.74	10.32
8.40	2.31	.00	.02	.12	88.64	.48	8.42
8.50	1.50	.00	.01	.10	91.29	.31	6.79
8.60	.97	.00	.01	.08	93.33	.20	5.41
8.70	.62	.00	.01	.07	94.91	.12	4.28
8.80	.40	.00	.00	.05	96.12	.08	3.35
8.90	.25	.00	.00	.04	97.06	.05	2.59
9.00	.16	.00	.00	.03	97.78	.03	1.99

LAGO GANNA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

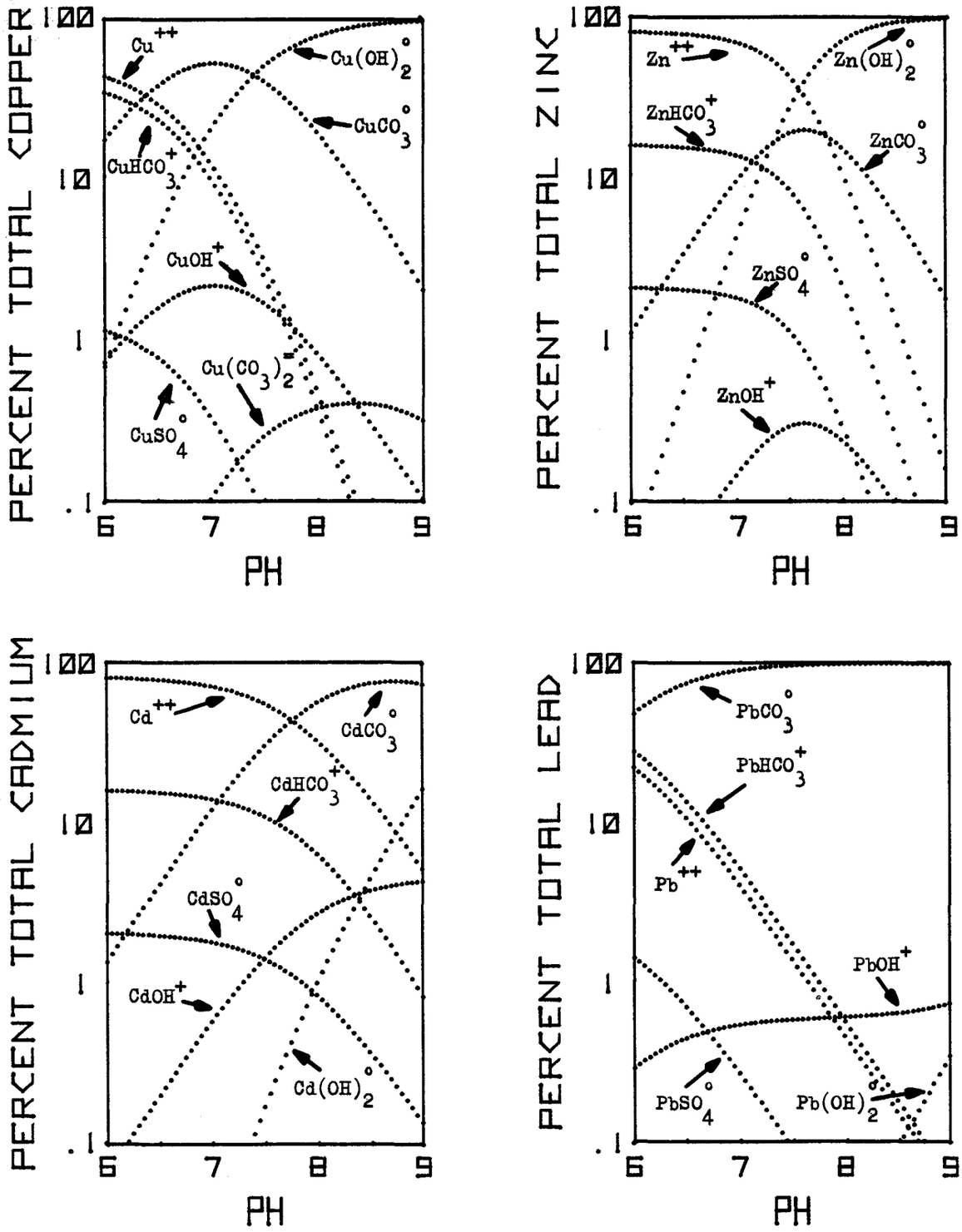
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	79.56	.50	.75	.07	.00	17.58	1.54
6.10	79.24	.50	.75	.08	.00	17.51	1.93
6.20	78.83	.49	.74	.10	.00	17.42	2.42
6.30	78.32	.49	.74	.13	.00	17.30	3.02
6.40	77.69	.49	.73	.16	.00	17.16	3.77
6.50	76.91	.48	.72	.20	.00	16.98	4.70
6.60	75.95	.48	.71	.25	.00	16.77	5.84
6.70	74.77	.47	.70	.31	.01	16.50	7.24
6.80	73.34	.46	.69	.38	.01	16.18	8.94
6.90	71.61	.45	.67	.47	.01	15.79	10.98
7.00	69.56	.44	.65	.58	.02	15.33	13.42
7.10	67.13	.42	.63	.70	.03	14.79	16.30
7.20	64.30	.40	.61	.85	.05	14.15	19.64
7.30	61.07	.38	.57	1.01	.08	13.43	23.46
7.40	57.43	.36	.54	1.20	.11	12.61	27.74
7.50	53.43	.33	.50	1.41	.17	11.72	32.44
7.60	49.13	.31	.46	1.63	.24	10.75	37.48
7.70	44.61	.28	.42	1.86	.35	9.74	42.74
7.80	39.99	.25	.38	2.10	.50	8.70	48.08
7.90	35.39	.22	.33	2.34	.70	7.67	53.35
8.00	30.91	.19	.29	2.57	.96	6.67	58.40
8.10	26.68	.17	.25	2.79	1.32	5.72	63.07
8.20	22.77	.14	.21	3.00	1.78	4.85	67.24
8.30	19.23	.12	.18	3.19	2.38	4.05	70.83
8.40	16.10	.10	.15	3.36	3.16	3.35	73.77
8.50	13.37	.08	.13	3.52	4.16	2.74	76.00
8.60	11.03	.07	.10	3.65	5.44	2.22	77.48
8.70	9.04	.06	.09	3.77	7.07	1.78	78.20
8.80	7.37	.05	.07	3.87	9.14	1.41	78.09
8.90	5.98	.04	.06	3.95	11.75	1.11	77.11
9.00	4.83	.03	.05	4.01	15.03	.86	75.19

LAGO GANNA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	20.54	.05	.49	.27	.00	28.63	50.02
6.10	18.17	.05	.43	.30	.00	25.33	55.72
6.20	15.87	.04	.38	.33	.00	22.12	61.26
6.30	13.69	.03	.32	.36	.00	19.08	66.51
6.40	11.67	.03	.28	.39	.00	16.26	71.37
6.50	9.84	.02	.23	.41	.00	13.72	75.77
6.60	8.22	.02	.19	.43	.00	11.46	79.67
6.70	6.81	.02	.16	.45	.00	9.49	83.07
6.80	5.60	.01	.13	.47	.00	7.80	85.98
6.90	4.58	.01	.11	.48	.00	6.37	88.44
7.00	3.73	.01	.09	.49	.00	5.18	90.50
7.10	3.02	.01	.07	.50	.00	4.19	92.21
7.20	2.43	.01	.06	.51	.00	3.38	93.61
7.30	1.96	.00	.05	.52	.00	2.72	94.75
7.40	1.57	.00	.04	.52	.01	2.18	95.68
7.50	1.26	.00	.03	.53	.01	1.75	96.43
7.60	1.01	.00	.02	.53	.01	1.40	97.03
7.70	.81	.00	.02	.53	.01	1.11	97.51
7.80	.65	.00	.02	.54	.02	.89	97.89
7.90	.52	.00	.01	.54	.02	.71	98.20
8.00	.41	.00	.01	.55	.03	.56	98.44
8.10	.33	.00	.01	.55	.03	.45	98.63
8.20	.27	.00	.01	.56	.04	.36	98.77
8.30	.21	.00	.01	.56	.05	.28	98.88
8.40	.17	.00	.00	.57	.07	.23	98.96
8.50	.14	.00	.00	.58	.09	.18	99.02
8.60	.11	.00	.00	.59	.11	.14	99.04
8.70	.09	.00	.00	.60	.14	.11	99.05
8.80	.07	.00	.00	.62	.18	.09	99.03
8.90	.06	.00	.00	.64	.24	.07	98.99
9.00	.05	.00	.00	.66	.31	.06	98.91

LAGO IDRO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.1
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7
8
9
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Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
Cu(CO3)2=
CuSO4°
PERCENT TOTAL ZINC
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
PERCENT TOTAL CADMIUM
Cd++
CdCO3°
CdHCO3+
CdSO4°
CdOH+
Cd(OH)2°
PERCENT TOTAL LEAD
PbCO3°
PbHCO3+
Pb++
PbOH+
PbSO4°
Pb(OH)2°

LAGO IDRO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	44.36	1.14	.73	.69	35.12	17.96	.00
6.10	42.15	1.09	.88	1.03	33.36	21.48	.01
6.20	39.62	1.02	1.04	1.54	31.35	25.42	.01
6.30	36.77	.95	1.21	2.27	29.10	29.70	.01
6.40	33.64	.87	1.39	3.29	26.61	34.19	.02
6.50	30.27	.78	1.58	4.69	23.94	38.72	.02
6.60	26.74	.69	1.76	6.56	21.15	43.07	.03
6.70	23.17	.60	1.92	9.01	18.31	46.95	.05
6.80	19.64	.51	2.04	12.11	15.53	50.11	.06
6.90	16.29	.42	2.13	15.92	12.87	52.29	.08
7.00	13.20	.34	2.18	20.44	10.42	53.31	.10
7.10	10.45	.27	2.17	25.64	8.24	53.09	.13
7.20	8.08	.21	2.11	31.43	6.37	51.64	.16
7.30	6.11	.16	2.01	37.64	4.81	49.09	.19
7.40	4.51	.12	1.87	44.10	3.55	45.62	.22
7.50	3.27	.08	1.70	50.60	2.57	41.52	.25
7.60	2.32	.06	1.52	56.95	1.82	37.04	.28
7.70	1.62	.04	1.34	62.97	1.27	32.45	.31
7.80	1.11	.03	1.16	68.53	.87	27.97	.34
7.90	.75	.02	.99	73.55	.58	23.75	.36
8.00	.50	.01	.83	77.98	.39	19.90	.38
8.10	.33	.01	.69	81.83	.26	16.49	.39
8.20	.22	.01	.57	85.12	.17	13.52	.40
8.30	.14	.00	.47	87.89	.11	10.98	.41
8.40	.09	.00	.38	90.20	.07	8.85	.41
8.50	.06	.00	.31	92.11	.04	7.07	.40
8.60	.04	.00	.25	93.68	.03	5.61	.39
8.70	.02	.00	.20	94.96	.02	4.41	.38
8.80	.02	.00	.16	96.00	.01	3.45	.37
8.90	.01	.00	.13	96.84	.01	2.67	.34
9.00	.01	.00	.10	97.52	.00	2.05	.32

LAGO IDRO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	80.70	.00	2.08	.02	.05	16.05	1.11
6.10	80.44	.00	2.08	.02	.08	15.99	1.39
6.20	80.12	.00	2.07	.03	.12	15.93	1.74
6.30	79.70	.00	2.06	.03	.19	15.84	2.18
6.40	79.16	.00	2.04	.04	.30	15.73	2.73
6.50	78.46	.00	2.03	.05	.47	15.59	3.40
6.60	77.56	.00	2.00	.06	.74	15.41	4.23
6.70	76.38	.00	1.97	.08	1.16	15.17	5.25
6.80	74.85	.00	1.93	.10	1.80	14.86	6.47
6.90	72.85	.00	1.88	.12	2.77	14.46	7.92
7.00	70.26	.00	1.81	.15	4.23	13.93	9.61
7.10	66.92	.00	1.73	.17	6.39	13.26	11.52
7.20	62.69	.00	1.62	.21	9.49	12.42	13.58
7.30	57.47	.00	1.48	.24	13.78	11.37	15.65
7.40	51.25	.00	1.32	.27	19.48	10.13	17.55
7.50	44.20	.00	1.14	.29	26.63	8.72	19.03
7.60	36.68	.00	.95	.30	35.02	7.22	19.84
7.70	29.20	.00	.75	.30	44.18	5.73	19.83
7.80	22.29	.00	.58	.29	53.47	4.37	19.00
7.90	16.37	.00	.42	.27	62.24	3.19	17.50
8.00	11.62	.00	.30	.24	70.02	2.26	15.56
8.10	8.02	.00	.21	.21	76.58	1.55	13.44
8.20	5.41	.00	.14	.18	81.90	1.04	11.33
8.30	3.59	.00	.09	.15	86.11	.68	9.37
8.40	2.35	.00	.06	.12	89.39	.44	7.64
8.50	1.53	.00	.04	.10	91.91	.28	6.15
8.60	.98	.00	.03	.08	93.84	.18	4.89
8.70	.63	.00	.02	.07	95.32	.11	3.86
8.80	.40	.00	.01	.05	96.45	.07	3.02
8.90	.26	.00	.01	.04	97.32	.04	2.34
9.00	.16	.00	.00	.03	97.98	.03	1.79

LAGO IDRO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

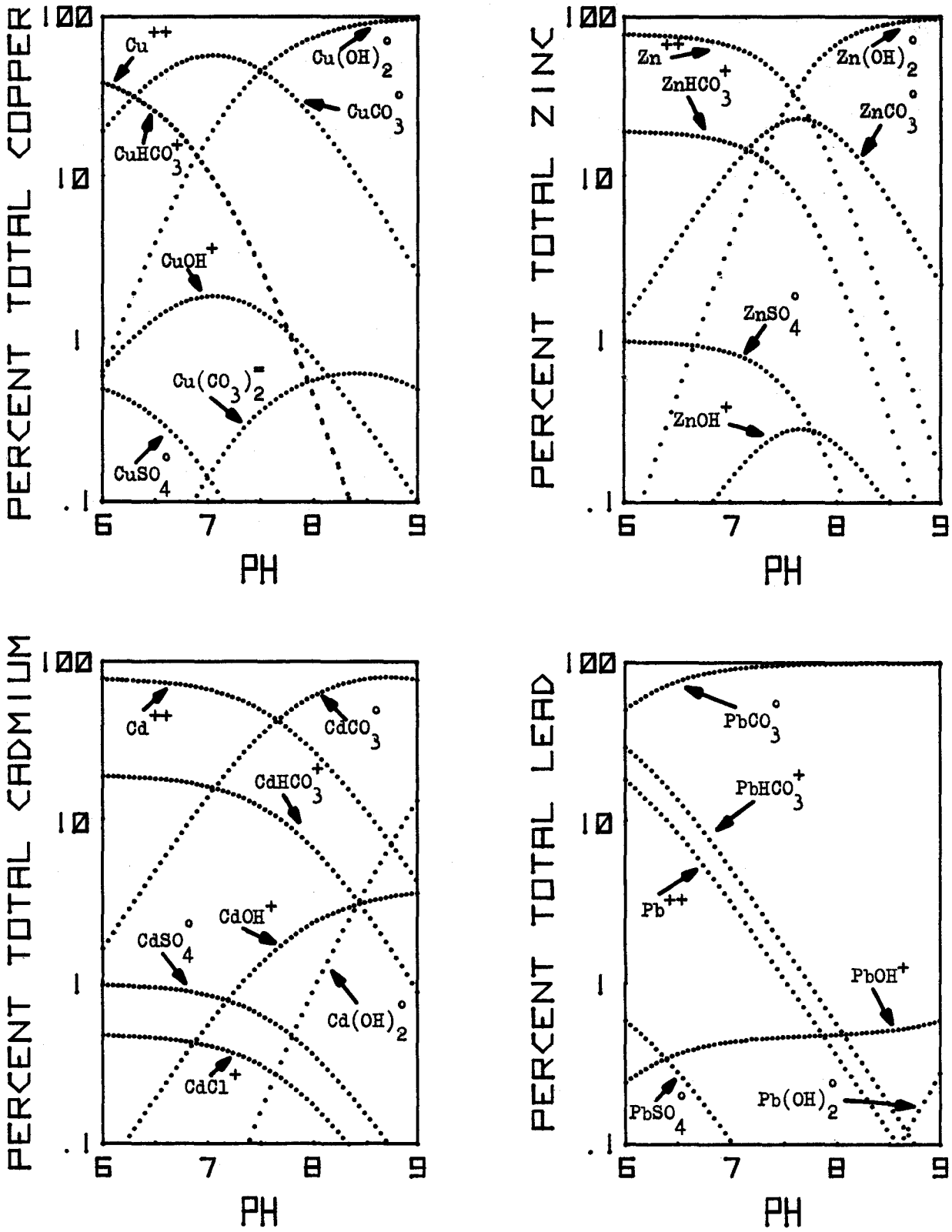
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	80.44	.03	2.08	.07	.00	16.00	1.39
6.10	80.14	.03	2.07	.08	.00	15.93	1.74
6.20	79.77	.03	2.06	.10	.00	15.86	2.18
6.30	79.30	.03	2.05	.13	.00	15.76	2.73
6.40	78.72	.03	2.03	.16	.00	15.64	3.41
6.50	78.00	.03	2.01	.20	.00	15.50	4.26
6.60	77.11	.03	1.99	.25	.00	15.32	5.30
6.70	76.02	.03	1.96	.32	.01	15.10	6.57
6.80	74.69	.03	1.93	.39	.01	14.83	8.13
6.90	73.08	.03	1.89	.48	.01	14.50	10.01
7.00	71.16	.03	1.84	.59	.02	14.11	12.26
7.10	68.87	.03	1.78	.72	.03	13.65	14.93
7.20	66.19	.03	1.71	.87	.05	13.11	18.05
7.30	63.10	.02	1.63	1.04	.08	12.48	21.64
7.40	59.61	.02	1.54	1.24	.12	11.78	25.70
7.50	55.72	.02	1.44	1.46	.17	10.99	30.20
7.60	51.50	.02	1.33	1.70	.25	10.14	35.07
7.70	47.02	.02	1.21	1.95	.36	9.23	40.20
7.80	42.38	.02	1.09	2.21	.52	8.30	45.48
7.90	37.70	.01	.97	2.48	.74	7.35	50.74
8.00	33.11	.01	.85	2.74	1.02	6.43	55.83
8.10	28.72	.01	.74	2.99	1.41	5.54	60.59
8.20	24.62	.01	.64	3.23	1.91	4.71	64.89
8.30	20.88	.01	.54	3.44	2.57	3.96	68.61
8.40	17.53	.01	.45	3.64	3.42	3.28	71.67
8.50	14.59	.01	.38	3.82	4.51	2.69	74.01
8.60	12.06	.00	.31	3.97	5.90	2.19	75.57
8.70	9.89	.00	.26	4.10	7.68	1.75	76.32
8.80	8.07	.00	.21	4.21	9.92	1.39	76.20
8.90	6.54	.00	.17	4.30	12.75	1.09	75.15
9.00	5.27	.00	.14	4.36	16.28	.84	73.12

LAGO IDRO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	22.18	.00	1.44	.29	.00	27.84	48.25
6.10	19.71	.00	1.28	.33	.00	24.73	53.96
6.20	17.28	.00	1.12	.36	.00	21.68	59.55
6.30	14.97	.00	.97	.39	.00	18.77	64.90
6.40	12.80	.00	.83	.42	.00	16.05	69.89
6.50	10.83	.00	.70	.45	.00	13.58	74.43
6.60	9.08	.00	.59	.47	.00	11.37	78.49
6.70	7.54	.00	.49	.50	.00	9.44	82.03
6.80	6.21	.00	.40	.51	.00	7.78	85.09
6.90	5.09	.00	.33	.53	.00	6.37	87.68
7.00	4.14	.00	.27	.54	.00	5.18	89.86
7.10	3.36	.00	.22	.55	.00	4.20	91.66
7.20	2.71	.00	.18	.56	.00	3.39	93.15
7.30	2.19	.00	.14	.57	.01	2.73	94.37
7.40	1.76	.00	.11	.58	.01	2.19	95.35
7.50	1.41	.00	.09	.58	.01	1.75	96.15
7.60	1.13	.00	.07	.59	.01	1.40	96.79
7.70	.90	.00	.06	.59	.01	1.12	97.31
7.80	.72	.00	.05	.60	.02	.89	97.72
7.90	.58	.00	.04	.60	.02	.71	98.05
8.00	.46	.00	.03	.61	.03	.57	98.30
8.10	.37	.00	.02	.61	.04	.45	98.51
8.20	.30	.00	.02	.62	.05	.36	98.66
8.30	.24	.00	.02	.62	.06	.29	98.78
8.40	.19	.00	.01	.63	.07	.23	98.86
8.50	.15	.00	.01	.64	.10	.18	98.92
8.60	.13	.00	.01	.65	.12	.14	98.95
8.70	.10	.00	.01	.67	.16	.11	98.95
8.80	.08	.00	.01	.69	.20	.09	98.93
8.90	.07	.00	.00	.71	.27	.07	98.88
9.00	.06	.00	.00	.74	.35	.06	98.79

LAGO GARDA


PERCENT TOTAL COPPER
100
10
1
.1
6
7
8
9
PH
Cu++
Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
Cu(CO3)2=
CuSO4°
PERCENT TOTAL ZINC
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
PERCENT TOTAL CADMIUM
Cd++
CdCO3°
CdHCO3+
CdOH+
CdSO4°
Cd(OH)2°
CdCl+
PERCENT TOTAL LEAD
PbCO3°
PbHCO3+
Pb++
PbOH+
PbSO4°
Pb(OH)2°

LAGO GARDA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	39.30	.50	.64	.60	39.10	19.84	.00
6.10	37.20	.47	.77	.91	37.00	23.64	.01
6.20	34.82	.44	.91	1.34	34.63	27.85	.01
6.30	32.17	.41	1.05	1.97	31.99	32.39	.02
6.40	29.30	.37	1.21	2.84	29.13	37.13	.02
6.50	26.26	.33	1.36	4.03	26.10	41.88	.03
6.60	23.12	.29	1.51	5.63	22.98	46.42	.05
6.70	19.98	.25	1.64	7.71	19.85	50.49	.06
6.80	16.93	.22	1.75	10.36	16.82	53.84	.08
6.90	14.06	.18	1.83	13.62	13.95	56.25	.11
7.00	11.43	.15	1.87	17.55	11.34	57.53	.14
7.10	9.09	.12	1.88	22.14	9.01	57.59	.18
7.20	7.08	.09	1.84	27.33	7.02	56.43	.22
7.30	5.40	.07	1.77	33.03	5.35	54.12	.26
7.40	4.03	.05	1.66	39.11	3.99	50.84	.31
7.50	2.96	.04	1.53	45.40	2.92	46.80	.36
7.60	2.12	.03	1.39	51.71	2.09	42.26	.41
7.70	1.50	.02	1.23	57.86	1.47	37.46	.46
7.80	1.04	.01	1.08	63.69	1.02	32.66	.50
7.90	.71	.01	.93	69.09	.70	28.03	.54
8.00	.48	.01	.79	73.97	.47	23.72	.57
8.10	.32	.00	.66	78.29	.31	19.81	.59
8.20	.21	.00	.55	82.05	.20	16.37	.61
8.30	.14	.00	.46	85.27	.13	13.38	.62
8.40	.09	.00	.37	87.99	.08	10.83	.63
8.50	.06	.00	.30	90.26	.05	8.70	.63
8.60	.04	.00	.25	92.14	.03	6.92	.62
8.70	.02	.00	.20	93.69	.02	5.46	.60
8.80	.02	.00	.16	94.96	.01	4.27	.57
8.90	.01	.00	.13	96.00	.01	3.32	.54
9.00	.01	.00	.10	96.84	.01	2.55	.50

LAGO GARDA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	78.09	.01	.99	.02	.05	19.51	1.34
6.10	77.79	.01	.99	.02	.07	19.44	1.68
6.20	77.42	.01	.98	.03	.12	19.34	2.10
6.30	76.95	.01	.98	.03	.18	19.22	2.63
6.40	76.35	.01	.97	.04	.29	19.07	3.28
6.50	75.57	.01	.96	.05	.45	18.87	4.08
6.60	74.58	.01	.95	.06	.71	18.62	5.07
6.70	73.31	.01	.93	.08	1.10	18.29	6.28
6.80	71.68	.01	.91	.09	1.71	17.88	7.72
6.90	69.58	.01	.88	.11	2.62	17.35	9.43
7.00	66.91	.01	.85	.14	4.00	16.68	11.42
7.10	63.54	.01	.81	.17	6.02	15.82	13.64
7.20	59.34	.01	.75	.19	8.91	14.77	16.02
7.30	54.26	.01	.69	.22	12.91	13.49	18.42
7.40	48.30	.01	.61	.25	18.21	11.99	20.62
7.50	41.64	.01	.53	.27	24.89	10.32	22.34
7.60	34.60	.01	.44	.28	32.78	8.56	23.33
7.70	27.64	.00	.35	.29	41.50	6.82	23.40
7.80	21.21	.00	.27	.28	50.48	5.22	22.54
7.90	15.68	.00	.20	.26	59.13	3.84	20.89
8.00	11.21	.00	.14	.23	66.98	2.73	18.70
8.10	7.79	.00	.10	.20	73.76	1.89	16.26
8.20	5.29	.00	.07	.17	79.40	1.27	13.79
8.30	3.53	.00	.04	.15	83.97	.84	11.47
8.40	2.32	.00	.03	.12	87.59	.55	9.39
8.50	1.51	.00	.02	.10	90.43	.35	7.59
8.60	.98	.00	.01	.08	92.65	.22	6.06
8.70	.63	.00	.01	.07	94.37	.14	4.79
8.80	.40	.00	.01	.05	95.70	.09	3.75
8.90	.26	.00	.00	.04	96.73	.05	2.91
9.00	.16	.00	.00	.03	97.53	.03	2.23

LAGO GARDA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

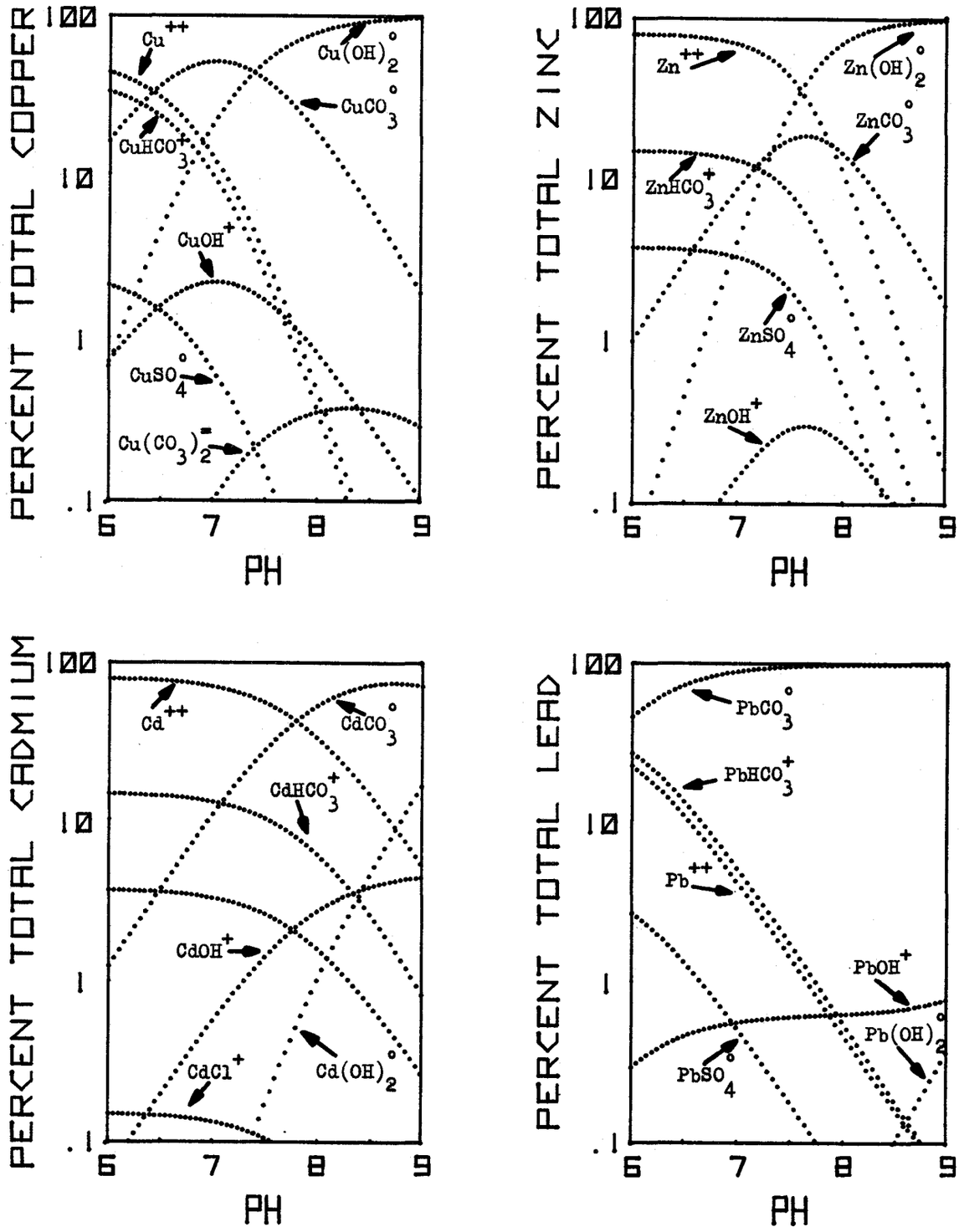
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	77.45	.48	.98	.06	.00	19.35	1.67
6.10	77.11	.47	.98	.08	.00	19.27	2.09
6.20	76.68	.47	.97	.10	.00	19.15	2.62
6.30	76.15	.47	.97	.12	.00	19.02	3.27
6.40	75.49	.46	.96	.16	.00	18.85	4.08
6.50	74.67	.46	.95	.19	.00	18.64	5.08
6.60	73.67	.45	.94	.24	.00	18.39	6.31
6.70	72.44	.45	.92	.30	.01	18.08	7.81
6.80	70.96	.44	.90	.37	.01	17.70	9.63
6.90	69.17	.43	.88	.45	.01	17.25	11.81
7.00	67.05	.41	.85	.55	.02	16.71	14.40
7.10	64.56	.40	.82	.67	.03	16.08	17.45
7.20	61.67	.38	.78	.80	.05	15.35	20.96
7.30	58.39	.36	.74	.96	.07	14.52	24.96
7.40	54.73	.34	.70	1.13	.11	13.59	29.42
7.50	50.73	.31	.64	1.32	.16	12.57	34.27
7.60	46.46	.29	.59	1.52	.23	11.49	39.43
7.70	42.01	.26	.53	1.73	.32	10.37	44.78
7.80	37.50	.23	.48	1.94	.46	9.22	50.16
7.90	33.05	.20	.42	2.16	.64	8.10	55.43
8.00	28.76	.18	.37	2.36	.88	7.01	60.43
8.10	24.74	.15	.31	2.56	1.20	5.99	65.04
8.20	21.05	.13	.27	2.74	1.62	5.06	69.13
8.30	17.74	.11	.23	2.91	2.17	4.22	72.63
8.40	14.83	.09	.19	3.06	2.87	3.49	75.48
8.50	12.30	.08	.16	3.20	3.77	2.85	77.65
8.60	10.14	.06	.13	3.32	4.93	2.31	79.11
8.70	8.32	.05	.11	3.43	6.41	1.85	79.84
8.80	6.79	.04	.09	3.52	8.29	1.47	79.79
8.90	5.53	.03	.07	3.61	10.69	1.15	78.92
9.00	4.48	.03	.06	3.68	13.72	.90	77.15

LAGO GARDA

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	18.74	.05	.60	.24	.00	29.55	50.82
6.10	16.56	.04	.53	.27	.00	26.10	56.50
6.20	14.44	.04	.46	.30	.00	22.75	62.01
6.30	12.43	.03	.40	.32	.00	19.59	67.22
6.40	10.58	.03	.34	.35	.00	16.68	72.03
6.50	8.92	.02	.28	.37	.00	14.04	76.37
6.60	7.44	.02	.24	.39	.00	11.72	80.20
6.70	6.16	.02	.20	.40	.00	9.69	83.54
6.80	5.06	.01	.16	.42	.00	7.96	86.39
6.90	4.13	.01	.13	.43	.00	6.50	88.80
7.00	3.36	.01	.11	.44	.00	5.28	90.81
7.10	2.72	.01	.09	.45	.00	4.27	92.47
7.20	2.19	.01	.07	.45	.00	3.44	93.83
7.30	1.76	.00	.06	.46	.00	2.77	94.95
7.40	1.42	.00	.05	.46	.01	2.22	95.85
7.50	1.14	.00	.04	.47	.01	1.78	96.57
7.60	.91	.00	.03	.47	.01	1.42	97.16
7.70	.73	.00	.02	.48	.01	1.13	97.63
7.80	.58	.00	.02	.48	.01	.90	98.00
7.90	.47	.00	.01	.48	.02	.72	98.30
8.00	.37	.00	.01	.49	.02	.57	98.53
8.10	.30	.00	.01	.49	.03	.46	98.72
8.20	.24	.00	.01	.49	.04	.36	98.86
8.30	.19	.00	.01	.50	.05	.29	98.97
8.40	.15	.00	.00	.51	.06	.23	99.05
8.50	.12	.00	.00	.51	.08	.18	99.10
8.60	.10	.00	.00	.52	.10	.14	99.13
8.70	.08	.00	.00	.54	.13	.12	99.14
8.80	.07	.00	.00	.55	.16	.09	99.12
8.90	.06	.00	.00	.57	.21	.07	99.09
9.00	.05	.00	.00	.59	.28	.06	99.02

LAGO ISEO


PERCENT TOTAL COPPER
100
10
1
.1
Cu++
Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
CuSO4°
Cu(CO3)2=
6
7
8
9
PH
PERCENT TOTAL ZINC
Zn++
Zn(OH)2°
ZnCO3°
ZnHCO3+
ZnSO4°
ZnOH+
PERCENT TOTAL CADMIUM
Cd++
CdCO3°
CdHCO3+
CdOH+
CdCl+
Cd(OH)2°
PERCENT TOTAL LEAD
PbCO3°
PbHCO3+
Pb++
PbOH+
Pb(OH)2°
PbSO4°

LAGO ISEO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^\circ$	$CuOH^+$	$Cu(OH)_2^\circ$	$CuHCO_3^+$	$CuCO_3^\circ$	$Cu(CO_3)_2^{--}$
6.00	45.23	2.15	.73	.68	34.18	17.02	.00
6.10	43.08	2.05	.88	1.03	32.55	20.41	.00
6.20	40.61	1.93	1.04	1.54	30.67	24.21	.01
6.30	37.80	1.80	1.22	2.27	28.54	28.36	.01
6.40	34.68	1.65	1.41	3.30	26.19	32.76	.02
6.50	31.31	1.49	1.60	4.72	23.63	37.22	.02
6.60	27.76	1.32	1.79	6.63	20.95	41.53	.03
6.70	24.12	1.15	1.95	9.13	18.19	45.41	.04
6.80	20.51	.98	2.09	12.31	15.46	48.59	.06
6.90	17.04	.81	2.19	16.21	12.85	50.82	.08
7.00	13.83	.66	2.24	20.85	10.42	51.90	.10
7.10	10.96	.52	2.23	26.18	8.25	51.73	.12
7.20	8.48	.40	2.17	32.10	6.38	50.32	.15
7.30	6.40	.30	2.07	38.43	4.81	47.81	.18
7.40	4.73	.23	1.92	44.98	3.55	44.39	.21
7.50	3.42	.16	1.75	51.54	2.56	40.33	.24
7.60	2.42	.12	1.56	57.90	1.81	35.92	.27
7.70	1.69	.08	1.37	63.91	1.26	31.41	.30
7.80	1.16	.06	1.18	69.42	.86	27.01	.32
7.90	.78	.04	1.00	74.37	.58	22.89	.34
8.00	.52	.02	.84	78.73	.38	19.14	.35
8.10	.35	.02	.70	82.49	.25	15.83	.37
8.20	.23	.01	.58	85.69	.16	12.96	.37
8.30	.15	.01	.48	88.38	.11	10.51	.38
8.40	.10	.00	.39	90.62	.07	8.45	.38
8.50	.06	.00	.31	92.47	.04	6.74	.37
8.60	.04	.00	.25	93.98	.03	5.34	.37
8.70	.03	.00	.20	95.21	.02	4.19	.35
8.80	.02	.00	.16	96.21	.01	3.27	.34
8.90	.01	.00	.13	97.01	.01	2.52	.32
9.00	.01	.00	.10	97.66	.00	1.93	.29

LAGO ISEO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	79.94	.00	3.80	.02	.05	15.17	1.02
6.10	79.70	.00	3.79	.02	.07	15.12	1.28
6.20	79.41	.00	3.78	.03	.12	15.06	1.60
6.30	79.02	.00	3.76	.03	.18	14.99	2.01
6.40	78.52	.00	3.74	.04	.29	14.89	2.51
6.50	77.88	.00	3.71	.05	.46	14.77	3.14
6.60	77.04	.00	3.67	.06	.72	14.60	3.91
6.70	75.95	.00	3.61	.08	1.12	14.39	4.85
6.80	74.52	.00	3.55	.10	1.74	14.12	5.98
6.90	72.64	.00	3.46	.12	2.69	13.75	7.34
7.00	70.19	.00	3.34	.14	4.12	13.28	8.92
7.10	67.01	.00	3.19	.17	6.23	12.67	10.72
7.20	62.96	.00	3.00	.20	9.28	11.90	12.67
7.30	57.91	.00	2.76	.24	13.52	10.93	14.65
7.40	51.83	.00	2.47	.27	19.18	9.77	16.49
7.50	44.87	.00	2.14	.29	26.32	8.44	17.94
7.60	37.38	.00	1.78	.30	34.75	7.02	18.77
7.70	29.86	.00	1.42	.30	43.99	5.59	18.83
7.80	22.87	.00	1.09	.29	53.39	4.27	18.09
7.90	16.83	.00	.80	.27	62.28	3.13	16.69
8.00	11.96	.00	.57	.24	70.15	2.21	14.86
8.10	8.26	.00	.39	.21	76.78	1.52	12.83
8.20	5.58	.00	.27	.18	82.15	1.02	10.82
8.30	3.70	.00	.18	.15	86.37	.67	8.94
8.40	2.42	.00	.12	.12	89.63	.43	7.28
8.50	1.57	.00	.07	.10	92.13	.28	5.85
8.60	1.01	.00	.05	.08	94.03	.17	4.65
8.70	.65	.00	.03	.07	95.48	.11	3.66
8.80	.41	.00	.02	.05	96.59	.07	2.86
8.90	.26	.00	.01	.04	97.43	.04	2.21
9.00	.17	.00	.01	.03	98.08	.03	1.69

LAGO ISEO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

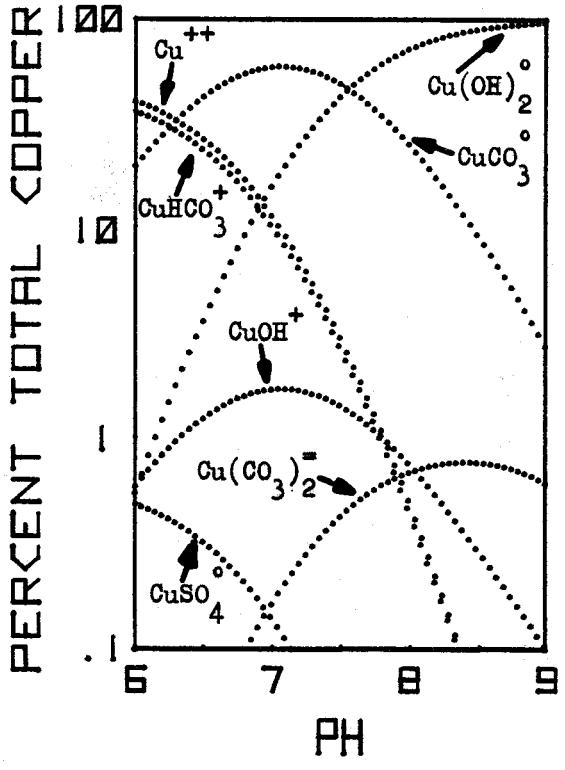
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	79.61	.15	3.79	.06	.00	15.11	1.28
6.10	79.34	.15	3.78	.08	.00	15.05	1.60
6.20	78.99	.15	3.76	.10	.00	14.99	2.01
6.30	78.57	.15	3.74	.13	.00	14.90	2.51
6.40	78.03	.15	3.71	.16	.00	14.80	3.14
6.50	77.38	.15	3.68	.20	.00	14.67	3.92
6.60	76.56	.14	3.64	.25	.00	14.51	4.89
6.70	75.56	.14	3.60	.31	.01	14.32	6.07
6.80	74.34	.14	3.54	.38	.01	14.08	7.51
6.90	72.85	.14	3.47	.47	.01	13.79	9.27
7.00	71.06	.13	3.38	.58	.02	13.45	11.37
7.10	68.94	.13	3.28	.70	.03	13.04	13.88
7.20	66.43	.13	3.16	.85	.05	12.55	16.83
7.30	63.53	.12	3.02	1.03	.08	11.99	20.23
7.40	60.22	.11	2.87	1.23	.11	11.35	24.11
7.50	56.51	.11	2.69	1.45	.17	10.63	28.44
7.60	52.45	.10	2.50	1.69	.25	9.85	33.16
7.70	48.10	.09	2.29	1.95	.36	9.01	38.19
7.80	43.57	.08	2.07	2.23	.52	8.13	43.40
7.90	38.95	.07	1.85	2.51	.74	7.24	48.64
8.00	34.37	.06	1.64	2.79	1.03	6.36	53.75
8.10	29.95	.06	1.43	3.06	1.43	5.50	58.58
8.20	25.79	.05	1.23	3.31	1.95	4.70	62.98
8.30	21.96	.04	1.05	3.55	2.63	3.96	66.82
8.40	18.50	.03	.88	3.77	3.51	3.30	70.00
8.50	15.46	.03	.74	3.96	4.65	2.71	72.46
8.60	12.81	.02	.61	4.13	6.11	2.20	74.12
8.70	10.54	.02	.50	4.28	7.96	1.77	74.93
8.80	8.61	.02	.41	4.40	10.31	1.40	74.85
8.90	6.99	.01	.33	4.50	13.27	1.10	73.79
9.00	5.64	.01	.27	4.57	16.96	.85	71.70

LAGO ISEO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	22.98	.02	2.75	.30	.00	27.52	46.44
6.10	20.50	.02	2.45	.33	.00	24.55	52.15
6.20	18.05	.01	2.16	.37	.00	21.61	57.80
6.30	15.69	.01	1.88	.40	.00	18.78	63.24
6.40	13.47	.01	1.61	.43	.00	16.12	68.35
6.50	11.44	.01	1.37	.46	.00	13.69	73.03
6.60	9.61	.01	1.15	.49	.00	11.50	77.24
6.70	8.00	.01	.96	.52	.00	9.57	80.95
6.80	6.61	.00	.79	.54	.00	7.90	84.15
6.90	5.43	.00	.65	.55	.00	6.48	86.88
7.00	4.43	.00	.53	.57	.00	5.29	89.19
7.10	3.59	.00	.43	.58	.00	4.29	91.10
7.20	2.91	.00	.35	.59	.00	3.47	92.68
7.30	2.34	.00	.28	.60	.01	2.79	93.98
7.40	1.89	.00	.23	.61	.01	2.24	95.03
7.50	1.51	.00	.18	.61	.01	1.80	95.88
7.60	1.21	.00	.15	.62	.01	1.44	96.57
7.70	.97	.00	.12	.63	.01	1.15	97.12
7.80	.78	.00	.09	.63	.02	.92	97.56
7.90	.62	.00	.07	.64	.02	.73	97.91
8.00	.50	.00	.06	.64	.03	.58	98.19
8.10	.40	.00	.05	.65	.04	.46	98.40
8.20	.32	.00	.04	.65	.05	.37	98.57
8.30	.26	.00	.03	.66	.06	.29	98.70
8.40	.21	.00	.02	.67	.08	.23	98.79
8.50	.17	.00	.02	.68	.10	.19	98.85
8.60	.14	.00	.02	.69	.13	.15	98.88
8.70	.11	.00	.01	.71	.17	.12	98.88
8.80	.09	.00	.01	.73	.22	.09	98.86
8.90	.07	.00	.01	.76	.28	.07	98.80
9.00	.06	.00	.01	.79	.37	.06	98.71

LAGO LUGANO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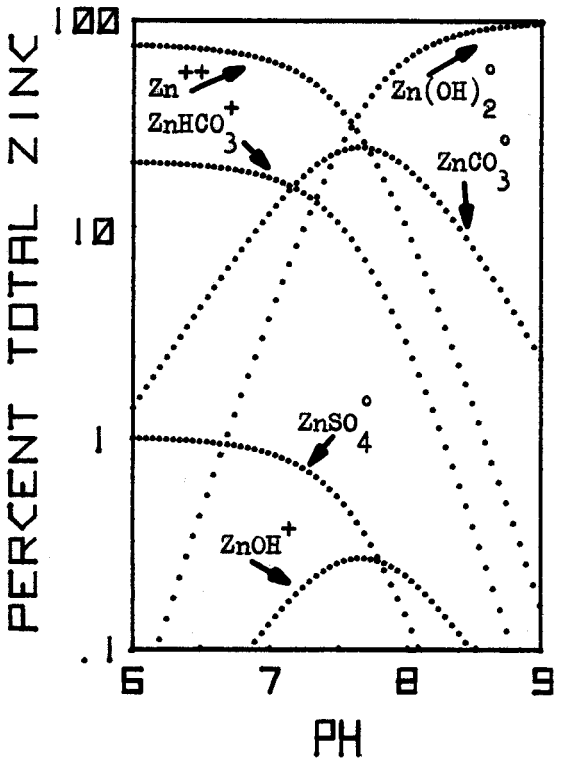
10
1
.1
Cu++
Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
Cu(CO3)2=
CuSO4°
6
7
8
9
PH


PERCENT TOTAL ZINC
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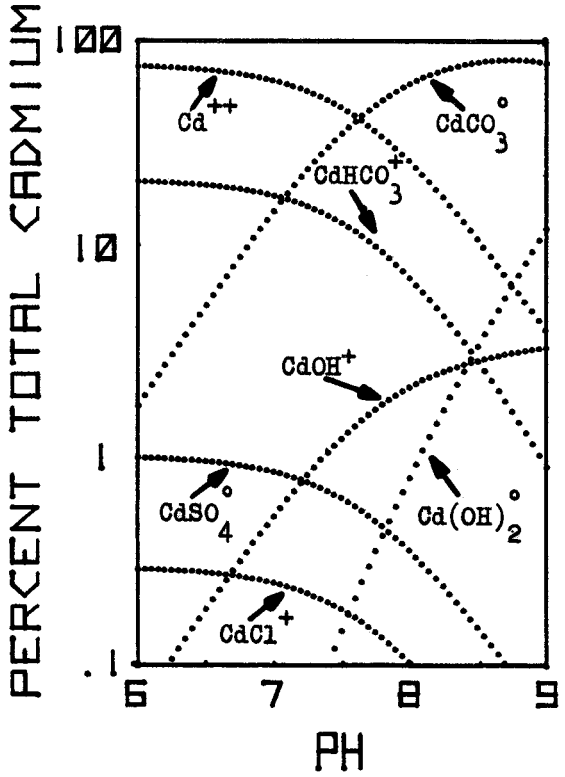
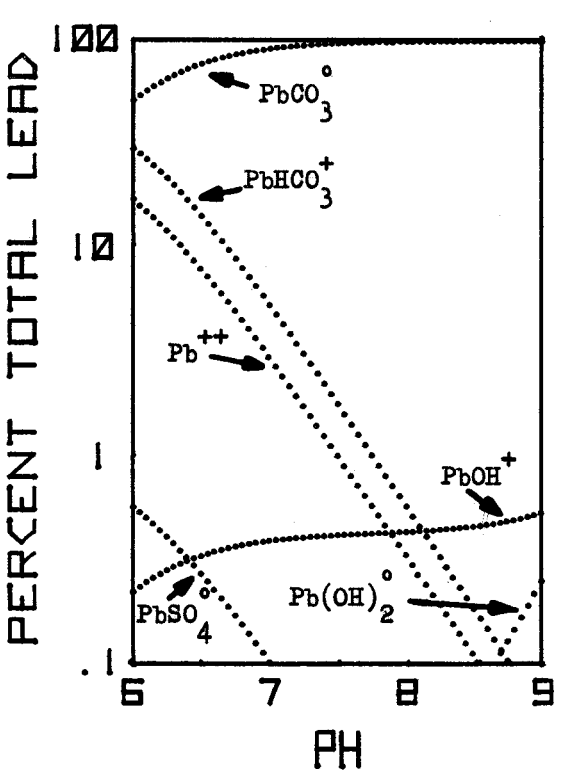
1
.1
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
6
7
8
9
PH


PERCENT TOTAL CADMIUM
100
10
1
.1
Cd++
CdCO3°
CdHCO3+
CdOH+
CdSO4°
Cd(OH)2°
CdCl+
6
7
8
9
PH


PERCENT TOTAL LEAD
100
10
1
.1
PbCO3°
PbHCO3+
Pb++
PbOH+
PbSO4°
Pb(OH)2°
6
7
8
9
PH

LAGO LUGANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	36.81	.49	.60	.56	41.00	20.53	.01
6.10	34.80	.46	.71	.84	38.75	24.43	.01
6.20	32.52	.43	.84	1.24	36.21	28.74	.01
6.30	30.01	.40	.97	1.81	33.41	33.38	.02
6.40	27.29	.36	1.11	2.61	30.38	38.21	.03
6.50	24.43	.33	1.25	3.70	27.19	43.06	.04
6.60	21.50	.29	1.39	5.17	23.92	47.69	.05
6.70	18.58	.25	1.51	7.07	20.66	51.86	.07
6.80	15.75	.21	1.61	9.50	17.51	55.32	.10
6.90	13.09	.17	1.69	12.52	14.54	57.86	.13
7.00	10.66	.14	1.73	16.16	11.84	59.30	.16
7.10	8.51	.11	1.74	20.44	9.44	59.54	.21
7.20	6.65	.09	1.71	25.34	7.38	58.57	.26
7.30	5.10	.07	1.65	30.78	5.65	56.44	.31
7.40	3.83	.05	1.56	36.64	4.24	53.31	.37
7.50	2.82	.04	1.45	42.78	3.12	49.36	.43
7.60	2.04	.03	1.32	49.03	2.25	44.84	.49
7.70	1.45	.02	1.18	55.21	1.59	40.00	.55
7.80	1.01	.01	1.04	61.15	1.11	35.07	.61
7.90	.70	.01	.90	66.71	.76	30.27	.66
8.00	.47	.01	.77	71.80	.51	25.74	.70
8.10	.32	.00	.65	76.35	.34	21.60	.73
8.20	.21	.00	.54	80.35	.23	17.91	.76
8.30	.14	.00	.45	83.80	.15	14.68	.78
8.40	.09	.00	.37	86.74	.09	11.92	.78
8.50	.06	.00	.30	89.21	.06	9.59	.78
8.60	.04	.00	.25	91.27	.04	7.64	.77
8.70	.02	.00	.20	92.97	.02	6.03	.74
8.80	.02	.00	.16	94.37	.01	4.72	.71
8.90	.01	.00	.13	95.52	.01	3.66	.67
9.00	.01	.00	.10	96.45	.01	2.81	.62

LAGO LUGANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	76.17	.01	1.02	.02	.04	21.31	1.44
6.10	75.87	.01	1.01	.02	.07	21.22	1.80
6.20	75.48	.01	1.01	.02	.11	21.11	2.26
6.30	74.99	.01	1.00	.03	.18	20.97	2.83
6.40	74.37	.01	.99	.04	.28	20.79	3.53
6.50	73.57	.01	.98	.05	.43	20.56	4.39
6.60	72.56	.01	.97	.06	.68	20.28	5.45
6.70	71.26	.01	.95	.07	1.06	19.91	6.74
6.80	69.61	.01	.93	.09	1.63	19.44	8.29
6.90	67.51	.01	.90	.11	2.51	18.84	10.11
7.00	64.85	.01	.87	.13	3.83	18.09	12.22
7.10	61.52	.01	.82	.16	5.75	17.15	14.59
7.20	57.42	.01	.77	.19	8.51	15.99	17.12
7.30	52.48	.01	.70	.21	12.32	14.60	19.68
7.40	46.73	.00	.62	.24	17.39	12.98	22.03
7.50	40.33	.00	.54	.26	23.78	11.19	23.90
7.60	33.58	.00	.45	.27	31.39	9.30	25.00
7.70	26.91	.00	.36	.28	39.87	7.43	25.16
7.80	20.74	.00	.28	.27	48.69	5.71	24.32
7.90	15.40	.00	.21	.25	57.29	4.22	22.64
8.00	11.05	.00	.15	.23	65.20	3.01	20.36
8.10	7.72	.00	.10	.20	72.12	2.09	17.77
8.20	5.26	.00	.07	.17	77.95	1.41	15.13
8.30	3.52	.00	.05	.14	82.72	.94	12.63
8.40	2.33	.00	.03	.12	86.55	.61	10.36
8.50	1.52	.00	.02	.10	89.59	.39	8.38
8.60	.98	.00	.01	.08	91.97	.25	6.70
8.70	.63	.00	.01	.06	93.83	.16	5.30
8.80	.41	.00	.01	.05	95.29	.10	4.15
8.90	.26	.00	.00	.04	96.42	.06	3.22
9.00	.16	.00	.00	.03	97.29	.04	2.47

LAGO LUGANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

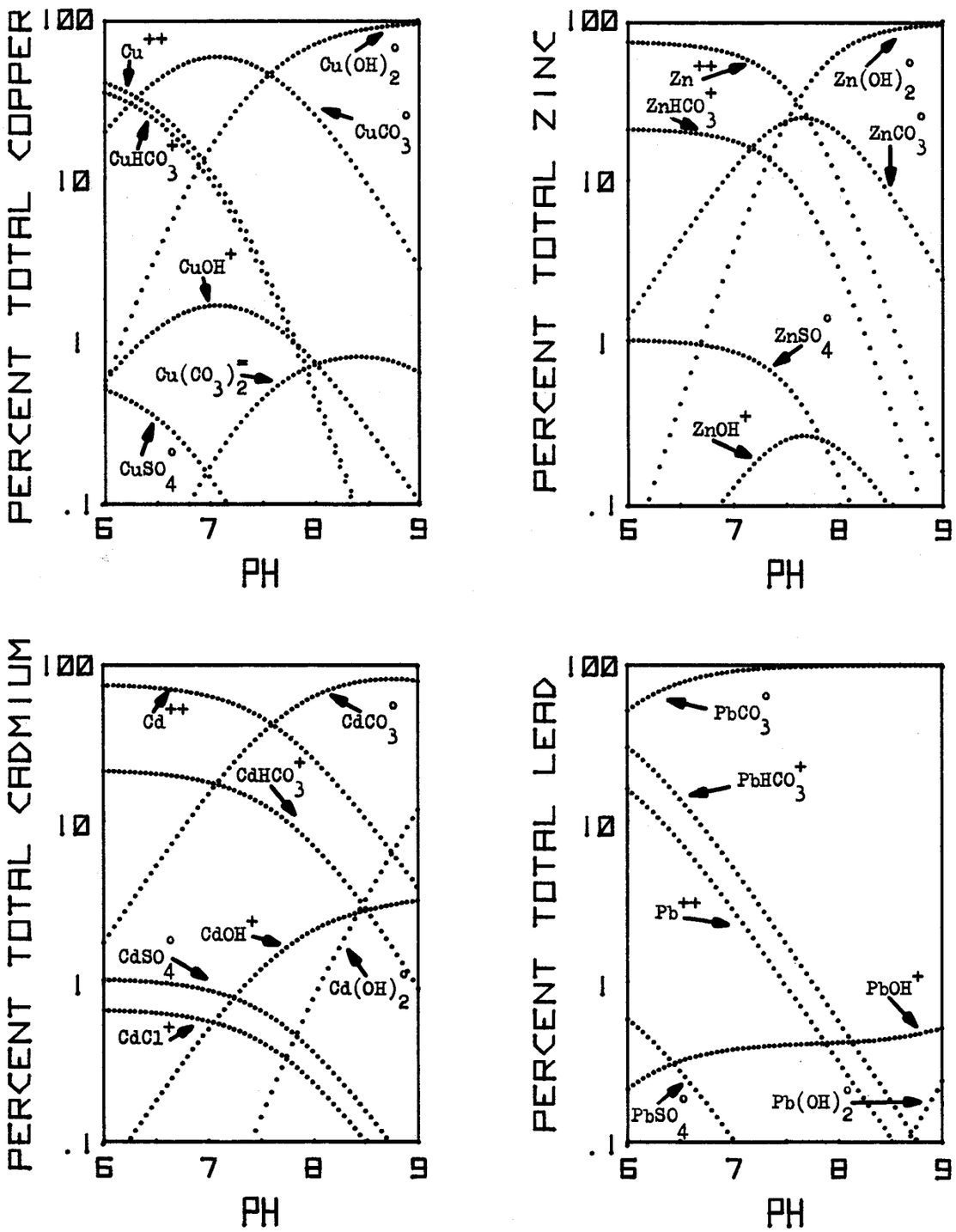
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	75.67	.29	1.01	.06	.00	21.17	1.80
6.10	75.31	.29	1.00	.08	.00	21.06	2.26
6.20	74.86	.29	1.00	.10	.00	20.93	2.82
6.30	74.30	.29	.99	.12	.00	20.77	3.53
6.40	73.61	.29	.98	.15	.00	20.58	4.40
6.50	72.75	.28	.97	.19	.00	20.33	5.47
6.60	71.71	.28	.96	.23	.00	20.04	6.78
6.70	70.43	.27	.94	.29	.01	19.68	8.39
6.80	68.89	.27	.92	.35	.01	19.24	10.32
6.90	67.04	.26	.89	.43	.01	18.71	12.64
7.00	64.85	.25	.87	.53	.02	18.09	15.39
7.10	62.30	.24	.83	.64	.03	17.37	18.60
7.20	59.35	.23	.79	.77	.05	16.53	22.28
7.30	56.02	.22	.75	.91	.07	15.59	26.45
7.40	52.33	.20	.70	1.07	.10	14.54	31.06
7.50	48.32	.19	.64	1.24	.15	13.40	36.05
7.60	44.08	.17	.59	1.43	.21	12.20	41.32
7.70	39.71	.15	.53	1.62	.30	10.96	46.73
7.80	35.31	.14	.47	1.81	.43	9.72	52.13
7.90	31.00	.12	.41	2.00	.59	8.49	57.38
8.00	26.88	.10	.36	2.19	.81	7.33	62.32
8.10	23.05	.09	.31	2.36	1.11	6.24	66.84
8.20	19.57	.08	.26	2.52	1.49	5.25	70.83
8.30	16.45	.06	.22	2.67	1.98	4.37	74.23
8.40	13.73	.05	.18	2.81	2.62	3.60	77.00
8.50	11.38	.04	.15	2.93	3.44	2.94	79.10
8.60	9.39	.04	.13	3.04	4.50	2.38	80.53
8.70	7.71	.03	.10	3.14	5.86	1.91	81.25
8.80	6.31	.02	.08	3.24	7.59	1.51	81.24
8.90	5.14	.02	.07	3.32	9.81	1.19	80.44
9.00	4.18	.02	.06	3.40	12.64	.93	78.78

LAGO LUGANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	17.22	.03	.58	.22	.00	30.39	51.57
6.10	15.18	.02	.51	.25	.00	26.79	57.24
6.20	13.22	.02	.44	.27	.00	23.32	62.73
6.30	11.37	.02	.38	.29	.00	20.05	67.89
6.40	9.66	.01	.32	.31	.00	17.04	72.64
6.50	8.13	.01	.27	.33	.00	14.33	76.92
6.60	6.77	.01	.23	.35	.00	11.94	80.69
6.70	5.60	.01	.19	.36	.00	9.87	83.97
6.80	4.60	.01	.15	.37	.00	8.10	86.76
6.90	3.75	.01	.13	.38	.00	6.61	89.12
7.00	3.05	.00	.10	.39	.00	5.37	91.08
7.10	2.47	.00	.08	.40	.00	4.34	92.70
7.20	1.99	.00	.07	.41	.00	3.50	94.03
7.30	1.60	.00	.05	.41	.00	2.81	95.12
7.40	1.28	.00	.04	.42	.00	2.25	96.00
7.50	1.03	.00	.03	.42	.01	1.80	96.71
7.60	.82	.00	.03	.42	.01	1.44	97.28
7.70	.66	.00	.02	.43	.01	1.15	97.73
7.80	.53	.00	.02	.43	.01	.92	98.10
7.90	.42	.00	.01	.43	.02	.73	98.38
8.00	.34	.00	.01	.44	.02	.58	98.61
8.10	.27	.00	.01	.44	.03	.46	98.79
8.20	.22	.00	.01	.44	.03	.37	98.93
8.30	.17	.00	.01	.45	.04	.29	99.04
8.40	.14	.00	.00	.45	.05	.23	99.11
8.50	.11	.00	.00	.46	.07	.18	99.17
8.60	.09	.00	.00	.47	.09	.15	99.20
8.70	.07	.00	.00	.48	.11	.12	99.21
8.80	.06	.00	.00	.50	.15	.09	99.20
8.90	.05	.00	.00	.52	.19	.07	99.17
9.00	.04	.00	.00	.54	.25	.06	99.11

LAGO VARESE


PERCENT TOTAL COPPER
100
10
1
.1
6
7
8
9
PH
Cu++
Cu(OH)2°
CuCO3°
CuHCO3+
CuOH+
Cu(CO3)2=
CuSO4°
PERCENT TOTAL ZINC
Zn++
Zn(OH)2°
ZnHCO3+
ZnCO3°
ZnSO4°
ZnOH+
PERCENT TOTAL CADMIUM
Cd++
CdCO3°
CdHCO3+
CdOH+
CdSO4°
Cd(OH)2°
CdCl+
PERCENT TOTAL LEAD
PbCO3°
PbHCO3+
Pb++
PbOH+
PbSO4°
Pb(OH)2°

LAGO VARESE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{-}$
6.00	36.21	.51	.59	.55	41.46	20.67	.01
6.10	34.22	.48	.70	.82	39.18	24.59	.01
6.20	31.98	.45	.82	1.21	36.60	28.92	.01
6.30	29.50	.42	.95	1.77	33.76	33.58	.02
6.40	26.82	.38	1.09	2.55	30.69	38.43	.03
6.50	24.01	.34	1.23	3.62	27.47	43.30	.04
6.60	21.12	.30	1.36	5.05	24.16	47.95	.05
6.70	18.25	.26	1.48	6.92	20.87	52.14	.08
6.80	15.48	.22	1.58	9.30	17.69	55.64	.10
6.90	12.87	.18	1.65	12.25	14.70	58.21	.13
7.00	10.49	.15	1.70	15.83	11.98	59.70	.17
7.10	8.38	.12	1.71	20.03	9.56	59.99	.22
7.20	6.56	.09	1.68	24.86	7.48	59.07	.27
7.30	5.03	.07	1.62	30.22	5.73	56.99	.33
7.40	3.78	.05	1.54	36.03	4.30	53.90	.39
7.50	2.79	.04	1.43	42.14	3.17	49.98	.45
7.60	2.02	.03	1.30	48.36	2.29	45.48	.52
7.70	1.44	.02	1.17	54.54	1.63	40.63	.58
7.80	1.01	.01	1.03	60.50	1.13	35.68	.64
7.90	.69	.01	.89	66.10	.78	30.84	.69
8.00	.47	.01	.76	71.23	.53	26.26	.74
8.10	.32	.00	.65	75.84	.35	22.06	.77
8.20	.21	.00	.54	79.90	.23	18.31	.80
8.30	.14	.00	.45	83.41	.15	15.03	.82
8.40	.09	.00	.37	86.40	.10	12.21	.83
8.50	.06	.00	.30	88.92	.06	9.83	.83
8.60	.04	.00	.25	91.02	.04	7.84	.81
8.70	.02	.00	.20	92.77	.02	6.20	.79
8.80	.02	.00	.16	94.20	.02	4.85	.76
8.90	.01	.00	.13	95.37	.01	3.76	.71
9.00	.01	.00	.10	96.33	.01	2.89	.66

LAGO VARESE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	75.64	.02	1.07	.02	.04	21.75	1.46
6.10	75.33	.02	1.06	.02	.07	21.66	1.83
6.20	74.95	.02	1.06	.02	.11	21.55	2.30
6.30	74.45	.02	1.05	.03	.17	21.40	2.87
6.40	73.83	.02	1.04	.04	.27	21.22	3.58
6.50	73.03	.02	1.03	.05	.43	20.99	4.46
6.60	72.01	.02	1.02	.06	.67	20.69	5.54
6.70	70.72	.02	1.00	.07	1.04	20.31	6.85
6.80	69.06	.02	.97	.09	1.61	19.83	8.41
6.90	66.97	.02	.95	.11	2.48	19.22	10.27
7.00	64.32	.01	.91	.13	3.78	18.45	12.41
7.10	61.00	.01	.86	.16	5.68	17.49	14.80
7.20	56.93	.01	.80	.18	8.39	16.30	17.38
7.30	52.03	.01	.73	.21	12.16	14.88	19.97
7.40	46.33	.01	.65	.24	17.16	13.24	22.36
7.50	40.01	.01	.56	.26	23.49	11.41	24.27
7.60	33.34	.01	.47	.27	31.02	9.49	25.40
7.70	26.74	.01	.38	.27	39.43	7.59	25.58
7.80	20.63	.00	.29	.27	48.21	5.84	24.76
7.90	15.33	.00	.22	.25	56.80	4.32	23.08
8.00	11.02	.00	.16	.22	64.72	3.09	20.78
8.10	7.70	.00	.11	.20	71.68	2.15	18.16
8.20	5.26	.00	.07	.17	77.56	1.45	15.48
8.30	3.52	.00	.05	.14	82.38	.96	12.93
8.40	2.33	.00	.03	.12	86.27	.63	10.62
8.50	1.52	.00	.02	.10	89.35	.40	8.60
8.60	.99	.00	.01	.08	91.78	.26	6.88
8.70	.64	.00	.01	.06	93.68	.16	5.45
8.80	.41	.00	.01	.05	95.16	.10	4.27
8.90	.26	.00	.00	.04	96.32	.06	3.31
9.00	.17	.00	.00	.03	97.22	.04	2.54

LAGO VARESE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

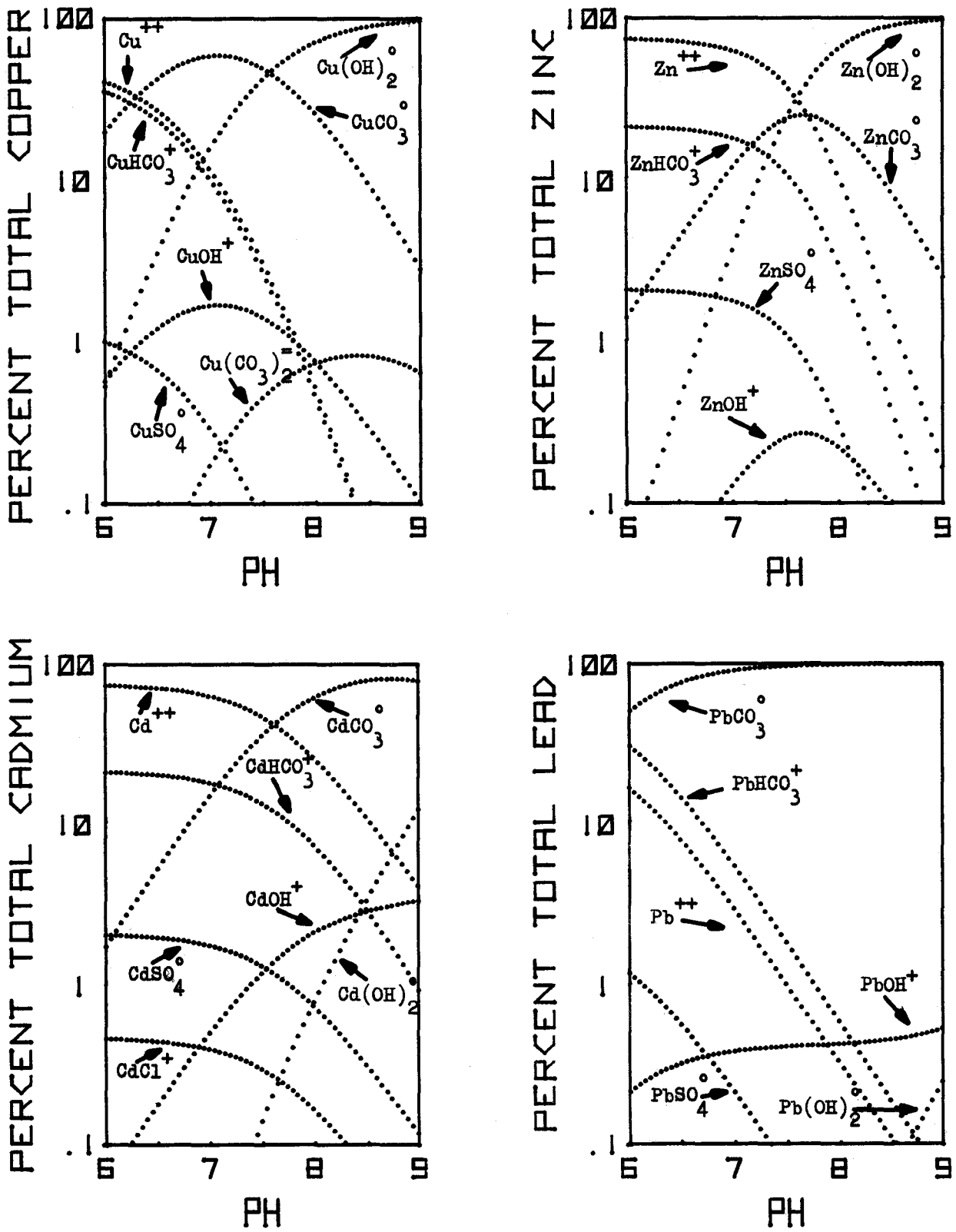
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	74.85	.68	1.06	.06	.00	21.53	1.82
6.10	74.49	.68	1.05	.08	.00	21.42	2.28
6.20	74.04	.67	1.04	.10	.00	21.29	2.86
6.30	73.48	.67	1.04	.12	.00	21.12	3.57
6.40	72.79	.66	1.03	.15	.00	20.92	4.45
6.50	71.94	.65	1.02	.18	.00	20.67	5.53
6.60	70.89	.64	1.00	.23	.00	20.37	6.86
6.70	69.62	.63	.98	.28	.01	20.00	8.48
6.80	68.08	.62	.96	.35	.01	19.55	10.44
6.90	66.23	.60	.93	.43	.01	19.01	12.78
7.00	64.05	.58	.90	.52	.02	18.37	15.55
7.10	61.50	.56	.87	.63	.03	17.63	18.79
7.20	58.57	.53	.83	.75	.04	16.77	22.51
7.30	55.25	.50	.78	.89	.07	15.81	26.70
7.40	51.58	.47	.73	1.05	.10	14.74	31.34
7.50	47.60	.43	.67	1.22	.14	13.58	36.35
7.60	43.40	.39	.61	1.40	.21	12.35	41.63
7.70	39.07	.35	.55	1.59	.30	11.09	47.05
7.80	34.71	.32	.49	1.78	.42	9.82	52.47
7.90	30.46	.28	.43	1.96	.58	8.58	57.71
8.00	26.40	.24	.37	2.14	.79	7.40	62.65
8.10	22.63	.21	.32	2.31	1.08	6.30	67.16
8.20	19.19	.17	.27	2.47	1.45	5.30	71.14
8.30	16.14	.15	.23	2.61	1.93	4.41	74.53
8.40	13.46	.12	.19	2.74	2.56	3.63	77.29
8.50	11.16	.10	.16	2.86	3.36	2.97	79.40
8.60	9.20	.08	.13	2.97	4.39	2.40	80.83
8.70	7.55	.07	.11	3.07	5.71	1.92	81.57
8.80	6.18	.06	.09	3.16	7.41	1.53	81.58
8.90	5.04	.05	.07	3.25	9.58	1.20	80.82
9.00	4.10	.04	.06	3.32	12.34	.94	79.21

LAGO VARESE

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	16.86	.06	.60	.22	.00	30.59	51.67
6.10	14.86	.05	.53	.24	.00	26.97	57.35
6.20	12.94	.05	.46	.26	.00	23.47	62.83
6.30	11.12	.04	.39	.29	.00	20.17	67.99
6.40	9.45	.03	.34	.31	.00	17.14	72.73
6.50	7.95	.03	.28	.32	.00	14.42	77.00
6.60	6.63	.02	.23	.34	.00	12.01	80.77
6.70	5.48	.02	.19	.35	.00	9.93	84.03
6.80	4.50	.02	.16	.36	.00	8.15	86.82
6.90	3.67	.01	.13	.37	.00	6.65	89.16
7.00	2.98	.01	.11	.38	.00	5.39	91.12
7.10	2.41	.01	.09	.39	.00	4.36	92.74
7.20	1.94	.01	.07	.40	.00	3.51	94.07
7.30	1.56	.01	.06	.40	.00	2.82	95.15
7.40	1.26	.00	.04	.41	.00	2.26	96.02
7.50	1.01	.00	.04	.41	.01	1.81	96.73
7.60	.81	.00	.03	.41	.01	1.45	97.30
7.70	.64	.00	.02	.42	.01	1.15	97.75
7.80	.52	.00	.02	.42	.01	.92	98.11
7.90	.41	.00	.01	.42	.02	.73	98.40
8.00	.33	.00	.01	.42	.02	.58	98.63
8.10	.26	.00	.01	.43	.03	.46	98.81
8.20	.21	.00	.01	.43	.03	.37	98.95
8.30	.17	.00	.01	.44	.04	.29	99.05
8.40	.14	.00	.00	.44	.05	.23	99.13
8.50	.11	.00	.00	.45	.07	.19	99.18
8.60	.09	.00	.00	.46	.09	.15	99.21
8.70	.07	.00	.00	.47	.11	.12	99.23
8.80	.06	.00	.00	.48	.14	.09	99.22
8.90	.05	.00	.00	.50	.19	.07	99.19
9.00	.04	.00	.00	.52	.24	.06	99.13

LAGO ANNONE E.



LAGO ANNONE E.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	36.19	1.01	.58	.54	41.38	20.29	.01
6.10	34.24	.96	.69	.81	39.14	24.16	.01
6.20	32.03	.90	.81	1.19	36.61	28.44	.01
6.30	29.58	.83	.94	1.75	33.81	33.07	.02
6.40	26.94	.75	1.08	2.52	30.78	37.90	.03
6.50	24.14	.68	1.22	3.58	27.58	42.75	.04
6.60	21.27	.60	1.35	5.00	24.30	47.42	.06
6.70	18.41	.52	1.47	6.86	21.02	51.64	.08
6.80	15.63	.44	1.58	9.23	17.84	55.18	.10
6.90	13.01	.36	1.65	12.18	14.85	57.81	.13
7.00	10.62	.30	1.70	15.76	12.11	59.35	.17
7.10	8.49	.24	1.71	19.97	9.67	59.70	.22
7.20	6.65	.19	1.68	24.80	7.57	58.83	.27
7.30	5.11	.14	1.63	30.18	5.81	56.81	.33
7.40	3.84	.11	1.54	36.00	4.37	53.75	.39
7.50	2.84	.08	1.43	42.11	3.22	49.86	.46
7.60	2.06	.06	1.31	48.36	2.33	45.37	.52
7.70	1.46	.04	1.17	54.55	1.65	40.54	.59
7.80	1.02	.03	1.03	60.52	1.15	35.60	.65
7.90	.71	.02	.90	66.13	.79	30.76	.70
8.00	.48	.01	.77	71.27	.53	26.19	.74
8.10	.32	.01	.65	75.88	.36	22.00	.78
8.20	.21	.01	.54	79.94	.23	18.25	.81
8.30	.14	.00	.45	83.46	.15	14.97	.83
8.40	.09	.00	.37	86.45	.10	12.15	.83
8.50	.06	.00	.30	88.97	.06	9.77	.83
8.60	.04	.00	.25	91.08	.04	7.78	.81
8.70	.02	.00	.20	92.82	.02	6.14	.79
8.80	.02	.00	.16	94.26	.02	4.80	.75
8.90	.01	.00	.13	95.43	.01	3.72	.71
9.00	.01	.00	.10	96.39	.01	2.85	.65

LAGO ANNONE E.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	74.90	.01	2.10	.02	.04	21.51	1.42
6.10	74.60	.01	2.09	.02	.07	21.42	1.78
6.20	74.23	.01	2.08	.02	.11	21.31	2.23
6.30	73.76	.01	2.07	.03	.17	21.17	2.79
6.40	73.15	.01	2.05	.04	.27	21.00	3.49
6.50	72.38	.01	2.03	.05	.42	20.77	4.34
6.60	71.40	.01	2.00	.06	.65	20.48	5.39
6.70	70.15	.01	1.97	.07	1.02	20.12	6.67
6.80	68.55	.01	1.92	.09	1.58	19.65	8.20
6.90	66.52	.01	1.86	.11	2.42	19.06	10.01
7.00	63.95	.01	1.79	.13	3.69	18.32	12.11
7.10	60.73	.01	1.70	.15	5.56	17.38	14.47
7.20	56.76	.01	1.59	.18	8.23	16.23	17.01
7.30	51.96	.01	1.46	.21	11.94	14.84	19.58
7.40	46.37	.01	1.30	.23	16.89	13.23	21.97
7.50	40.13	.01	1.12	.26	23.17	11.42	23.89
7.60	33.52	.01	.94	.27	30.67	9.52	25.07
7.70	26.95	.00	.76	.27	39.08	7.63	25.30
7.80	20.84	.00	.58	.26	47.89	5.88	24.54
7.90	15.52	.00	.43	.25	56.53	4.36	22.90
8.00	11.18	.00	.31	.22	64.51	3.12	20.65
8.10	7.82	.00	.22	.20	71.53	2.17	18.06
8.20	5.34	.00	.15	.17	77.47	1.47	15.40
8.30	3.58	.00	.10	.14	82.34	.97	12.86
8.40	2.37	.00	.07	.12	86.25	.64	10.56
8.50	1.55	.00	.04	.10	89.36	.41	8.54
8.60	1.00	.00	.03	.08	91.80	.26	6.83
8.70	.65	.00	.02	.07	93.71	.16	5.40
8.80	.41	.00	.01	.05	95.20	.10	4.22
8.90	.26	.00	.01	.04	96.36	.06	3.27
9.00	.17	.00	.00	.03	97.25	.04	2.50

LAGO ANNONE E.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	74.28	.47	2.08	.06	.00	21.33	1.78
6.10	73.93	.47	2.07	.07	.00	21.23	2.22
6.20	73.50	.46	2.06	.09	.00	21.10	2.78
6.30	72.96	.46	2.04	.12	.00	20.94	3.48
6.40	72.29	.46	2.03	.15	.00	20.75	4.34
6.50	71.46	.45	2.00	.18	.00	20.51	5.40
6.60	70.45	.45	1.97	.22	.00	20.21	6.70
6.70	69.21	.44	1.94	.28	.01	19.85	8.28
6.80	67.71	.43	1.90	.34	.01	19.41	10.20
6.90	65.92	.42	1.85	.42	.01	18.89	12.49
7.00	63.80	.40	1.79	.51	.02	18.27	15.21
7.10	61.31	.39	1.72	.62	.03	17.55	18.39
7.20	58.45	.37	1.64	.74	.04	16.71	22.05
7.30	55.20	.35	1.55	.88	.07	15.77	26.19
7.40	51.60	.33	1.45	1.04	.10	14.72	30.77
7.50	47.69	.30	1.34	1.21	.14	13.58	35.74
7.60	43.55	.28	1.22	1.39	.20	12.37	40.99
7.70	39.26	.25	1.10	1.58	.29	11.12	46.40
7.80	34.95	.22	.98	1.77	.41	9.86	51.81
7.90	30.72	.19	.86	1.95	.57	8.63	57.07
8.00	26.67	.17	.75	2.14	.79	7.45	62.04
8.10	22.90	.14	.64	2.31	1.07	6.35	66.58
8.20	19.46	.12	.55	2.47	1.45	5.35	70.61
8.30	16.38	.10	.46	2.62	1.93	4.46	74.05
8.40	13.69	.09	.38	2.75	2.56	3.68	76.85
8.50	11.37	.07	.32	2.88	3.37	3.00	79.00
8.60	9.39	.06	.26	2.99	4.41	2.43	80.46
8.70	7.72	.05	.22	3.10	5.74	1.95	81.22
8.80	6.33	.04	.18	3.20	7.46	1.55	81.24
8.90	5.18	.03	.14	3.29	9.67	1.22	80.47
9.00	4.22	.03	.12	3.38	12.49	.95	78.83

LAGO ANNONE E.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	16.93	.04	1.19	.21	.00	30.67	50.95
6.10	14.95	.04	1.05	.24	.00	27.09	56.64
6.20	13.03	.03	.92	.26	.00	23.61	62.15
6.30	11.22	.03	.79	.28	.00	20.32	67.35
6.40	9.55	.02	.67	.30	.00	17.29	72.16
6.50	8.04	.02	.57	.32	.00	14.56	76.49
6.60	6.71	.02	.47	.34	.00	12.15	80.32
6.70	5.55	.01	.39	.35	.00	10.05	83.64
6.80	4.56	.01	.32	.37	.00	8.25	86.49
6.90	3.73	.01	.26	.38	.00	6.74	88.89
7.00	3.03	.01	.21	.38	.00	5.47	90.89
7.10	2.45	.01	.17	.39	.00	4.43	92.55
7.20	1.98	.00	.14	.40	.00	3.57	93.91
7.30	1.59	.00	.11	.40	.00	2.87	95.02
7.40	1.28	.00	.09	.41	.00	2.30	95.92
7.50	1.02	.00	.07	.41	.01	1.84	96.64
7.60	.82	.00	.06	.41	.01	1.47	97.23
7.70	.66	.00	.05	.42	.01	1.17	97.69
7.80	.53	.00	.04	.42	.01	.94	98.07
7.90	.42	.00	.03	.42	.02	.75	98.36
8.00	.34	.00	.02	.43	.02	.59	98.60
8.10	.27	.00	.02	.43	.03	.47	98.78
8.20	.22	.00	.02	.44	.03	.38	98.92
8.30	.17	.00	.01	.44	.04	.30	99.03
8.40	.14	.00	.01	.45	.05	.24	99.11
8.50	.11	.00	.01	.45	.07	.19	99.17
8.60	.09	.00	.01	.46	.09	.15	99.20
8.70	.07	.00	.01	.48	.11	.12	99.21
8.80	.06	.00	.00	.49	.14	.09	99.20
8.90	.05	.00	.00	.51	.19	.08	99.17
9.00	.04	.00	.00	.53	.25	.06	99.11

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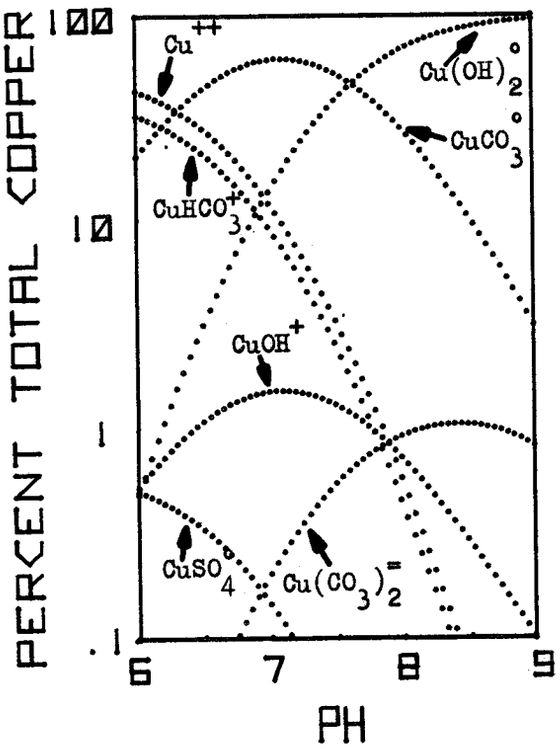

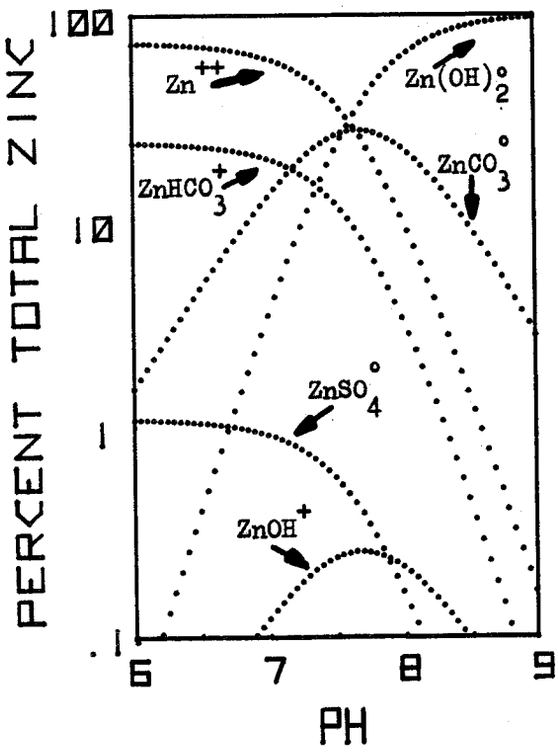

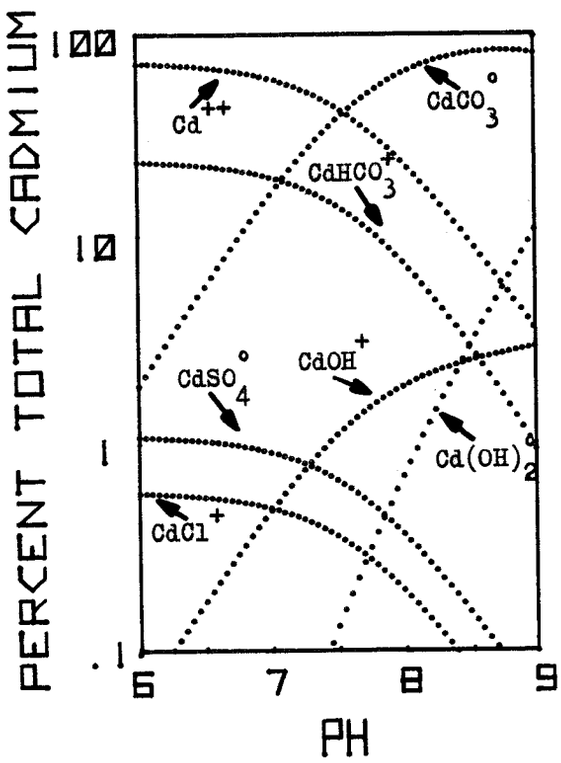

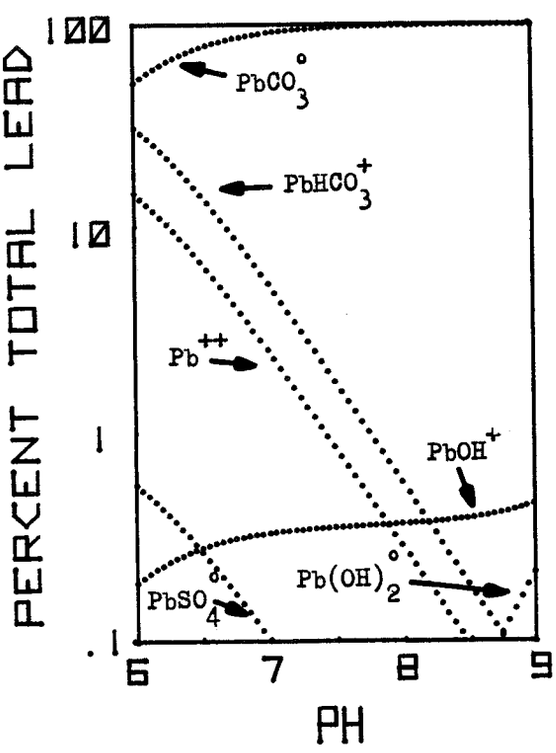

LAGO ALSERIO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	33.34	.51	.53	.49	43.75	21.36	.01
6.10	31.47	.48	.63	.74	41.29	25.38	.01
6.20	29.37	.45	.74	1.09	38.53	29.81	.02
6.30	27.06	.41	.86	1.59	35.49	34.57	.02
6.40	24.57	.37	.98	2.29	32.22	39.52	.03
6.50	21.97	.33	1.11	3.25	28.81	44.48	.05
6.60	19.32	.29	1.23	4.53	25.33	49.23	.07
6.70	16.70	.25	1.33	6.20	21.88	53.54	.09
6.80	14.17	.22	1.42	8.34	18.56	57.17	.12
6.90	11.80	.18	1.49	11.00	15.45	59.91	.16
7.00	9.64	.15	1.54	14.25	12.62	61.60	.21
7.10	7.73	.12	1.55	18.11	10.11	62.12	.26
7.20	6.08	.09	1.54	22.57	7.94	61.45	.33
7.30	4.69	.07	1.49	27.60	6.12	59.62	.40
7.40	3.55	.05	1.42	33.12	4.63	56.75	.48
7.50	2.64	.04	1.33	39.01	3.43	52.99	.56
7.60	1.93	.03	1.22	45.11	2.50	48.57	.64
7.70	1.38	.02	1.10	51.27	1.79	43.71	.73
7.80	.97	.01	.98	57.30	1.26	38.67	.81
7.90	.68	.01	.86	63.06	.87	33.65	.88
8.00	.46	.01	.74	68.42	.59	28.84	.94
8.10	.31	.00	.63	73.30	.40	24.36	1.00
8.20	.21	.00	.53	77.64	.26	20.32	1.04
8.30	.14	.00	.44	81.44	.17	16.74	1.06
8.40	.09	.00	.36	84.71	.11	13.64	1.08
8.50	.06	.00	.30	87.49	.07	11.00	1.07
8.60	.04	.00	.24	89.83	.05	8.78	1.06
8.70	.02	.00	.20	91.78	.03	6.95	1.03
8.80	.02	.00	.16	93.39	.02	5.44	.98
8.90	.01	.00	.13	94.72	.01	4.21	.92
9.00	.01	.00	.10	95.81	.01	3.23	.85

LAGO ALSERIO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	73.13	.01	1.11	.01	.04	24.10	1.59
6.10	72.81	.01	1.11	.02	.07	24.00	1.99
6.20	72.41	.01	1.10	.02	.10	23.86	2.49
6.30	71.90	.01	1.09	.03	.16	23.69	3.11
6.40	71.25	.01	1.08	.04	.26	23.47	3.88
6.50	70.44	.01	1.07	.04	.40	23.20	4.83
6.60	69.40	.01	1.05	.06	.63	22.85	5.99
6.70	68.09	.01	1.03	.07	.98	22.41	7.40
6.80	66.43	.01	1.01	.08	1.52	21.86	9.08
6.90	64.34	.01	.98	.10	2.33	21.16	11.07
7.00	61.73	.01	.94	.12	3.55	20.29	13.36
7.10	58.49	.01	.89	.15	5.33	19.21	15.93
7.20	54.54	.01	.83	.17	7.88	17.89	18.68
7.30	49.83	.01	.76	.20	11.41	16.33	21.46
7.40	44.41	.01	.67	.22	16.11	14.53	24.04
7.50	38.41	.01	.58	.24	22.08	12.55	26.13
7.60	32.10	.01	.49	.26	29.25	10.46	27.43
7.70	25.86	.01	.39	.26	37.35	8.40	27.74
7.80	20.06	.00	.30	.25	45.91	6.49	26.98
7.90	15.00	.00	.23	.24	54.41	4.83	25.29
8.00	10.85	.00	.16	.22	62.39	3.48	22.90
8.10	7.63	.00	.12	.19	69.51	2.43	20.12
8.20	5.24	.00	.08	.17	75.63	1.65	17.24
8.30	3.53	.00	.05	.14	80.73	1.10	14.45
8.40	2.34	.00	.04	.12	84.88	.72	11.91
8.50	1.53	.00	.02	.10	88.22	.46	9.66
8.60	1.00	.00	.02	.08	90.87	.30	7.74
8.70	.64	.00	.01	.06	92.97	.19	6.13
8.80	.41	.00	.01	.05	94.61	.12	4.80
8.90	.26	.00	.00	.04	95.90	.07	3.72
9.00	.17	.00	.00	.03	96.91	.04	2.85

LAGO ALSERIO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	72.41	.59	1.10	.06	.00	23.87	1.98
6.10	72.03	.59	1.09	.07	.00	23.74	2.48
6.20	71.56	.58	1.09	.09	.00	23.58	3.10
6.30	70.98	.58	1.08	.11	.00	23.38	3.87
6.40	70.26	.57	1.07	.14	.00	23.14	4.82
6.50	69.37	.57	1.05	.18	.00	22.85	5.99
6.60	68.28	.56	1.04	.22	.00	22.48	7.42
6.70	66.96	.55	1.02	.27	.00	22.04	9.16
6.80	65.38	.53	.99	.33	.01	21.51	11.25
6.90	63.48	.52	.96	.40	.01	20.88	13.75
7.00	61.25	.50	.93	.49	.02	20.13	16.69
7.10	58.65	.48	.89	.59	.03	19.26	20.10
7.20	55.68	.45	.85	.70	.04	18.27	24.01
7.30	52.35	.43	.80	.83	.06	17.16	28.38
7.40	48.68	.40	.74	.98	.09	15.93	33.18
7.50	44.75	.36	.68	1.13	.13	14.62	38.33
7.60	40.63	.33	.62	1.29	.19	13.24	43.70
7.70	36.42	.30	.55	1.46	.27	11.83	49.17
7.80	32.23	.26	.49	1.62	.38	10.43	54.58
7.90	28.17	.23	.43	1.79	.52	9.08	59.79
8.00	24.33	.20	.37	1.94	.72	7.80	64.65
8.10	20.79	.17	.32	2.09	.97	6.62	69.05
8.20	17.60	.14	.27	2.23	1.30	5.55	72.92
8.30	14.77	.12	.22	2.35	1.73	4.61	76.19
8.40	12.31	.10	.19	2.47	2.29	3.79	78.86
8.50	10.20	.08	.16	2.58	3.01	3.09	80.89
8.60	8.42	.07	.13	2.68	3.94	2.49	82.28
8.70	6.93	.06	.11	2.77	5.13	2.00	83.01
8.80	5.68	.05	.09	2.86	6.67	1.59	83.06
8.90	4.65	.04	.07	2.95	8.66	1.25	82.37
9.00	3.80	.03	.06	3.04	11.22	.98	80.87

LAGO ALSERIO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	15.21	.05	.58	.19	.00	31.63	52.33
6.10	13.39	.04	.51	.21	.00	27.85	57.99
6.20	11.64	.04	.44	.23	.00	24.20	63.45
6.30	9.99	.03	.38	.25	.00	20.77	68.57
6.40	8.48	.03	.32	.27	.00	17.63	73.26
6.50	7.13	.02	.27	.29	.00	14.81	77.48
6.60	5.93	.02	.23	.30	.00	12.33	81.19
6.70	4.90	.02	.19	.31	.00	10.18	84.40
6.80	4.02	.01	.15	.32	.00	8.35	87.14
6.90	3.28	.01	.13	.33	.00	6.81	89.45
7.00	2.66	.01	.10	.34	.00	5.52	91.36
7.10	2.15	.01	.08	.34	.00	4.46	92.95
7.20	1.74	.01	.07	.35	.00	3.59	94.25
7.30	1.40	.00	.05	.35	.00	2.89	95.30
7.40	1.12	.00	.04	.36	.00	2.31	96.16
7.50	.90	.00	.03	.36	.01	1.85	96.85
7.60	.72	.00	.03	.36	.01	1.48	97.40
7.70	.58	.00	.02	.37	.01	1.18	97.85
7.80	.46	.00	.02	.37	.01	.94	98.20
7.90	.37	.00	.01	.37	.01	.75	98.48
8.00	.30	.00	.01	.37	.02	.60	98.71
8.10	.24	.00	.01	.38	.02	.47	98.88
8.20	.19	.00	.01	.38	.03	.38	99.02
8.30	.15	.00	.01	.39	.04	.30	99.12
8.40	.12	.00	.00	.39	.05	.24	99.20
8.50	.10	.00	.00	.40	.06	.19	99.25
8.60	.08	.00	.00	.41	.08	.15	99.28
8.70	.07	.00	.00	.42	.10	.12	99.30
8.80	.05	.00	.00	.43	.13	.10	99.29
8.90	.04	.00	.00	.45	.17	.08	99.26
9.00	.04	.00	.00	.47	.22	.06	99.21

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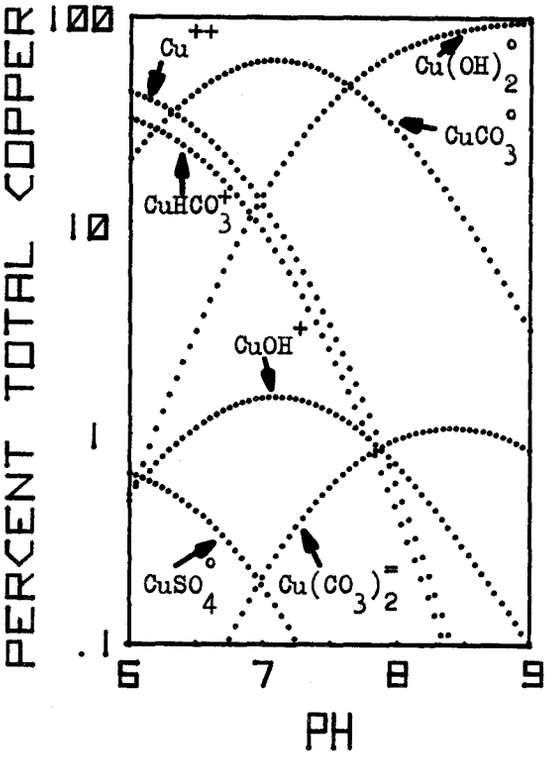
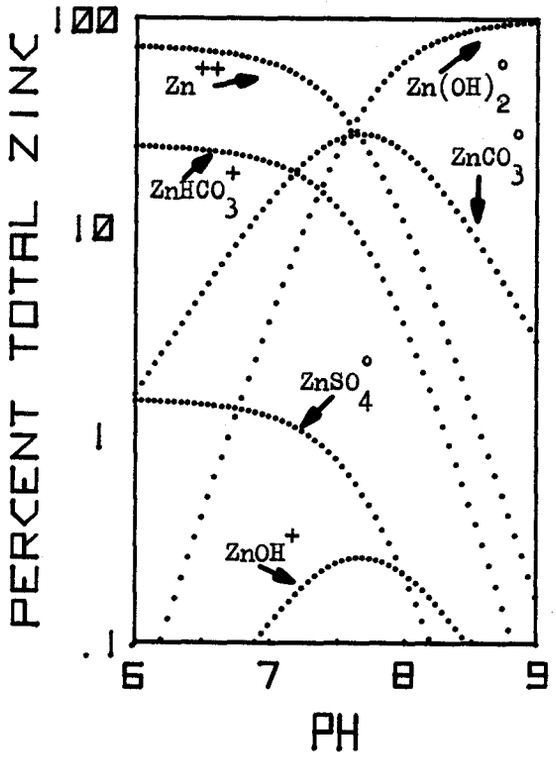
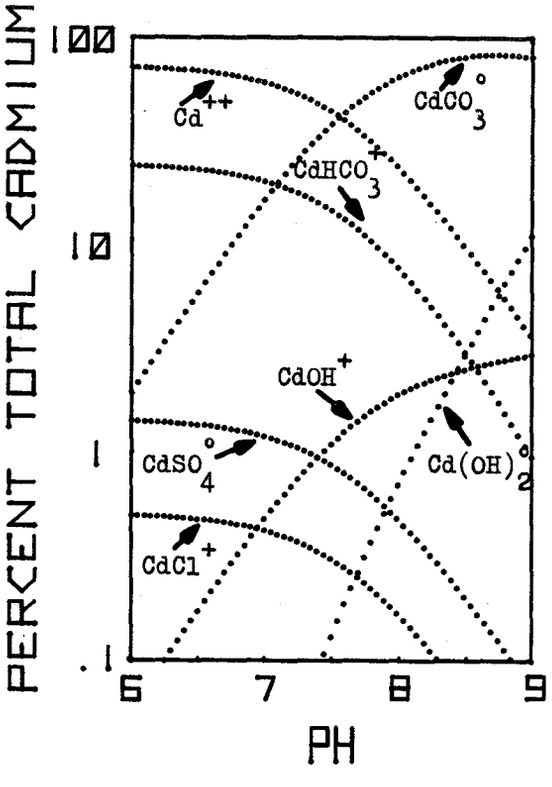
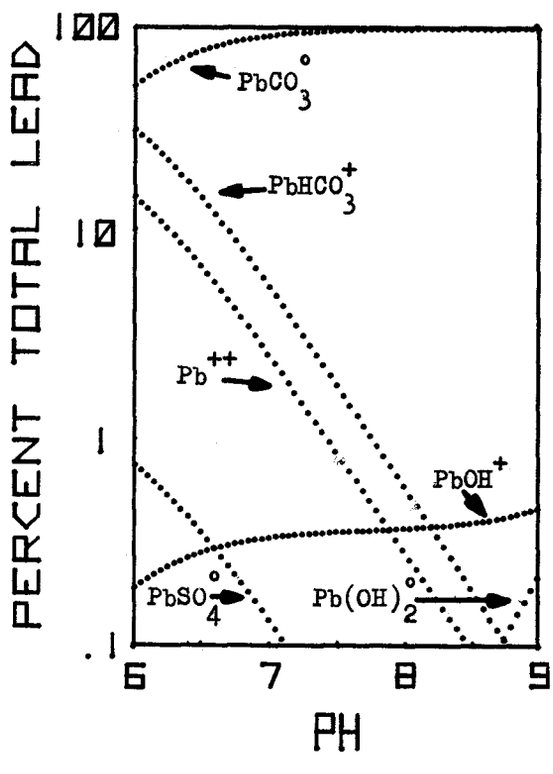








LAGO PUSIANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	33.09	.66	.53	.49	43.90	21.32	.01
6.10	31.24	.63	.62	.73	41.43	25.34	.01
6.20	29.16	.58	.73	1.08	38.66	29.77	.02
6.30	26.87	.54	.85	1.57	35.62	34.53	.02
6.40	24.41	.49	.97	2.26	32.35	39.48	.03
6.50	21.83	.44	1.10	3.21	28.93	44.44	.05
6.60	19.20	.38	1.21	4.48	25.45	49.21	.07
6.70	16.60	.33	1.32	6.13	21.99	53.53	.09
6.80	14.09	.28	1.41	8.25	18.66	57.19	.12
6.90	11.74	.24	1.48	10.89	15.54	59.95	.16
7.00	9.60	.19	1.52	14.11	12.70	61.67	.21
7.10	7.70	.15	1.54	17.94	10.18	62.23	.27
7.20	6.06	.12	1.52	22.38	8.00	61.59	.33
7.30	4.68	.09	1.48	27.38	6.17	59.79	.41
7.40	3.54	.07	1.41	32.88	4.67	56.94	.49
7.50	2.63	.05	1.32	38.75	3.46	53.21	.57
7.60	1.92	.04	1.22	44.84	2.52	48.80	.66
7.70	1.38	.03	1.10	50.99	1.81	43.95	.74
7.80	.97	.02	.98	57.03	1.27	38.91	.83
7.90	.68	.01	.85	62.80	.88	33.88	.90
8.00	.46	.01	.74	68.18	.60	29.05	.97
8.10	.31	.01	.63	73.08	.40	24.55	1.02
8.20	.21	.00	.53	77.44	.27	20.48	1.06
8.30	.14	.00	.44	81.27	.17	16.89	1.09
8.40	.09	.00	.36	84.56	.11	13.76	1.10
8.50	.06	.00	.30	87.36	.07	11.10	1.10
8.60	.04	.00	.24	89.72	.05	8.87	1.08
8.70	.02	.00	.20	91.69	.03	7.01	1.05
8.80	.02	.00	.16	93.31	.02	5.49	1.00
8.90	.01	.00	.13	94.65	.01	4.25	.94
9.00	.01	.00	.10	95.75	.01	3.26	.87

LAGO PUSIANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	72.67	.01	1.46	.01	.04	24.22	1.59
6.10	72.36	.01	1.45	.02	.07	24.11	1.99
6.20	71.96	.01	1.44	.02	.10	23.97	2.49
6.30	71.45	.01	1.43	.03	.16	23.80	3.11
6.40	70.81	.01	1.42	.04	.26	23.58	3.88
6.50	70.00	.01	1.40	.04	.40	23.31	4.83
6.60	68.98	.01	1.38	.05	.63	22.96	5.99
6.70	67.68	.01	1.36	.07	.97	22.52	7.40
6.80	66.03	.01	1.32	.08	1.50	21.96	9.08
6.90	63.96	.01	1.28	.10	2.31	21.26	11.07
7.00	61.37	.01	1.23	.12	3.51	20.39	13.36
7.10	58.16	.01	1.17	.15	5.27	19.31	15.93
7.20	54.25	.01	1.09	.17	7.80	18.00	18.69
7.30	49.59	.01	.99	.20	11.29	16.43	21.48
7.40	44.22	.01	.89	.22	15.96	14.63	24.08
7.50	38.27	.01	.77	.24	21.89	12.64	26.19
7.60	32.01	.01	.64	.25	29.03	10.55	27.51
7.70	25.81	.00	.52	.26	37.09	8.48	27.84
7.80	20.04	.00	.40	.25	45.63	6.56	27.11
7.90	15.00	.00	.30	.24	54.14	4.89	25.43
8.00	10.86	.00	.22	.22	62.13	3.52	23.05
8.10	7.64	.00	.15	.19	69.28	2.46	20.27
8.20	5.25	.00	.11	.17	75.43	1.67	17.38
8.30	3.54	.00	.07	.14	80.56	1.12	14.58
8.40	2.35	.00	.05	.12	84.74	.73	12.01
8.50	1.54	.00	.03	.10	88.11	.47	9.75
8.60	1.00	.00	.02	.08	90.79	.30	7.81
8.70	.65	.00	.01	.06	92.90	.19	6.19
8.80	.42	.00	.01	.05	94.56	.12	4.85
8.90	.27	.00	.01	.04	95.86	.07	3.75
9.00	.17	.00	.00	.03	96.88	.04	2.87

LAGO PUSIANO

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

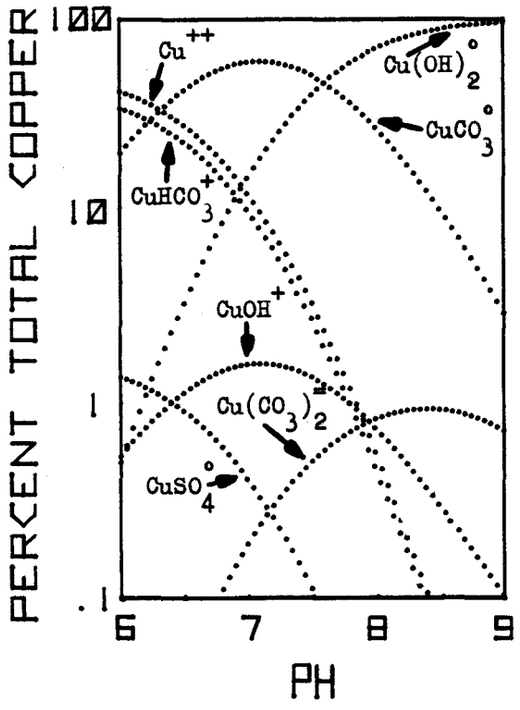
pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	72.02	.50	1.44	.06	.00	24.00	1.98
6.10	71.64	.50	1.44	.07	.00	23.87	2.48
6.20	71.18	.50	1.43	.09	.00	23.71	3.10
6.30	70.60	.49	1.42	.11	.00	23.51	3.87
6.40	69.88	.49	1.40	.14	.00	23.27	4.82
6.50	69.00	.48	1.38	.17	.00	22.97	5.99
6.60	67.92	.48	1.36	.22	.00	22.61	7.42
6.70	66.60	.47	1.34	.27	.00	22.16	9.16
6.80	65.02	.46	1.30	.33	.01	21.63	11.26
6.90	63.14	.44	1.27	.40	.01	20.99	13.75
7.00	60.91	.43	1.22	.48	.02	20.24	16.70
7.10	58.33	.41	1.17	.58	.03	19.37	20.11
7.20	55.38	.39	1.11	.70	.04	18.37	24.02
7.30	52.06	.36	1.04	.83	.06	17.25	28.39
7.40	48.42	.34	.97	.97	.09	16.02	33.19
7.50	44.51	.31	.89	1.12	.13	14.70	38.34
7.60	40.41	.28	.81	1.28	.19	13.31	43.72
7.70	36.22	.25	.73	1.44	.27	11.90	49.19
7.80	32.05	.22	.64	1.61	.37	10.49	54.61
7.90	28.02	.20	.56	1.77	.52	9.13	59.81
8.00	24.20	.17	.49	1.92	.71	7.84	64.67
8.10	20.68	.14	.41	2.07	.96	6.65	69.08
8.20	17.50	.12	.35	2.21	1.29	5.58	72.95
8.30	14.69	.10	.29	2.33	1.72	4.63	76.23
8.40	12.25	.09	.25	2.45	2.27	3.81	78.90
8.50	10.15	.07	.20	2.55	2.98	3.10	80.94
8.60	8.38	.06	.17	2.65	3.90	2.51	82.34
8.70	6.89	.05	.14	2.75	5.08	2.01	83.08
8.80	5.66	.04	.11	2.84	6.61	1.60	83.14
8.90	4.64	.03	.09	2.93	8.58	1.26	82.47
9.00	3.79	.03	.08	3.02	11.12	.98	80.99

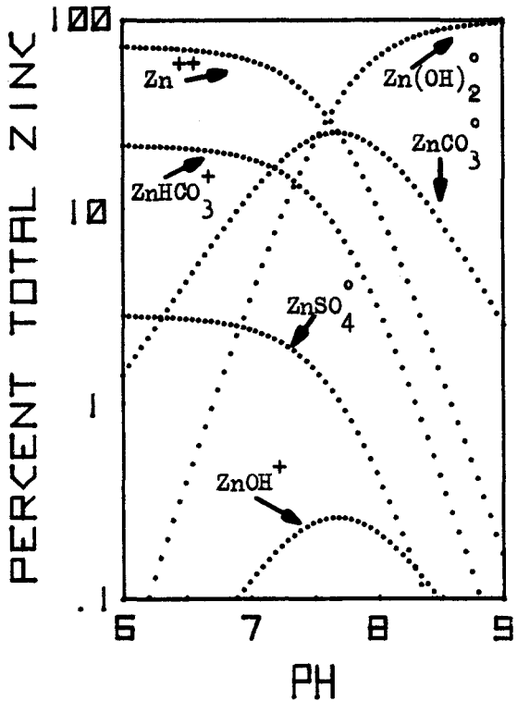
LAGO PUSIANO

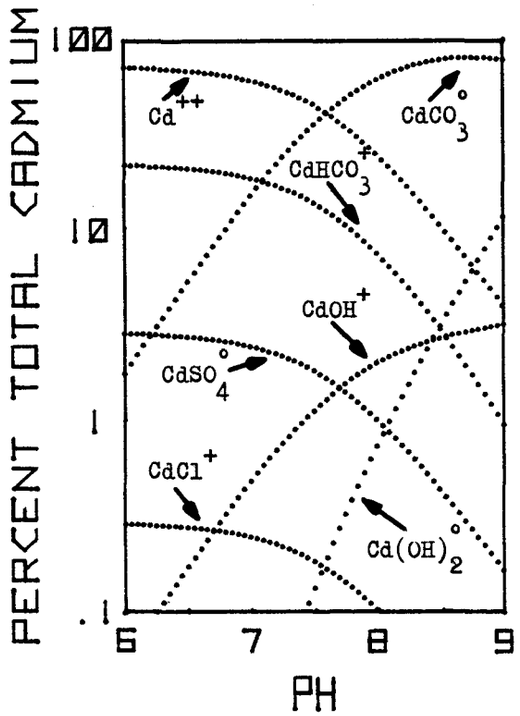
% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

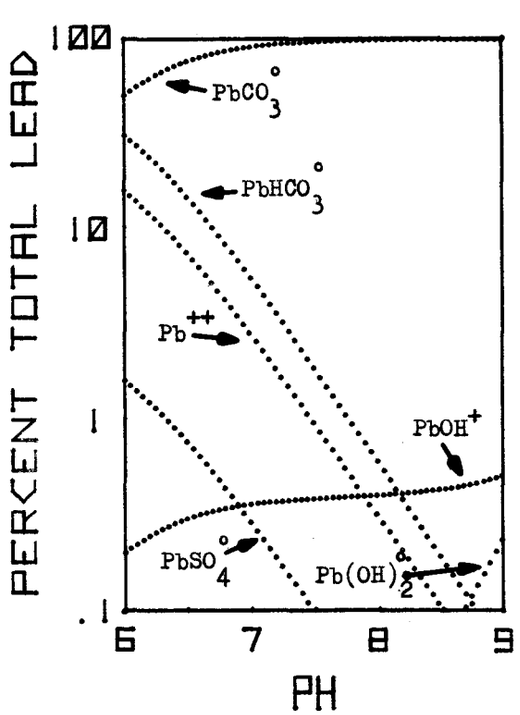
pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	15.09	.04	.76	.19	.00	31.72	52.20
6.10	13.29	.04	.67	.21	.00	27.93	57.87
6.20	11.55	.03	.58	.23	.00	24.28	63.33
6.30	9.92	.03	.50	.25	.00	20.85	68.46
6.40	8.42	.02	.42	.27	.00	17.70	73.17
6.50	7.08	.02	.36	.28	.00	14.87	77.39
6.60	5.89	.02	.30	.30	.00	12.38	81.12
6.70	4.87	.01	.25	.31	.00	10.22	84.34
6.80	4.00	.01	.20	.32	.00	8.39	87.09
6.90	3.26	.01	.16	.33	.00	6.84	89.40
7.00	2.65	.01	.13	.33	.00	5.55	91.33
7.10	2.14	.01	.11	.34	.00	4.48	92.92
7.20	1.73	.00	.09	.34	.00	3.61	94.22
7.30	1.39	.00	.07	.35	.00	2.90	95.28
7.40	1.11	.00	.06	.35	.00	2.33	96.14
7.50	.89	.00	.04	.36	.01	1.86	96.84
7.60	.72	.00	.04	.36	.01	1.49	97.40
7.70	.57	.00	.03	.36	.01	1.19	97.84
7.80	.46	.00	.02	.36	.01	.95	98.20
7.90	.37	.00	.02	.37	.01	.75	98.48
8.00	.29	.00	.01	.37	.02	.60	98.70
8.10	.24	.00	.01	.37	.02	.48	98.88
8.20	.19	.00	.01	.38	.03	.38	99.02
8.30	.15	.00	.01	.38	.04	.30	99.12
8.40	.12	.00	.01	.39	.05	.24	99.20
8.50	.10	.00	.00	.39	.06	.19	99.25
8.60	.08	.00	.00	.40	.07	.15	99.29
8.70	.07	.00	.00	.41	.10	.12	99.30
8.80	.05	.00	.00	.43	.13	.10	99.30
8.90	.04	.00	.00	.44	.16	.08	99.27
9.00	.04	.00	.00	.47	.22	.06	99.22

LAGO ANNONE D.









LAGO ANNONE O.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF COPPER

pH	Cu^{++}	$CuSO_4^{\circ}$	$CuOH^{+}$	$Cu(OH)_2^{\circ}$	$CuHCO_3^{+}$	$CuCO_3^{\circ}$	$Cu(CO_3)_2^{--}$
6.00	34.76	1.39	.55	.50	42.43	20.35	.01
6.10	32.89	1.32	.65	.76	40.14	24.24	.01
6.20	30.77	1.23	.77	1.12	37.55	28.54	.01
6.30	28.43	1.14	.89	1.64	34.69	33.19	.02
6.40	25.89	1.04	1.02	2.37	31.59	38.05	.03
6.50	23.22	.93	1.15	3.37	28.32	42.95	.04
6.60	20.48	.82	1.28	4.71	24.97	47.68	.06
6.70	17.74	.71	1.40	6.47	21.62	51.98	.08
6.80	15.08	.60	1.50	8.72	18.38	55.61	.11
6.90	12.58	.50	1.57	11.52	15.32	58.36	.15
7.00	10.29	.41	1.62	14.93	12.52	60.04	.19
7.10	8.25	.33	1.63	18.97	10.03	60.55	.24
7.20	6.48	.26	1.61	23.63	7.87	59.84	.30
7.30	4.99	.20	1.57	28.85	6.06	57.97	.37
7.40	3.77	.15	1.49	34.54	4.57	55.04	.44
7.50	2.79	.11	1.39	40.57	3.38	51.25	.51
7.60	2.03	.08	1.27	46.76	2.45	46.81	.59
7.70	1.45	.06	1.14	52.95	1.75	41.98	.66
7.80	1.02	.04	1.01	58.97	1.22	37.00	.73
7.90	.71	.03	.88	64.67	.84	32.08	.79
8.00	.48	.02	.76	69.93	.57	27.39	.85
8.10	.32	.01	.64	74.68	.38	23.06	.89
8.20	.22	.01	.54	78.89	.25	19.17	.93
8.30	.14	.01	.45	82.54	.16	15.75	.95
8.40	.09	.00	.37	85.67	.11	12.80	.95
8.50	.06	.00	.30	88.32	.07	10.30	.95
8.60	.04	.00	.25	90.53	.04	8.20	.93
8.70	.03	.00	.20	92.37	.03	6.47	.90
8.80	.02	.00	.16	93.89	.02	5.06	.86
8.90	.01	.00	.13	95.14	.01	3.91	.80
9.00	.01	.00	.10	96.16	.01	2.99	.74

LAGO ANNONE O.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF ZINC

pH	Zn^{++}	$ZnCl^{+}$	$ZnSO_4^{\circ}$	$ZnOH^{+}$	$Zn(OH)_2^{\circ}$	$ZnHCO_3^{+}$	$ZnCO_3^{\circ}$
6.00	73.13	.01	2.93	.01	.04	22.42	1.45
6.10	72.84	.01	2.92	.02	.07	22.33	1.82
6.20	72.47	.01	2.91	.02	.10	22.21	2.28
6.30	72.00	.01	2.89	.03	.16	22.07	2.85
6.40	71.40	.01	2.86	.04	.25	21.88	3.56
6.50	70.65	.01	2.83	.04	.40	21.64	4.43
6.60	69.68	.01	2.79	.05	.62	21.34	5.50
6.70	68.45	.01	2.74	.07	.97	20.96	6.80
6.80	66.89	.01	2.68	.08	1.50	20.47	8.36
6.90	64.91	.01	2.60	.10	2.31	19.86	10.20
7.00	62.42	.01	2.50	.12	3.53	19.08	12.34
7.10	59.29	.01	2.38	.15	5.31	18.11	14.75
7.20	55.45	.01	2.22	.17	7.87	16.92	17.35
7.30	50.83	.01	2.04	.20	11.43	15.49	20.00
7.40	45.44	.00	1.82	.23	16.19	13.83	22.48
7.50	39.42	.00	1.58	.25	22.27	11.98	24.50
7.60	33.04	.00	1.32	.26	29.57	10.01	25.79
7.70	26.66	.00	1.07	.26	37.83	8.06	26.12
7.80	20.70	.00	.83	.26	46.54	6.23	25.43
7.90	15.48	.00	.62	.24	55.18	4.64	23.84
8.00	11.19	.00	.45	.22	63.23	3.33	21.57
8.10	7.86	.00	.32	.20	70.37	2.32	18.93
8.20	5.39	.00	.22	.17	76.46	1.58	16.19
8.30	3.62	.00	.15	.14	81.49	1.05	13.55
8.40	2.40	.00	.10	.12	85.56	.69	11.14
8.50	1.57	.00	.06	.10	88.81	.44	9.02
8.60	1.02	.00	.04	.08	91.37	.28	7.21
8.70	.66	.00	.03	.07	93.38	.18	5.70
8.80	.42	.00	.02	.05	94.95	.11	4.45
8.90	.27	.00	.01	.04	96.17	.07	3.44
9.00	.17	.00	.01	.03	97.12	.04	2.63

LAGO ANNONE O.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF CADMIUM

pH	Cd^{++}	$CdCl^{+}$	$CdSO_4^{\circ}$	$CdOH^{+}$	$Cd(OH)_2^{\circ}$	$CdHCO_3^{+}$	$CdCO_3^{\circ}$
6.00	72.65	.29	2.91	.06	.00	22.28	1.81
6.10	72.30	.29	2.90	.07	.00	22.17	2.27
6.20	71.87	.29	2.88	.09	.00	22.03	2.84
6.30	71.33	.29	2.86	.11	.00	21.86	3.55
6.40	70.66	.28	2.83	.14	.00	21.65	4.43
6.50	69.84	.28	2.80	.17	.00	21.40	5.51
6.60	68.83	.28	2.76	.22	.00	21.08	6.84
6.70	67.60	.27	2.71	.27	.00	20.70	8.45
6.80	66.11	.26	2.65	.33	.01	20.24	10.40
6.90	64.34	.26	2.58	.40	.01	19.68	12.73
7.00	62.23	.25	2.50	.49	.02	19.02	15.49
7.10	59.77	.24	2.40	.59	.03	18.26	18.72
7.20	56.93	.23	2.28	.71	.04	17.38	22.43
7.30	53.73	.22	2.15	.84	.06	16.38	26.62
7.40	50.18	.20	2.01	.99	.09	15.27	31.25
7.50	46.34	.19	1.86	1.15	.13	14.08	36.25
7.60	42.27	.17	1.69	1.33	.19	12.81	41.54
7.70	38.08	.15	1.53	1.50	.28	11.50	46.96
7.80	33.86	.14	1.36	1.68	.39	10.19	52.38
7.90	29.74	.12	1.19	1.86	.54	8.91	57.64
8.00	25.80	.10	1.03	2.03	.75	7.69	62.59
8.10	22.14	.09	.89	2.20	1.02	6.55	67.12
8.20	18.81	.08	.75	2.35	1.37	5.51	71.13
8.30	15.84	.06	.64	2.49	1.83	4.59	74.55
8.40	13.25	.05	.53	2.62	2.42	3.78	77.35
8.50	11.01	.04	.44	2.74	3.19	3.09	79.49
8.60	9.10	.04	.36	2.86	4.18	2.50	80.96
8.70	7.50	.03	.30	2.96	5.46	2.00	81.75
8.80	6.16	.02	.25	3.06	7.11	1.59	81.81
8.90	5.05	.02	.20	3.16	9.23	1.25	81.08
9.00	4.13	.02	.17	3.25	11.96	.98	79.50

LAGO ANNONE O.

% DISTRIBUTION OF THE CHEMICAL SPECIES OF LEAD

pH	Pb^{++}	$PbCl^{+}$	$PbSO_4^{\circ}$	$PbOH^{+}$	$Pb(OH)_2^{\circ}$	$PbHCO_3^{+}$	$PbCO_3^{\circ}$
6.00	16.15	.03	1.63	.20	.00	31.24	50.76
6.10	14.27	.02	1.44	.22	.00	27.60	56.46
6.20	12.44	.02	1.25	.25	.00	24.06	61.98
6.30	10.72	.02	1.08	.27	.00	20.72	67.20
6.40	9.12	.01	.92	.29	.00	17.64	72.01
6.50	7.69	.01	.77	.30	.00	14.86	76.36
6.60	6.42	.01	.65	.32	.00	12.40	80.21
6.70	5.31	.01	.53	.33	.00	10.26	83.55
6.80	4.36	.01	.44	.34	.00	8.43	86.42
6.90	3.57	.01	.36	.35	.00	6.88	88.83
7.00	2.90	.00	.29	.36	.00	5.59	90.85
7.10	2.35	.00	.24	.37	.00	4.52	92.52
7.20	1.89	.00	.19	.37	.00	3.65	93.89
7.30	1.52	.00	.15	.38	.00	2.93	95.01
7.40	1.22	.00	.12	.38	.00	2.35	95.91
7.50	.98	.00	.10	.39	.01	1.88	96.64
7.60	.79	.00	.08	.39	.01	1.50	97.23
7.70	.63	.00	.06	.39	.01	1.20	97.70
7.80	.50	.00	.05	.40	.01	.96	98.08
7.90	.40	.00	.04	.40	.01	.76	98.38
8.00	.32	.00	.03	.40	.02	.61	98.62
8.10	.26	.00	.03	.41	.02	.48	98.80
8.20	.21	.00	.02	.41	.03	.38	98.95
8.30	.17	.00	.02	.42	.04	.31	99.06
8.40	.13	.00	.01	.42	.05	.24	99.14
8.50	.11	.00	.01	.43	.06	.19	99.19
8.60	.09	.00	.01	.44	.08	.15	99.23
8.70	.07	.00	.01	.45	.11	.12	99.24
8.80	.06	.00	.01	.47	.14	.10	99.23
8.90	.05	.00	.00	.49	.18	.08	99.20
9.00	.04	.00	.00	.51	.24	.06	99.15

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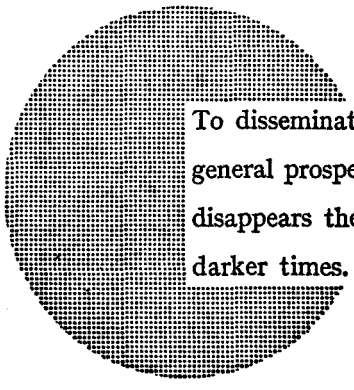

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Alfred Nobel

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