COMPONENTS:	EVALUATOR:
(1) Mercury; Hg; [7439-97-6]	H. Lawrence Clever Chemistry Department
(2) Aqueous Electrolyte and Nonelectrolyte Solutions	Emory University Atlanta, Georgia 30322 USA
	<u>1986</u> , June

CRITICAL EVALUATION:

An Evlauation of the Solubility of Mercury in Aqueous Electrolyte and Nonelectrolyte Solutions.

The solubility of metallic mercury in aqueous elctrolyte solutions has been reported in seven papers. Not enough workers have measured the solubility of mercury in any one electrolyte system over common ranges of temperature and electrolyte concentration to recommend solubility values. Most of the available data are classed as tentative values. Some mercury nonelectrolyte + water systems are included in the section.

The solubility values have been converted to Sechenov salt effect parameters in order to have a common basis of comparison of the effect of the electrolyte on the mercury solubility. The notation used for the Sechenov salt effect parameter is discussed in detail in Solubility Series Volume 10, pp. xxix to xlii. Most of the mercury solubility data are given in one of two forms:

 $k_{scc}/dm^3 mol^{-1} = (1/(c_2/mol dm^{-3})) \log(c_{1,sat}^0)/(c_{1,sat})$

and

$$k_{gmm}/kg \mod^{-1} = (1/(m_2/mol kg^{-1})) \log(m_{1,gat}^2)/(m_{1,gat})$$

where subscripts 1 and 2 refer to mercury and electrolyte, respectively, and the superscript "o" refers to the mercury solubility in pure water.

The Sechenov salt effect parameters for the mercury containing systems are of a similar magnitude to the parameters for typical nonelectrolyte gas, liquid, and solid solutes. The mercury salt effect parameters are probably of a larger uncertainty than for other solutes because the mercury solubility values are of larger uncertainty. Some of the same electrolytes that salt-in typical solutes also salt in mercury. For example tetramethylammonium bromide, tetraethylammonium bromide and sodium thiocyanate. The change in the sign of the salt effect parameter with temperature observed for other solutes is also observed for mercury. The k smm value of sodium chloride changes sign at 324 K from salting-out to salting-in as the temperature increases.

Alpha amino acids and some of their hydrochlorides are included in this section. They appear to abnormally "salt-in" at very low concentrations. All of these data come from one paper, and it would be desirable to have these systems studied further.

Most of the salt effect data come from three papers. These three papers deserve some special comments. Glew and Hames (ref. 2) measured the solubility of mercury in water and in 6.1 mol kg⁻¹ NaCl solution from 278 to 343 K under oxygen free conditions in the presence of trace amounts of reducing agent. The study appears to be a carefully executed experiment and the results are considered to be reliable. The results are compatible with the results of Chviruk and Koneva (ref. 3) who measured the solubility of mercury at four temperatures in 3.42 mol dm⁻³ sodium chloride.

Sanemasa, Haraguchi, and Nagai (ref. 6) measured the solubility of mercury as a function of electrolyte concentration up to one mol dm⁻³ at 298.15 K. The data appears to be internally consistent and the salt effect parameters of the expected magnitude. The evaluator does have some doubts about the method used by the authors. The method does not exclude air, and it seems the times used to establish both liquid mercury liquid-vapor equilibrium and mercury aqueous solution equilibrium are very short. These problems were discussed in more detail in the mercury + water evaluation. However, the 293 - 303 K mercury solubility values in water agree well with the results of other studies. We believe the salt effect data at 298.15 K are reliable. Kawakara *et al.* (ref. 5) report the mercury solubility values in the alpha-amino acid and alpha amino acid hydrochloride solutions in water and in Hanks' balanced salt solutions (composition given on p. 87). For many of these systems the mercury solubility is four to seven times larger in the presence of only 0.0002 to 0.01 mol dm⁻⁷ amino acid or its hydrochloride than it is in pure water. It is not clear why there should be such a large enhancement of solubility in these solutions. It is not clear whether or not oxygen was rigously excluded, or if some chemical interaction might be involved. The results are classed as tentative, but the systems deserve further study.

The individual systems are discussed below. The systems are given in the order of the standard arrangement for inorganic compounds used by the US National Bureau of Standards publications. The number before each system is the standard order number for the cation. The amino acid, amino acid hydrochlorides, and nonelectrolyte systems are at the end.

1 Mercury + Hydrochloric acid [7647-01-0] + Water

Baltisberger *et al.* (ref. 4) report the only salt effect parameter for the system. The $k_{SCC} = 0.072$ at 296.15 K is classed tentative.

18(1) Mercury + Ammonium nitrate [6484-52-2] + Water

Tammann (ref. 1) reports no quantitative data.

18(2) Mercury + Tetramethylammonium bromide [64-20-0] + Water 18(3) Mercury + Tetraethylammonium bromide [71-91-0] + Water

Sanemasa *et al.* (ref. 6) measured the solubility of mercury in four solutions of different tetraalkylammonium bromide concentrations at 298.15 K. Mercury is salted in by both salts. The salt effect parameters below are classed tentative.

Electrolyte	^k scc	_kscx_
Tetramethylammonium bromide	-0.0779	-0.112
Tetraethylammonium bromide	-0.116	-0.176

35 Mercury + Mercury (II) sulfide [1344-48-5] + Water Mercury + Cinnabar [19122-79-3] + Water

Mukimova and Bykovskaya (ref. 11) experimentally determined the mercury solubility from mercury containing cinnabar in distilled and natural waters in contact with shales and carbonate rocks. This is not a real salt effect study, but a study of a natural system. According to the abstract the mercury dissolves in concentration of $(0.2 - 2) \times 10^{-6}$ g dm⁻³. The original paper was not available.

96 Mercury + Barium chloride [10361-37-2] + Water

Sanemasa *et al.* (ref. 6) measured the solubility of mercury in solutions of 0.250, 0.500, and 0.750 molar barium chloride at 298.15 K. The mercury is salted out. The salt effect parameters are:

 $k_{scc}/dm^3 mol^{-1} = 0.115$ $k_{scx}/dm^3 mol^{-1} = 0.121$

The values are smaller than expected for a 2-1 electrolyte. They are classed tentative, but should be used with caution.

99(1) Mercury + Sodium fluoride [7681-49-4] + Water

Sanemasa *et a1*. (ref. 6) measured the solubility of mercury in solutions of 0.250, 0.500, and 0.750 molar sodium fluoride at 298.15 K. The mercury is salted out. The salt effect parameters are:

COMPONENTS:			EVALUATOR	:		
 Mercury Aqueous Noneleo 	7; Hg; [743 Electroly ctrolyte So	9-97-6] te and lutions	H. Law Chemis Emory Atlant	rence Clev try Depart University a, Georgia	er ment 30322	USA
			<u>1986</u> ,	June		
CRITICAL EVAL	JATION:					
		k _{scc} /dm³ k _{scx} /dm³	$mol^{-1} = 0.$ $mol^{-1} = 0.$	157 174		
The values	are classe	ed as tentative	•			
99(2) Merc	cury + Sodi	um chloride [7	647-14-5]	+ Water		
Glew and H (ref. 4), bility of	ames (ref. Sanemasa <i>e</i> mercury i	2), Chviruk an t al. (ref. 6) n aqueous sol	d Koneva , and Hurs utions of ers are gi	(ref. 3), B sh (ref. 7 sodium c ven in the	altisber) report hloride. followin	ger <i>et al</i> . the solu- The salt ng table.
effect par						_
effect par T/K		Salt eff	ect parame	ter, k _{scc}		k _{smm}
effect par	Chviruk,	Salt eff Baltisberger et al.	ect parame Sanemasa et al.	ter, k _{scc} Hursh	Glew and	k _{smm} Hames
effect par	Chviruk, Koneva (ref. 3)	Salt eff Baltisberger et al. (ref. 4)	sanemasa et al. (ref. 6)	ter, k _{scc} Hursh (ref. 7)	Glew and (ref. 2)	k _{smm} Hames
effect par 273.2 278.2 283.2 288.2 293.2 293.2 295.2	Chviruk, Koneva (ref. 3)	Salt eff Baltisberger et al. (ref. 4)	Sanemasa et al. (ref. 6)	ter, k _{scc} Hursh (ref. 7)	Glew and (ref. 2) (0.099)	k _{smm} Hames 0.112 0.095 0.080 0.065 0.053
effect par 273.2 278.2 283.2 288.2 293.2 295.2 295.2 296.2 298.2 303.2	Chviruk, Koneva (ref. 3)	Salt eff Baltisberger et al. (ref. 4) 0.70, 0.22	Sanemasa et al. (ref. 6)	ter, k _{scc} Hursh (ref. 7) 0.54	Glew and (ref. 2) (0.099)	k _{smm} Hames 0.112 0.095 0.080 0.065 0.053 - - 0.041 0.031
effect par T/K 273.2 278.2 283.2 288.2 293.2 295.2 295.2 296.2 298.2 303.2 308.2 313.2 318.2 323.2	Chviruk, Koneva (ref. 3) 0.119 0.051	Salt eff Baltisberger et al. (ref. 4) 0.70, 0.22	Sanemasa et al. (ref. 6)	ter, k _{scc} Hursh (ref. 7) 0.54	Glew and (ref. 2) (0.099) (0.056)	k _{smm} Hames 0.112 0.095 0.080 0.065 0.053 - - 0.041 0.031 0.022 0.014 0.007 0.001
effect par T/K 273.2 278.2 283.2 288.2 293.2 295.2 296.2 296.2 298.2 303.2 308.2 313.2 318.2 328.2 328.2 333.2 338.2	Chviruk, Koneva (ref. 3) 0.119 0.051 0.000	Salt eff Baltisberger et al. (ref. 4) 0.70, 0.22	Sanemasa et al. (ref. 6)	ter, k _{scc} Hursh (ref. 7) 0.54	Glew and (ref. 2) (0.099) (0.056) (0.027)	k _{smm} Hames 0.112 0.095 0.080 0.065 0.053 - - 0.041 0.031 0.022 0.014 0.007 0.001 -0.004 -0.009 -0.013

The $k_{\rm SMM}$ values of Glew and Hames are the authors' smoothed values. The values in () are $k_{\rm SCC}$ values calculated by the evaluator from the Glew and Hames results. The other values are calculated from the individual solubility values. The Baltisberger *et al.* and the Hursh values are for sodium chloride concentrations of 0.01, 0.1, and 0.155 mol dm⁻³, respectively. Salt effect parameters measured at these low electrolyte concentrations are seldom reliable, and these are classed as doubtful. Chviruk and Koneva did not measure the solubility of mercury in water. The evaluator calculated the salt effect parameters using evaluated mercury solubilities in water. The results agree well with the Glew and Hames results including agreement on a change from salting out to salting in by sodium chloride between 333 K and 343 K. The results of Chviruk and Koneva, Sanemasa *et al.*, and Glew and Hames are classed as tentative. We prefer the use of the Glew and Hames data as a self-consistent data set extending over a 70 degree temperature interval.

Wu and Qi (ref. 10) report a study titled "Solubility factors of elemental mercury, mercury oxides and mercury sulfides". They give data and discuss the effect of chloride ion concentration as well as humic acids and weathered coal fulvic acids on the solubility of Hg, HgO, and HgS. We were unable to obtain a reliable translation of their paper and no data sheet was prepared. 99(3) Mercury + Sodium bromide [7647-15-6] + water 99(4) Mercury + Sodium iodide [7681-82-5] + Water 99(5) Mercury + Sodium perchlorate [7601-89-0] + Water 99(6) Mercury + Sodium sulfate [7757-82-6] + Water 99(7) Mercury + Sodium nitrate [7631-99-4] + Water 99(8) Mercury + Sodium thiocyanate [540-72-7] + Water

Sanemasa, Haraguchi, and Nagai (ref. 6) reported the salt effect parameters for the above sodium salts. They measured the solubility of mercury at four electrolyte concentrations at 298.15 K. The salt effect parameter is taken as the slope of a plot of log (solubility) vs. electrolyte concentration. The plot was not forced through the origin. Sodium thiocyanate salts in which has been observed for some other nonelectrolyte solutes. Sodium perchlorate salts out more than the sodium halides which is not the usual trend with other solutes. No data were obtained for the sodium iodide. Use of the iodide ion gave abnormal results possibly due to some chemical reaction with the mercury. Although we have expressed some doubt about the authors' method we believe their data at 298 K are reliable and the values are classed tentative. The salt effect parameters are summarized below.

^k scc	^k scx
نحذ هبا هت هت ها بي	
0.017	0.023
0.117	0.114
0.308	0.319
0.062	0.065
-0.035	-0.034
	^k scc 0.017 0.117 0.308 0.062 -0.035

100 Mercury + Potassium chloride [7447-40-7] + Water

Sanemasa *et al.* (ref. 6) measured the solubility of mercury in four concentrations of potassium chloride between 0.250 and 1.000 mol dm⁻³ at 298 K. See section above for comments about method and reliabliity. The results are classed as tentative.

> $k_{scc}/dm^3 mol^{-1} = 0.070$ $k_{scx}/dm^3 mol^{-1} = 0.074$

Mercury + Alpha-amino acids and hydrochlorides + Water

Kawakara *et al.* (ref. 5) have measured the solubility of mercury in water and in Hanks' balanced salt solution in the presence of up to 0.01 mol dm⁻³ alpha-amino acids and some of their hydrochlorides. The solubility of mercury is greater in the presence of the alpha-amino acid component than in either pure water or Hanks' salt solution. Mercury is 2.35 times more soluble in Hanks' balanced salt solution than in water. When alphaamino acid or hydrochloride is added to either water or balanced salt solution the solubility is often increased by a factor of between four to seven. Salt effect parameters have not been calculated for these systems. The increase in mercuy solubilities are summarized below. The alpha-amino acids are identified by their Chemical Abstracts Registry Number, IUPAC abbreviation, and semiempirical formula.

Alpha-amino acid or Hydrochloride	Solvent	°2	°1/c ₁
[56-41-7] Ala CH ₃ CH(NH ₂)COOH	water	0.00056	5.9
[56-84-8] Азр нооссн (NH ₂) сн ₂ соон	water	0.00045	5.9
[72-19-5] Thr CH ₃ CHOHCH (NH ₂) COOH	water	0.00050	7.7
Table continued on next page.			

MPONENTS :	EVALUATOR:		
 Mercury; Hg; [7439-97-6] Aqueous Electrolyte and Nonelectrolyte Solutions 	H. Lawrence Clever Chemistry Department Emory University Atlanta, Georgia 30322 USA <u>1986</u> , June		
ITICAL EVALUATION:		<u></u>	
Alpha-amino acid or Hydrochloride	Solvent	°2	c ₁ /c ₁
[147-85-3] Pro CH ₂ -CH ₂ CH ₂ CHCOOH NH	water	0.00035	5.0
[56-85-9] Gln HOOCCH(NH ₂)CH ₂ CH ₂ CONH ₂	water	0.00068 0.01	12.4 10.6
[63-68-3] Met CH ₃ SCH ₂ CH ₂ CH(NH ₂)COOH	water Hanks'	0.00020 0.01 0.01	1.1 4.9 2.2
[61-90~5] Leu (CH ₃) ₂ CHCH ₂ CH(NH ₂)COOH	water	0.000915	4.2
[73-32-5] Ile СH ₃ CH ₂ CH (CH ₃) CH (NH ₂) СООН	water	0.00030	2.6
[63-91-2] Phe C ₆ H ₅ CH ₂ CH(NH ₂)COOH	water	0.0003	6.2
[60-18-4] Tyr p-HOC ₆ H ₄ CH ₂ CH (NH ₂) COOH	water	0.00022 0.01	5.9 3.1
[52-89-1] Cys.HCl HSCH ₂ CH(NH ₂)COOH.HCl	water Hanks'	0.00000063 0.01 0.01	19.4 908. 479.
[645-35-2] His.HCl N — CHCH ₂ CH(NH ₂)COOH.HCl CH CH NH	water Hanks'	0.01 0.01	10.8 17.3
[3184-13-2] Orn.HCl NH ₂ (CH ₂) ₃ CH (NH ₂)COOH.HCl	water	0.01	1.8
	Hanks'	0.01	4.7
[657-27-2] Lys.HCl NH ₂ (CH ₂) ₄ CH(NH ₂)COOH.HCl	water Hanks'	0.00038 0.01 0.01	1.8 1.6 5.8
[1119-34-2] Arg.HCl	water	0,00033	4.8
MI-COMP2/MICCI2/3CHONH2/COOH.HCJ	Hanks'	0.01	1.6

The solubility ratios for the amino acid containing systems in Hanks' balanced salt solution are referenced to the solubility of mercury in the Hanks' balanced salt solution. The superscript "o" in the c_1/c_1° ratio refers to the mercury solubility in either water or Hanks' balanced salt solution.

Several trends show in the data. Solutions containing 0.0002 to 0.0007 mol dm⁻³ amino acid enhance the mercury solubility 4 to 8 times over its solubility in water, but there is a decrease in the ratio when one increases the concentration to 0.01. However, solutions containing methionine, ornithine HCl, or lysine HCl are exceptions to the trend. A compound containing ~SH greatly enhances the mercury solubility, but one containing C-S-C does not. Mercury in the presence of alpha amino acid hydrochlorides is more soluble in the Hanks' balanced salt solutions than

in the corresponding water solutions. Arginine HCl is an exception.

The reliability of these data is impossible to judge. It is not clear whether or not oxygen was rigoursly excluded, nor is it clear whether or not a direct chemical interaction occurs in some of the systems. These data need confirmation by further experimental studies. For now they are classed as tentative.

Another paper from the same laboratory, Kawahara *et al.* (ref. 9), reports the solubility of mercury from high copper, conventional, and copper dental amalgams in a tissue culture medium (YLH). Data sheets containing the graphical results were prepared (pp. 100 - 1). The data are classed tentative.

Mercury + Humus + Water

Gjessing and Rogne (ref. 8) have measured the solubility of mercury in various natural humus containing waters. They conclude that the presence of humus enhances the solubility of mercury. From our knowledge of the behavior of other humus containing systems we suspect this is true. However, the present study is not conclusive because it reports a mercury solubility in water that is much too small. The data are classed doubtful.

Mercury + Blood and Various Blood Components

Hursh (ref. 7) has measured the solubility of mercury vapor in whole blood, plasma, and aqueous hemoglobin solutions. Care was taken to prevent the oxidation of mercury by the oxygen of the air. The results are consistent with the hemoglobin of whole blood binding up to one-half the mercury dissolved. The experiments appear to have been carefully done, and the results are classed tentative.

REFERENCES:

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COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]	Baltisberger, R. J.; Hildebrand,		
<pre>(2) Hydrogen chloride; HCl; [7647-01-0]</pre>	D. A.; Grieble, D.; Ballintine, T. A.		
(3) Water; H ₂ O; [7732-18-5]	Anal. Chim. Acta <u>1979</u> , 111, 111 - 2.		
VARIABLES:	PREPARED BY:		
<i>T</i> /K = 296.15, 303.15	H. L. Clever M. Iwamoto		
EXPERIMENTAL VALUES:			
Temperature Hydrogen Merc	ury solubility Salt		
chloride	Concentration ^C Parameter		
$c_2/\text{mol dm}^{-3}$	$10^{7}c_{1}/mol dm^{-3}$ $k_{\rm SCC}/dm^{3} mol^{-1}$		
30 303.15 0 63 <u>+</u> 2	^b $3.1_4 \pm 0.10$ -		
23 296.15 0.1 59	2.9 ₄ 0.072		
^a ppb = parts per billion.			
^b Standard deviation of ten analyses.			
Calculated by compilers. The molar	solubility was calculated assuming		
grams of mercury per 1 x 10° cm³ of	solution.		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
nitrogen gas for 45 minutes, a drop of mercury was added, and then the mixture sparged another 30 minutes	(1) Mercury. Prepared by distilla- tion from mercury(II) oxide un- der a N ₂ atmosphere.		
with nitrogen. Solutions were stir- red for 24 hours with a glass-co- vered stirring bar. Samples of so-	 Hydrogen chloride. From analy- tical grade reagent and solu- tion. 		
with a maintained nitrogen flow to prevent oxygen diffusion into the solutions.	(3) Water. Triple distilled.		
An aliquot of the saturated solu-	ECTIMATED EDDOD.		
tion was transferred to a non-redu- cing cell. The mercury was collec- ted by nitrogen sparging and ana- lyzed by cold vapor atomic absorp- tion.	See standard deviation of solubil- ity in water above.		
The non-reducing cell was a cell that had never contacted reducing agents.	REFERENCES :		
Hg + H_2O was quite prone to oxida- tion. The presence of Cl ⁻ prevented the disproportionation of any Hg(I).			

COMPONENTS -	ADICINAL MEACUDENENDS .
(1) MORGURY: H_{0} , $[7/39-97-6]$	Mammann C
(1) Mercury; ng; (1439-97-01	
(2) Ammonium nitrate; NH ₄ NO ₃ ; [6484-52-2]	Z. Anorg. Allgem. Chem. <u>1922</u> , 121, 275 - 80.
(3) Water; H ₂ O; [7732-18-5]	
VARIABLES:	PREPARED BY:
Room temperature to solution boiling point.	H. L. Clever
EXPERIMENTAL VALUES:	
Tammann confirmed the repor	t of Hodgkinson and
Coot [Chem. News <u>1904</u> , 90, 1	42] that mercury was
insoluble in 50 % aqueous an	nmonium nitrate. The
report is of doubtful value	considering present
methods of measuring small an	mounts of mercury.
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
	ESTIMATED ERROR:
	1
	REFERENCES :

COMPONENTS:		ORIGINAL MEASUREMENTS:				
(1) Mercury; Hg; [7439-97-6]		Sanemasa, I.; Haraguchi, K.; Nagai, H.				
(2) N,N,N-Trimethylmethanaminium bromide or Tetramethylammonium bromide; (CH ₃) ₄ NBr; [64-20-0]		Bull. Chem. S 1040 - 3.	loc. Jpn .	<u>1981</u> , 54,		
(3) Wa	ter; H ₂ O;	[7732-18-5]				
VARIABLE	ES :			PREPARED BY:		
c2/	T/K mol dm ⁻	= 298.15 = 0 - 1.00		S. H. Johnsor H. L. Clever M. Iwamoto	1	
EXPERIME	ENTAL VALUE	S:				
Temper	ature	Electrolyte	Solubilit Ratio	y log(c [§] /c ₁) at lim	Salt Effe	ct Parameter
t/°C	<i>T/</i> K	c ₂ /mol dm ⁻³	c1/c1	$c_2 \rightarrow 0$		^k scx
25	298.15	0.250	0.968		-0.056	
		0.500	0.923		-0.070	
		0.750	0.886		-0.070	
		1.00	0.845		-0.073	
				0.0051 ^a	-0.0779 ^a	-0.112
a _{Autho}	ors' valu	es which are	the interc	ept and slope of	of log(cg/c	1) vs. c ₂ .
The ot	cher k _{scc}	values were	calculated	by the compile	er from:	
The k.	value	k _{sc} s were calcul	$c = (1/c_2)$ ated by th	x log(c1/c1) e authors from	:	
where Φ is the apparent molar volume Φ/cm^3 mol ⁻¹ = 114.28.		$6 - \Phi \times 10^{-3})/2$ of the salt. I	2.30 For this sy	stem		
The solubility of mercury in water i determination of 63.9 x 10 ⁻⁶ g dm ⁻³ .		s based on Sane	emasa's (rei	E. 3) earlier		
Note:	k _{scc} /dm³	$mol^{-1} = (1/6)$	$c_2/mol dm^{-1}$	³))log(c ₁ /c ₁);	$k_{\rm scx} = (1/$	$(c_2) \log(x_1^9/x_1)$
AUXILIAR			INFORMATION			
METHOD/APPARATUS/PROCEDURE:			SOURCE AND PURTT	V OF MATERIAL		
The	solubi	lity appara	tus is a	(1) Mercury.	Source not	t given. Pur-
close	d system	which consis	ts of se-	ified by	distilla	ation under
	portion of	of Hg is plac	ed in one	Ieduceu F	ressure.	
flask	immersed	in thermost	at I, and	(2) Tetrameth	ylammonium	bromide.
a sec	ond flas	k immersed i	n thermo-	and weigh	ned.	grade. Dried
stat	II. The	Hg vapor pr	essure is	(3) Wator D	odiatillod	water Beth
therm	nostat I.	Nitrogen g	as at atm	aerated a	and deoxyq	enated water
press	ure is c	irculated by	the pump.	were used	l with no d	ifference.
bles	through	the water	(or solu-	ESTIMATED ERROR		
tion)	. One ho	ur circulat	ion satu-	δ7/	K = +0.05	
The Hg is determined by cold-vapor		10" 8c1/g dm-	$\frac{1}{2} = \frac{1}{2} 0.1$			
atomic absorption. The method is		s(c1/c1	$) = \pm 0.005$			
found	by Kimu	ra and Miller	(ref. 1).	REFERENCES:		
The Inthe	procedure	e used is s d by Omang	imilar to	L. Kimura, Y.	; Miller, Mill	V. L.
The s	ample and	a working sta	andard are	2. Omang, S.	H.	<u>~~</u> ; .;; 525.
Analy	through vses are	the same p done in +r	rocedure.	Anal. Chim 3. Sanemasa.	. Acta <u>19</u> I.	<u>71, 53, 415.</u>
Measu	rements	were made at	up to six	Bull. Chem	. Soc. Jpn	. <u>1975</u> , 48,
нg pr	essures a	it each tempe	rature.	T T/22.		

COMPONENTS:	ORIGINAL MEASUREMENTS:	
(1) Mercury; Hg; [7439-97-6]	Sanemasa, I.; Haraguchi, K.; Nagai, H.	
(2) N,N,N-Triethylmethanaminium bromide or Tetraethylammonium bromide; (C ₂ H ₅) ₄ NBr; [71-91-0]	Bull. Chem. Soc. Jpn. <u>1981</u> , 54, 1040 - 3.	
(3) Water; H ₂ O; [7732-18-5]		
VARIABLES:	PREPARED BY:	
T/K = 298.15 $c_2/mol dm^{-3} = 0 - 0.995$	S. H. Johnson H. L. Clever M. Iwamoto	
EXPERIMENTAL VALUES:		
Temperature Electrolyte Solubilit Ratio	y $\log(c_1^{\circ}/c_1)$ Salt Effect Parameter at lim	
$t/^{\circ}C$ T/K $c_2/\text{mol dm}^{-3}$ c_1/c_1	$c_2 \rightarrow 0$ $k_{\rm scc}$ $k_{\rm scx}$	
25 298.15 0.250 0.933	-0.120	
0.500 0.870	-0.120	
0.746 0.812	-0.121	
0.995 0.766	-0.116	
	-0.0022 ^a -0.116 ^a -0.176	
^a Authors' values which are the interc	ept and slope of $log(c_1/c_1)$ vs. c_2 .	
The other k_{rec} values were calculated	by the compiler from:	
The k_{scc} values were calculated by th	x log(c ² /c ₁) e authors from:	
$k_{\text{scx}} = k_{\text{scc}} + (0.03)$ where Φ is the apparent molar volume $\Phi/\text{cm}^3 \text{ mol}^{-1} = 173.83$.	$6 - \Phi \times 10^{-3})/2.30$ of the salt. For this system	
The solubility of mercury in water is determination of 63.9 x 10 ⁻⁴ g dm ⁻³ .	s based on Sanemasa's (ref. 3) earlier	
Note: $k_{\rm scc}/{\rm dm^3} {\rm mol^{-1}} = (1/(c_2/{\rm mol} {\rm dm^{-1}}))$	$(s_1) \log(c_1^0/c_1); k_{SCX} = (1/c_2) \log(x_1^0/x_1)$	
AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:	
The solubility apparatus is a closed system which consists of se- veral flasks connected by tubing. A	(1) Mercury. Source not given. Pur- ified by distillation under reduced pressure.	
20 g portion of Hg is placed in one flask immersed in thermostat I, and up to 200 ml of water are placed in	(2) Tetraethylammonium bromide. An-	
a second flask immersed in thermo- stat II. The Hg vapor pressure is	and weighed.	
controlled by the temperature of	(3) Water Pedistilled water Peth	
pressure is circulated by the pump.	aerated and deoxygenated water	
bles through the water (or solu-	ESTIMATED ERROR:	
rates both the gas space and water.	$\delta T/K = \pm 0.05$	
The Hg is determined by cold-Vapor atomic absorption. The method is	$\frac{10007}{5(c_1^0/c_1)} = \pm 0.005$	
based on a reduction-aeration method found by Kimura and Miller (ref. 1).	REFERENCES:	
The procedure used is similar to that reported by Omang (ref. 2).	1. Kimura, Y.; Miller, V. L. Anal. Chim. Acta <u>19</u> 62, 27, 325.	
The sample and working standard are	2. Omang, S. H. Anal. Chim. Acta 1971 53 A15	
Analyses are done in triplicate.	3. Sanemasa, I. Bull. Chem. Soc. Jnn. 1975 49	
Hg pressures at each temperature.	1795.	

COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Mercury; Hg; [7439-97-6]	Mukimova, D. S.; Bykovskaya, L. P.
(2) Cinnabar; HgS; [19122-79-3]	Vopr. Reg. Geol. Petrol. Sredn. Azii <u>1975</u> , 148 - 54. Chem. Abetr. <u>1977</u> , 87, 26346p.
VARIABLES:	PREPARED BY:
	H. L. Clever

EXPERIMENTAL VALUES:

The paper was not available. Part of the abstract is reproduced below.

"The experimental solubility of mercury was determined in cinnabar and rocks of the primary dispersion haloes, which had mercury content: shale 0.001, dolostone 0.015, volcanic rocks 0.0001, and effusive-sedimentary rocks 0.005 weight %, in distilled, natural (pH 6.5 and 5.5), and aggressive natural (pH 6.5 and 5.5) waters. The mercury was dissolved from the mercury containing minerals and rocks and subsequently absorbed with the shales absorbing more mercury than the carbonate rocks. The mercury in intrusive and effusive rocks dissolved in concentrations of (0.2 to 2) x 10^{-6} g dm⁻³; its concentration continually increased over a six month period. Zones with high and low content of mercury in water were observed during the dissolution because of dissolution and absorption of mercury in the rocks."

The paper may contain pertinent data but its usefulness can not be determined from the abstract. The paper is discussed in the salt effect evaluation, although it is not a salt effect study. It appears to be a study of a natural system of mercury containing minerals and rocks in contact with water.

AUXILIARY INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS;	
	ESTIMATED ERROR: REFERENCES:	

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury;	Hg; [7439-97-6	51	Sanemasa, I.; Haraguchi, K.;		
(2) Barium ch. [10361-37·	(2) Barium chloride; BaCl ₂ ; [10361-37-2]			Soc. Jpn. <u>1</u>	<u>.981, 54,</u>
(3) Water; H ₂ (D; [7732-18-5]		1040 - 3.		
VARIABLES:	····		PREPARED BY:		
T/I c ₂ /mol dm ⁻	x = 298.15 x = 0 - 0.750		S. H. Johnson H. L. Clever M. Iwamoto	n	
EXPERIMENTAL VALU	ES:	- <u> </u>	I		
Temperature	Electrolyte	Solubilit	y $\log(c_1^o/c_1)$	Salt Effec	t Parameter
t/°C T/K	c2/mol dm-3	c_1^2/c_1	$c_2 \rightarrow 0$	k _{scc}	kscx
25 298.15	0.250	1.080		0.134	
	0.500	1.148		0.120	
	0.750	1.233		0.121	
			0.0039 ^a	0.115 ^a	0.121
^a Authors' valu The other k_{sco}	es which are values were	the interc calculated $c = (1/c_2)$	ept and slope of by the compile x log(c%/c7)	of $\log(c_1^\circ/c_1$ er from:) vs. c ₂ .
The k _{scx} value	es were calcul	ated by th	e authors from:		
where Φ is the $\Phi/cm^3 \mod^{-1} =$	$k_{\text{scx}} = k_{\text{s}}$ e apparent mol 23.19.	cc + (0.03 ar volume	$6 - \Phi \times 10^{-3})/2$ of the salt. F	or this sys	tem
The solubility determination	y of mercury : h of 63.9 x 10	in water is 'g dm''.	s based on Sane	masa's (ref.	3) earlier
Note: k _{scc} /dm ¹	³ mol ⁻¹ = (1/(c ₂ /mol dm ⁻	³))log(c ₁ /c ₁);	$k_{\rm SCX} = (1/c$	$_{2}) \log(x_{1}^{o}/x_{1})$
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/	PROCEDURE:	tue ie a	SOURCE AND PURITY	OF MATERIALS	; given Pur-
closed system veral flasks	which consist connected by	ts of se- tubing. A	ified by reduced p	distillat ressure.	ion under
20 g portion flask immerse up to 200 ml c a second flas	of Hg is plac d in thermost of water are j k immersed in	ed in one at I, and placed in h thermo-	(2) Barium c reagent weighed.	chloride. grade. I	Analytical Dried and
stat II. The Hg vapor pressure is controlled by the temperature of thermostat I. Nitrogen gas at atm pressure is circulated by the pump.(3) Wate aera wereThe gas passes over the Hg and bub-				edistilled w nd deoxygen with no dif	ater. Both ated water fference.
(bles through tion). One ho	the water (our circulati	or solu- on satu-	ESTIMATED ERROR:		
rates both the gas space and water. The Hg is determined by cold-vapor				$x = \pm 0.05$ $y = \pm 0.1$ $z = \pm 0.005$	
based on a reduction-aeration method					
found by Kimura and Miller (ref. 1).			L. Kimura. V.	Miller. V.	I.
that reporte	d by Omang	(ref. 2).	Anal. Chim.	Acta <u>1962</u>	, 27, 325.
The sample and put through	i working sta the same pr	ndard are ocedure.	2. Omang, S. H Anal. Chim.	Acta <u>19</u> 71	, 53, 415.
Analyses are	done in tra	iplicate.	3. Sanemasa, 1 Bull. Chem	Soc. Inm	1975. 48
Hg pressures a	it each temper	ature.	1795.	. The obut	<u>+2/3</u> , +0,

COMPONENTS:			ORIGINAL MEASUREMENTS:			
(1) Mercury; Hg; [7439-97-6]			Sanemasa, I. Nagai, H.	; Haraguchi	, K.;	
(2) Sodium fl [7681-49-	uoride; NaF; 4]		Bull. Chem.	Soc. Jpn.	<u>1981</u> , 54,	
(3) Water; H ₂	0; [7732-18-5]		1040 - 3.			
VARIABLES :			PREPARED BY.			
<i>T/</i> c ₂ /mol dm ⁻	$\begin{array}{l} K = 298.15 \\ {}^3 = 0 - 0.750 \end{array}$		S. H. Johnso H. L. Clever M. Iwamoto	n		
EXPERIMENTAL VALU	JES:					
Temperature	Electrolvte	Solubilit	y log(c%/c1)	Salt Effe	ct Parameter	
t/°C T/K	c ₂ /mol dm ⁻³	Ratio c ₁ /c ₁	at lim $c_2 \rightarrow 0$		k _{scx}	
25 298.15	0.250	1.102		0.169		
	0.500	1.207		0.163		
	0.750	1.321		0.161		
	0.750	1.521		0.101		
			0.00294	0.1574	0.174	
The solubilit determinatio Note: k _{scc} /dm	y of mercury : n of 63.9 x 10 ³ mol ⁻¹ = (1/(in water is ^{-®} g dm ⁻³ . Ce ₂ /mol dm ⁻	<pre>s based on Sand 3))log(c¹/c₁);</pre>	emasa's (ref k _{scx} = (1/	<pre>5. 3) earlier 6. 2)log(x⁰/x₁)</pre>	
		AUXILIARY	INFORMATION			
METHOD/APPARATUS	/PROCEDURE:		SOURCE AND PURIT	Y OF MATERIAL	S;	
The solub: closed system veral flasks 20 g portion	ility appara which consis connected by of Hg is plac	tus is a ts of se- tubing. A ed in one	(1) Mercury. ified by reduced p	Source not distilla pressure.	given. Pur- tion under	
flask immerse up to 200 ml a second flas stat II. The controlled b thermostat I pressure is o The gas passe	ed in thermost of water are sk immersed in Hg vapor pro by the temper Nitrogen g Sirculated by es over the Hg	at I, and placed in n thermo- essure is cature of as at atm the pump-	 (2) Sodium f reagent weighed. (3) Water. R aerated a were used 	luoride. grade. edistilled and deoxyge with no di	Analytical Dried and water. Both enated water ifference.	
bles through tion). One h rates both th The Hg is d atomic absor based on a re found by Kimu The procedur that report The sample ar put through Analyses are	the water of our circulation etermined by control ption. The production-aeration and Miller working states of the same pro- done in tr	(or solu- ion satu- nd water. cold-vapor method is on method (ref. 1). .milar to (ref. 2). .mdard are cocedure. iplicate.	ESTIMATED ERROR: $\delta T/$ $10^{\circ} \delta c_{1}/g dm^{-1}$ $\delta (c_{1}^{\circ}/c_{1})$ REFERENCES: 1. Kimura, Y. Anal. Chim 2. Omang, S. Anal. Chim 3. Sanemasa.	$K = \pm 0.05$ $i = \pm 0.1$ $j = \pm 0.005$; Miller, V . Acta <u>196</u> H. . Acta <u>197</u> I.	⁷ . L. <u>2</u> , 27, 325. <u>1</u> , 53, 415.	
Measurements were made at up to six Hg pressures at each temperature.			Bull. Chem 1795.	. Soc. Jpn.	<u>1975</u> , 48,	

MPONENTS:		PONENTS: ORIGINAL MEASUREMENTS:					
l) Mercu	ry; Hg;	[7439-97-6]	Glew, D. N	Glew, D. N.; Hames, D. A.			
2) Sodiu [7647	m chlori -14-5]	.de; NaCl;	Can. J. Ch	em. <u>197</u>	<u>2</u> , 50, 3124 - 8.		
3) Water	; H ₂ 0; [7732-18-5]					
PERIMENTAL	VALUES:					_	
Temper	ature	Sodium chloride	Mercury Solub	ility	Salt Effect		
t/°C	<i>T/</i> K	<i>m₂/</i> mol kg ⁻¹	10° <i>m</i> ₁ /mol kg ⁻¹	10°x ₁ ^a	Parameter k _{smm} /kg mol ^{-1a}		
5.24	278.37	0.0 6.10 6.10 6.10 6.10 6.10	21.8 5.05 5.25 5.65 6.35	3.93 0.746 0.775 0.775 0.938	0.104 0.101 0.096 0.096 0.088		
5.35	278.48	0.0 6.10	21.8 5.89	3.93 0.870	0.093		
10.17	283.32	0.0 6.10 6.10 6.10	23.1 7.40 7.44 7.61	4.16 1.093 1.106 1.124	_ 0.081 0.080 0.079		
15.01	288.16	0.0 6.12 6.12	24.7 10.8 11.2	4.45 1.594 1.653	- 0.059 0.056		
19.92	293.07	0.0 6.13 6.13 6.13 6.13 6.13	26.8 12.1 13.7 15.1 15.2	4.83 1.93 2.02 2.23 2.24	- 0.051 0.048 0.041 0.040		
25.02	298.17	0.0 6.14 6.14 6.14 6.14 6.14	29.3 15.6 15.6 16.7 16.9	5.28 2.30 2.30 2.46 2.49	0.045 0.045 0.040 0.039		
30.27	303.42	0.0 6.09 6.09 6.09 6.09 6.09	32.5 18.7 19.6 20.4 20.4	5.85 2.76 2.90 3.01 3.01	0.039 0.036 0.033 0.033		
34.96	308.11	0.0 6.18 6.18 6.18 6.18 6.18	36.0 25.1 26.3 27.5 27.6	6.49 3.70 3.88 4.05 4.07	0.025 0.022 0.019 0.019		
40.02	313.17	0.0 6.21 6.21	40.3 31.3 32.9	7.26 4.61 4.84	0.0177 0.0143		
44.86	318.01	0.0 6.18 6.18 6.18	45.4 37.1 38.8 41.2	8.18 5.47 5.72 6.07	0.0142 0.0110 0.0068		
50.07	323.22	0.0 6.09 6.09	51.8 46.5 49.8	9.33 6.87 7.36	0.0077 0.0028		

^aCalculated by compiler.

Continued on the next page.

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]	Glew, D. N.; Hames, D. A.		
<pre>(2) Sodium chloride; NaCl; [7647-14-5]</pre>	Can. J. Chem. <u>1972</u> , 50, 3124 - 8.		
(3) Water; H ₂ O; [7732-18-5]			
VARIABLES:	PREPARED BY:		
T/K = 278.39 - 342.92 $m_2/mol kg^{-1} = 6.09 - 6.29$	H. L. Clever		
EXPERIMENTAL VALUES:			
Temperature Sodium chloride M	lercury Solubility Salt Effect		
t/°C T/K m ₂ /mol kg ⁻¹ 10	$m_1/mol \ kg^{-1} \ 10^{s} x_1^{a} \ k_{smm}/kg \ mol^{-1a}$		
54.99 328.14 0.0	59.1 10.65 -		
6.29	58.9 8.65 0.0002		
6.29	61.9 9.09 -0.0032		
6.29	67.4 9.90 -0.0091		
6.29	68.7 10.09 -0.0104		
6.29	68.9 10.12 -0.0106		
60.12 333.27 0.0	68.1 12.27 -		
6.18	74.3 10.95 -0.0061		
6.18	76.0 11.20 -0.0077		
65.28 338.43 0.0			
6.18			
6.18	9/.5 14.3/ -0.014/		
59 77 340 co 0 0	90 / 16 29 -		
6 18	10.4 10.25 - 112 16.5 - 0.0151		
6 18	112 10.5 -0.0151		
AUXILIARY	INFORMATION		
METHOD ADDADATHS (DDOGEDUDE -			
The polybility poly and the poly	SOURCE AND PURITY OF MATERIALS:		
The solubility cell and tempera-	arado, purified as follows, agi-		
dozenibed opplies (met 1 and 2)	grade; pullied as follows: agi-		
described earlier (rer. 1 and 2).	Lated with all and washed with		
The water and mercury were dis-	UNO . filtorod through Au foil.		
coll Sufficient NoCl upg added	rowaghed with 59 NNO. and dig		
under We to make the colution about	tilled water distilled three		
6 molal About 0.001 molal hydra-	times.		
zine hydrate was added to ensure no			
Hq was oxidized by residual air.	(2) Sodium chloride. Fischer Scien-		
The solubility cell was contin-	tific Co.; ASC Grade.		
uously stirred and Hg solubilities			
were determined at preselected tem-	(3) Water. Distilled.		
peratures starting from both above			
and below saturation.	ESTIMATED ERROR:		
The stirrer was stopped 2 hours	Sm(x - 10.03		
plog of colution were supported into	$\int \frac{1}{2} \nabla T = T + 0$		
pies of solution were expensed into	$\int \frac{1}{2} $		
KaCrao and 1 ml 200 H co. min	$8k/mol ka^{1} = 40.005A$ chandend or or		
flack was reweighed and heated to	on = cincle determination (au-		
boiling to oxidize the Ha	thors).		
The sample was cooled and trans-			
ferred quantitatively to a wash	REFERENCES .		
bottle in the train for the atomic			
absorption spectrophotometer. The	1. Glew, D. N.; Hames, D. A.		
Hg 2 was reduced to Hg by SnCl	Can. J. Chem. <u>1969</u> , 47, 4651.		
The mercury was vaporized into the			
quartz cell of the spectrophotome-	2. Glew, D. N.; Hames, D. A.		
ter. The spectrophotometer was cal-	Can. J. Chem. <u>1971</u> , 49, 3114.		
ibrated by a standard Hg solution			
prepared from HgCl ₂ .			

			<u> </u>					
COMPON	COMPONENTS: ORIGINAL MEASUREMENTS:							
(1) M	lercu	ry; Hg;	[7439-97-6]		Glew,	D. N.; Hames, D.	. A.	
(2) g	5odiu [7647-	m chlor: -14-5]	ide; NaCl;		Can. i	I. Chem. <u>1972</u> , 8	50, 3124 - 8.	
(3) P	Nater	; H ₂ O;	[7732-18-5]					
ADDIT	IONAI	INFORM	ATION:					
Au ag	Authors' smoothed data. Solubility of mercury in 6.10 mol/kg ¹ aqueous sodium chloride.							
Те	empera	ature	Molality	Sta	andard Salt Effect Standard			
t/	°C	<i>T/</i> K	10* <i>m</i> 1/mol k	kg ⁻¹ σ		k _{smm} /kg mol-1a	d 	
	0.0	273.2	4.31	0	.10	0.1120	0.0028	
	5.0	278.2	5.75	0	.12	0.0950	0.0020	
l 1	.0.0	283.2	7.58	0	.14	0.0795	0.0014	
1	.5.0	288.2	9.91	0	.16	0.0654	0.0011	
2	20.0	293.2	12.8	0	.17	0.0528	0.0011	
2	25.0	298.2	16.5	0	.20	0.0413	0.0012	
3	80.0	303.2	21.0	0	.24	0.0311	0.0012	
3	85.0	308.2	26.5	0	.30	0.0220	0.0012	
4	10.0	313.2	33.2	0	.39	0.0140	0.0011	
4	15.0	318.2	41.3	0	.54	0.0069	0.0011	
5	50.0	323.2	51.1	0	.74	0.0008	0.0011	
5	5.0	328.2	62.8	1	.0	-0.0044	0.0012	
6	50.0	333.2	76.7	1	.4	-0.0089	0.0015	
6	55.0	338.2	93.1	1	.9	-0.0125	0.0019	
7	0.0	343.2	112.	2	.5	-0.0153	0.0024	

 $a_{k_{gmm}/kg mol^{-1}} = (1/(m_2/mol kg^{-1}))\log((m_1^o/mol kg^{-1})/(m_1/mol kg^{-1}))$

The authors' smoothing equations were $\log(m_1/mol \ kg^{-1}) = -6.043 - 1639.8/(T/K) + 1.9230 \ \log(T/K)$ with a standard error on a single determination of 7.7%, and $k_{gmm} = -20.373 + 1072.2/(T/K) + 6.7966 \ \log(T/K)$ with a standard error on a single determination of 0.0054.

The salting out constant changes sign at 50.8 \pm 1.0 °C (324.0 K).

· ·	· · · · · ·					
COMPONENTS :	C	ORIGINAL MEASUREMENTS:				
(1) Mercury; Hg; [7439-97-6]		Chviruk, A. P.; Koneva, N. V.				
<pre>(2) Sodium chloride; NaCl; [7647-14-5]</pre>		Urk	Khim.	Zh.	<u>1975</u> , <i>41</i> , 1162 - 4.	
(3) Water; H ₂ O; [7732-18-5]		* <i>So</i> t <u>197</u> :	5. Prog. 5, 41(1)	. Chem 1), 39	. (Engl. Transl.) - 41.	
VARIABLES:		PREPAR	ED BY:			
T/K = 293.15 - 353.1 $p_1/kPa = 0 - 0.0112$ $c_2/mol dm^{-3} = 3.42$	5	H. 1 M. 1	L. Cleve Wamoto	er		
EXPERIMENTAL VALUES:						
Temperature Pressure ^a Sod	H	lenry	's Const	ant ^C	Mercury Solubility ^d	
$t/^{\circ}C T/K p_1/mmHg c_2/mmHg$	oride ^D g dm ⁻³	1	o1/c1		c ₁ /mg dm ⁻³	
20 293.15 1.1 x 10 ⁻³ 40 313.15 5.7 x 10 ⁻³ 60 333.15 24 x 10 ⁻³ 80 353.15 84 x 10 ⁻³	200		0.63 1.0 1.45 2.1		0.0192 0.0591 0.158 0.377	
^a Calculated by compilers from	literatı	ure e	quation	(ref.	1) given in paper,	
$\log p_1 = 10.55 - 0.84 \log T$	- (3348/ T	"), P;	1/mmHg a	and T/	κ.	
^C Henry's constant defined as $K = (p_1/mg dm^{-3})/(c_1/mg dm^{-3})$. The authors'						
dCalculated by the compiler f - 1.325 log(T/K) - 2411/(T/K	rom auth	ors'	equatio	n log(c₁/mg dm⁻³)= 9.781	
The authors also measured the dm ⁻³ of sodium hydroxide at system, but they say that the	e solubil 20°C. T results	ity c They agre	of mercu give no e with	ry in nume the aq	a solution of 600 g rical data for the ueous NaCl data.	
Systems undersaturated, satu studied. The authors show a solutions obey Henry's law, a with mercury vapor at its equ	irated sn fiqure v nd the su ilibrium	nd suj which ipersa pres	persatu shows aturate sure.	rated that solut	with mercury were the undersaturated ions are in contact	
	AUXILIARY	INFORM	ATION		. <u></u>	
METHOD/APPARATUS/PROCEDURE:		SOURC	E AND PUR	ITY OF	MATERIALS:	
		(1)	Mercury. oy redu (15 g di	Form ction m ⁻³) a	med in the solution of HgCl ₂ by SnCl ₂ t pH 2.	
		(2)	Sodium "cp".	chlor	ide. Specified as	
		(3)	Water.	Disti	lled.	
		ESTIM	ATED ERRO	DR:		
1		REFER	ENCES:			
		1. M(<i>P)</i> t:	oelwyn hysical ranslata	- Hugh Chemi ion, I	es, E. A. stry, Russian L Press, Moscow.	

COMPONENT	S:			ORIGINAL MEASUREMENTS:		
(l) Mer	cury; Hg;	[7439-97-6]		Baltisberger, R. J.; Hildebrand,		
(2) Sod [76	lium chlo: 547-14-5]	ide; NaCl;		D. A.; Grieble, D.; Ballintine, T. A.		
(3) Wat	er; H ₂ 0;	[7732-18-5]		Anal. Chim. Acta 2.	<u>1979</u> , <i>111</i> , 111 -	
VARIABLES	:			PREPARED BY:	······································	
I	'/K = 296.	.15, 303.15		H. L. Clever M. Iwamoto		
EXPERIMEN	TAL VALUES	;		L		
Temper	ature	Sodium	Merc	ury solubility	Salt	
t∕°C	T/K	$c_2/mol dm^{-3}$	ppb ^a	Concentration ^C 10 ⁷ c ₁ /mol dm ⁻³	Parameter k _{scc} /dm ³ mol ⁻¹	
30	303.15	0	63 <u>+</u> 2	$3.1_4 \pm 0.10$	-	
23	296.15	0.01	59	2.94	0.70	
		0.1	57	2.84	0.22	
annh	narte n	r billion				
betand	· parts pe	tion of ton an				
Gazza		cion di cen an	aryses.			
gram	s of merc	ury per 1 x 10°	cm ³ of	solution.	culated assuming	
	· · · ·					
		A	UXILIARY	INFORMATION		
METHOD/AL	PPARATUS/PR	OCEDURE:	with	SOURCE AND PURITY OF M	ATERIALS:	
nitrog of mer mixtur	en gas fo cury was e sparged	r 45 minutes, added, and th another 30 m	a drop en the inutes	(1) Mercury. Prep tion from merc der a N ₂ atmos	ared by distilla- cury(II) oxide un- phere.	
with ni red fo	itrogen. r 24 hou: stirring	Solutions were rs with a glas bar. Samples	stir- ss-co-	(2) Sodium chlorid cal grade reag	e. From analyti- ent and solution.	
lution with a	were wi	thdrawn by synchrony f	yringe	(3) Water. Triple	distilled.	
preven solutio	t oxygen	diffusion in	to the			
An alie	quot of as transf	the saturated erred to a non	solu- -redu-	ESTIMATED ERROR:		
cing ce ted by lyzed l	all. The nitroge by cold v	mercury was c n sparging and apor atomic al	ollec- d ana- bsorp-	See standard devi ity in water abov	ation of solubil- e.	
tion.	_		_	REFERENCES:		
The no that h agents.	n-reduci ad never	ng cell was a contacted red	a cell ducing			
Hg + H tion. the dis	20 was qu The prese sproportic	nite prone to e ence of Cl pre pnation of any	oxida- vented Hg(I).			

COMPONEN	NTS:			ORIGINAL MEASUREMENTS:		
(1) M	ercury; H	g; [7439-97-6	1	Sanemasa, I.; Haraguchi, K.; Nagai, H.		
(2) S	odium chl 7647-14-5	oride; NaCl;]		Bull. Chem. Soc. Jpn <u>1981</u> , 54,		
(3) W	ater; H ₂ O	; [7732-18-5]				
VARIABL	ES:			PREPARED BY:		
	T/K	= 298.15 = 0 - 1.00		S. H. Johnson H. L. Clever		
· · · 2				M. Iwamoto		
EXPERIM	ENTAL VALUE	S:				
Tempe	rature	Electrolyte	Solubilit Ratio	y log(c ^o /c ₁) Salt Effect Parameter at lim		
t/°C	<i>T</i> /K	c ₂ /mol dm ⁻³	c ₁ /c ₁	$c_2 \rightarrow 0$ $k_{\rm scc}$ $k_{\rm scx}$		
25	298.15	0.250	1.050	0.0848		
		0.501	1.105	0.0866		
		0.752	1.154	0.0827		
		1.00	1.204	0.0806		
				0.0025 ^a 0.0788 ^a 0.0872		
a _{Auth}	ors' valu	es which are	the interc	ept and slope of $log(c_1/c_1)$ vs. c_2 .		
The o	ther keeg	values were	calculated	by the compiler from:		
The k	value	k _{sc}	$c = (1/c_2)$	$x \log(c_1^0/c_1)$		
where	• • is the	$k_{\rm scx} = k_{\rm scx}$ apparent mol	cc + (0.03 ar volume	$6 - \Phi \times 10^{-3})/2.30$ of the salt. For this system		
₽/cm³	mol ⁻¹ =	16.62.				
deter	mination	of mercury 1 of 63.9×10^{-1}	n water 19 ' [*] g dm ⁻³ .	s based on Sanemasa's (ref. 3) earlier		
Note:	k _{scc} /dm ³	$mol^{-1} = (1/(1))$	c ₂ /mol dm ⁻	³)) $\log(c_1^0/c_1)$; $k_{\text{SCX}} = (1/c_2) \log(x_1^0/x_1)$		
			AUXILIARY	INFORMATION		
METHOD/	APPARATUS/P	ROCEDURE :		SOURCE AND PURITY OF MATERIALS:		
The	e solubil d system flasks o	lity apparat which consist	us is a s of se-	(1) Mercury. Source not given. Pur- ified by distillation under reduced pressure		
20 g j	portion o	f Hg is place	ed in one			
up to	immersed 200 ml o	f water are p	at I, and blaced in	(2) Sodium chloride. Analytical reagent grade. Dried and		
a sec	ond flask	immersed in Hg vapor pre	ssure is	weighed.		
contr	olled by	the temper	ature of	(3) Water. Redistilled water. Both		
press	ure is ci	rculated by f	the pump.	were used with no difference.		
The g	as passes through	over the Hg the water (and bub- or solu-	ESTIMATED FREOR.		
tion). One hour circulation satu-			on satu- d water.	$\delta T/K = \pm 0.05$		
The Hg is determined by cold-vapor			old-vapor	$ \begin{array}{rcl} 10^{\circ}\delta c_{7}/g & \mathrm{dm}^{-3} = \pm 0.1 \\ \delta (c_{7}^{\circ}/c_{7}) = +0.005 \end{array} $		
based on a reduction-aeration method			on method	REFERENCES.		
The p	by Kimur procedure	a and Miller used is si	(ref. 1). milar to	1. Kimura, Y.; Miller, V. L.		
that The s	reported	by Omang (working star	ref. 2).	Anal. Chim. Acta <u>1962</u> , 27, 325. 2. Omang, S. H.		
put t	through	the same pr	ocedure.	Anal. Chim. Acta <u>1971</u> , 53, 415.		
Measu	rements w	ere made at	up to six	Bull. Chem. Soc. Jpn. <u>1975</u> , 48,		
Hg pr	essures a	t each temper	ature.	1795.		

	·					
COMPONENTS:	ORIGINAL MEASUREMENTS:					
(1) Mercury; Hg; [7439-97-6] Mercury-203; ²⁰³ Hg; [13982-78-0]	Hursh, J. B. JAT, J. Appl. Toxicol. <u>1985</u> , 5, 327 - 32.					
<pre>(2) Sodium chloride; NaCl; [7647-14-5]</pre>						
(3) Water; H ₂ O; [7732-18-5]						
VARIABLES:	PREPARED BY:					
T/K = 295	H. L. Clever					
EXPERIMENTAL VALUES:						
Temperature NaCl Carrier	Ostwald Concentration ^b					
t/°C T/K c ₂ /mol dm ⁻³	Coefficient ^a Av. <u>+</u> SE (no.) 10 ⁷ c ₁ /mol dm ⁻³					
22 295.15 0 -	(3.22) 2.61					
0.155 Air	2.65 <u>+</u> 0.07(5) 2.15					
^a The Ostwald coefficient is ((Given above is the average <u>+</u> s minations).	ng Hg/mL fluid)/(ng Hg/mL air)). tandard error (number of deter-					
 ^b The concentrations were calculated by the compiler for mercury vapor in equilibrium with pure liquid mercury from the vapor pressure evaluation of Ambrose and Sprake (ref. 1). The mercury vapor pressure and vapor concentration at 295.15 K are 19.90 Pa and 16.27 ng Hg/mL air, respectively. The author describes the solution as 0.9 wt. % NaCl. The compiler calculated the concentration as 0.155 mol dm⁻³ NaCl. The water values in () were added by the compiler for comparison. They were calculated from data in the mercury + water evaluation. 						
AUXILIARY	INFORMATION					
	CONDER AND DIDITY OF MATEDIALS.					
The equilibrium cell is a 50 mL syringe thermostated in a Dewar flask. A 10 mL liquid sample and a 40 mL carrier gas with Hg vapor sample are drawn into the cell. The cell is turned and rolled on the cylinder axis for 120 to 300 sec. Equilibrium is rapidly attained through the large contact area be- tween liquid and vapor phases. Both the liquid and vapor phases are	 Mercury. Prepared by reduction of ²⁰³HgCl₂. The Hg vapor is swept into a leak-proof Saran bag. Sodium chloride. No information given. Solution specific gravi- ty Handbook value of 1.0064. Water. Deionized and doubly distilled. 					
sampled. The liquid phase is aer- ated and the Hg adsorbed on Hopca-	ESTIMATED ERROR:					
lite. The Hg radioactivity is meas- ured on a liquid scintillation coun-						
ter. Corrections are applied for the counter efficiency, and for						
radioactive decay of the Hg.	REFERENCES:					
	 Ambrose, D.; Sprake, C. H. S. J. Chem. Thermodynam. <u>1972</u>, 4, 603. 					

Mercury in Aqueous Electrolyte and Nonelectrolyte Solutions

COMPONENTS:			ORIGINAL MEASUREMENTS:			
(l) Mercury; H	(1) Mercury; Hg; [7439-97-6]			Sanemasa, I.; Haraguchi, K.; Nagai, H.		
(2) Sodium bro [7647-15-6	mide; NaBr;]		Bull. Chem. Soc. Jpn. <u>1981</u> , 54,			
(3) Water; H ₂ O	; [7732-18-5]		1040 - 3.			
VARIABLES:			PREPARED BY:			
<i>T/K</i> c ₂ /mol dm ⁻³	= 298.15 = 0 - 1.01		S. H. Johnson H. L. Clever M. Iwamoto	1		
EXPERIMENTAL VALUE	S:					
Temperature	Electrolyte	Solubilit Ratio	y log(c½/c1) at lim	Salt Effec	t Parameter	
t/°C T/K	$c_2/mol dm^{-3}$	c1/c1	$c_2 \rightarrow 0$	k _{scc}	k _{scx}	
25 298.15	0.253	1.023		0.039		
	0.506	1.038		0.032		
	0.750	1.046		0.026		
	1.01	1.055		0.023		
			0.0063 ^a	0.0173 ^a	0.0227	
^a Authors' valu	es which are	the interc	ept and slope o	f log(c ₁ /c ₁) vs. c ₂ .	
The other k_{scc}	values were	calculated	by the compile	r from:		
The k _{scx} value	s were calcul	ated by th	$\begin{array}{c} x & \log(c_1/c_1) \\ e & \operatorname{authors} from: \\ 6 & - & - & - & 10^{-3} \\ \end{array}$	30		
where Φ is the $\Phi/cm^3 \mod^{-1} =$	apparent mol 23.50.	ar volume	of the salt. F	or this sys	tem	
The solubility determination	of mercury i of 63.9 x 10	in water is "g dm-".	s based on Sane	masa's (ref.	3) earlier	
Note: k _{scc} /dm³	$mol^{-1} = (1/($	c ₂ /mol dm ⁻	<pre>\$))log(c₁/c₁);</pre>	$k_{\rm scx} = (1/c)$	(x_1^{o}/x_1)	
		AUXILIARY	INFORMATION			
METHOD/APPARATUS/P	ROCEDURE:		SOURCE AND PURITY	OF MATERIALS	;	
The solubi closed system veral flasks o	lity apparate which consist connected by	tus is a ts of se- tubing. A	(1) Mercury. ified by reduced pr	Source not distillat ressure.	given. Pur- ion under	
20 g portion o flask immersed up to 200 ml o	f Hg 15 place l in thermost f water are p	at I, and placed in	(2) Sodium bro gent grade	omide. Anal . Dried ar	ytical rea- nd weighed.	
stat II. The controlled by	limmersed in Hg vapor pre the temper	ssure is ature of	(3) Water. Re aerated a	distilled w nd deoxyger	vater. Both nated water	
thermostat I. pressure is ci	Nitrogen ga rculated by	as at atm the pump.	were used	with no dif	fference.	
The gas passes bles through	s over the Hg the water (or solu-	ESTIMATED FREOR.			
tion). One ho	ur circulati	on satu-	δ <i>T</i> /K	= +0.05		
The Hg is def atomic absorp	termined by c tion. The m	old-vapor wethod is	$\frac{10^{\circ} \delta c_1/g \ \mathrm{dm}^{-3}}{\delta (c_1^{\circ}/c_1)}$	$= \pm 0.1$ = ± 0.005		
based on a redu	uction-aerati	on method	REFERENCES:			
The procedure	used is si	milar to	l. Kimura, Y.;	Miller, V.	L.	
The sample and	a by Omang working sta	(ref. 2). ndard are	2. Omang, S. H	Аста <u>1962</u> !•	<i>27, 32</i> 5.	
put through	the same pr	ocedure.	Anal. Chim.	Acta <u>1971</u>	<u>,</u> 53, 415.	
Measurements w	vere made at	up to six	Bull. Chem.	Soc. Jpn.	<u>1975</u> , 48,	
FICODULED a	- cren cember		L			

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COMPONENTS :			ORIGINAL MEASUREMENTS:		
(1) Mercury; H	Ig; [7439-97-6	11	Sanemasa, I.; Haraguchi, K.; Nagai, H.		
<pre>(2) Sodium perchlorate; NaClO₄; [7601-89-0]</pre>			Bull. Chem. Soc. Jpn. <u>1981</u> , 54,		
(3) Water; H ₂ O; [7732-18-5]			1040 - 3.		
TADTARI DC .	· · · · · · · · · · · · · · · · · · ·				
$c_2/mol dm^{-3}$	2 = 298.15 = 0 - 1.00		PREPARED BY: S. H. Johnson H. L. Clever M. Twamoto		
EXPERIMENTAL VALU	ES:				
Temperature	Electrolyte	Solubilit	y $\log(c_1^{o}/c_1)$ Salt Effect Parameter		
t/°C T/K	c_2 /mol dm ⁻³	Ratio c ₁ /c ₁	at $\lim_{c_2 \to 0} \frac{1}{k_{\text{scc}}} + \frac{1}{k_{\text{scx}}}$		
25 298.15	0.250	1.093	0.154		
[0.500	1.172	0.138		
	0.750	1.252	0.130		
	1.00	1.338	0.126		
			0.0098 ^a 0.117 ^a 0.114		
aAuthors' valu	es which are	the interc	ept and slope of $log(c_1/c_1)$ vs. c_2 .		
The other k _{scc}	values were	calculated	by the compiler from:		
The k _{scx} value	s were calcul	$c = (1/c_2)$ ated by th	x log(c1/c1) e authors from:		
where Φ is the $\Phi/cm^3 \mod^{-1} =$	$k_{\text{scx}} = k_{\text{s}}$ apparent mol 42.91.	cc + (0.03 ar volume	$6 - \Phi \times 10^{-1}/2.30$ of the salt. For this system		
The solubility determination	of mercury i of 63.9 x 10	in water is ''g dm''.	s based on Sanemasa's (ref. 3) earlier		
Note: k _{scc} /dm³	$mol^{-1} = (1/($	c2/mol dm ⁻	$(c_1^2/c_1); k_{SCX} = (1/c_2)\log(x_1^2/x_1)$		
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/I	PROCEDURE :	n	SOURCE AND PURITY OF MATERIALS:		
The solubi	lity apparat	tus is a	(1) Mercury. Source not given. Pur-		
closed system	which consist	s of se-	ified by distillation under		
20 q portion c	of Hg is place	ed in one	reduced pressure.		
flask immersed	in thermosta	at I, and	(2) Sodium perchlorate. Analytical		
up to 200 mi o a second flas	f water are _b c immersed in	thermo-	reagent grade. Dried and weighed.		
stat II. The	Hg vapor pre	ssure is			
controlled by	the temper Nitrogen ga	ature of as at atm	(3) Water. Redistilled water. Both aerated and deoxygenated water		
pressure is ci	rculated by t	the pump.	were used with no difference.		
The gas passes	s over the Hg the water (or solu-	ECTIMATED EDDAD.		
tion). One ho	ur circulati	on satu-	$\frac{8\pi}{v} = \pm 0.05$		
rates both the gas space and water. The Hg is determined by cold-vapor			$10^{\circ} \delta c_{1}/g dm^{-3} = \pm 0.1$ $\delta (c_{1}/c_{1}) = \pm 0.005$		
based on a red	action-aeratic	on method			
found by Kimur	a and Miller	(ref. 1).	REFERENCES: 1 Vimura V • Miller V I		
that reported	d by Omang (ref. 2).	Anal. Chim. Acta <u>1962</u> , 27, 325.		
The sample and	working star	ndard are	2. Omang, S. H.		
put through Analyses are	done in tri	plicate.	3. Sanemasa, I.		
Measurements w	vere made at u	up to six ature.	Bull. Chem. Soc. Jpn. <u>1975</u> , 48, 1795.		
ny pressures a	r each rempor				

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury; I	lg; [7439-97-6]	Sanemasa, I.; Haraguchi, K.;		
(2) Sodium su [7757-82-6	lfate; Na ₂ SO ₄ ; 5]		Bull. Chem. Soc. Jpn. <u>1981</u> , 54,		
(3) Water; H ₂ (; [7732-18-5]		1040 5.		
VARIABLES:			PREPARED BY:		
T/H c ₂ /mol dm ⁻¹	<pre>x = 298.15 y = 0 - 0.501</pre>		S. H. Johnson H. L. Clever M. Iwamoto	1	
EXPERIMENTAL VALU	2S:		L <u></u>		
Temperature	Electrolyte	Solubilit Ratio	y log(c ₁ /c ₁)	Salt Effect Parameter	
t/°C T/K	c ₂ /mol dm ⁻³	c ₁ /c ₁	$c_2 \rightarrow 0$	kscc kscx	
25 298.15	0.125	1.104		0.344	
	0.250	1.216		0.340	
	0.375	1.314		0.316	
	0.501	1.447		0.320	
			0.0053 ^a	0.308 ^a 0.319	
^a Authors' valu	les which are	the interc	ept and slope o	$f \log(c_1^2/c_1) vs. c_2.$	
The other kee	, values were	calculated	by the compile	r from:	
The k_{scr} value	k _{sc} s were calcul	$c = (1/c_2)$ ated by th	x log(c ₁ /c ₁) le authors from:		
where Φ is the Φ/cm^3 mol ⁻¹ =	$k_{scx} = k_{s}$ apparent mol 11.56.	cc + (0.03 ar volume	$6 - \Phi \times 10^{-3})/2$ of the salt. F	.30 or this system	
The solubility determination	y of mercury in of 63.9 x 10	in water i: • g dm**.	s based on Sane	masa's (ref. 3) earlier	
Note: k _{scc} /dm	mol ⁻¹ = (1/(c2/mol dm-	''))log(c1/c1);	$k_{\rm SCX} = (1/c_2) \log(x_1^0/x_1)$	
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/	PROCEDURE:		SOURCE AND PURITY	OF MATERIALS:	
The solubi closed system veral flasks 20 g portion	lity apparate which consist connected by	tus is a ts of se- tubing. A ed in one	(1) Mercury. ified by reduced p	Source not given. Pur- distillation under ressure.	
flask immerse up to 200 ml (a second flas	d in thermost of water are j k immersed in	at I, and placed in h thermo-	(2) Sodium sul gent grade	fate. Analytical rea- . Dried and weighed.	
stat II. The Hg vapor pressure is controlled by the temperature of thermostat I. Nitrogen gas at atm pressure is circulated by the pump.			(3) Water. Re aerated a were used	distilled water. Both nd deoxygenated water with no difference.	
bles through	the water (or solu-	ESTIMATED ERROR:		
tion). One hour circulation satu- rates both the gas space and water.			δτ/κ	: = <u>+</u> 0.05	
The Hg is determined by cold-vapor atomic absorption. The method is			10 ^{*δ} c ₁ /g dm ⁻³ δ(c ₁ /c ₁)	= <u>+</u> 0.1 = <u>+</u> 0.005	
based on a reduction-aeration method found by Kimura and Miller (ref. 1).			REFERENCES :		
The procedure that reporte	e used is si	milar to (ref. 2)	1. Kimura, Y.; Anal. Chim.	Miller, V. L. <i>Acta</i> 1962, 27, 325.	
The sample and	d working sta	ndard are	2. Omang, S. H Angl. Chim	Acta 1971. 53. 415.	
Analyses are	done in tr	iplicate.	3. Sanemasa, I Bull Cham	Soc. Jnn. 1975 - 48	
Measurements were made at up to six Hg pressures at each temperature.			1795.	200. 0 Pro 10101 #01	

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COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury; H	ig; [7439-97-6	, 1	Sanemasa, I.; Haraguchi, K.; Nagai, H.		
<pre>(2) Sodium nitrate; NaNO₃; [7631-99-4]</pre>			Bull. Chem. 1	Soc. Jpn. <u>1</u>	<u>981</u> , 54,
(3) Water; H ₂ O; [7732-18-5]			1040 - 3.		
VARIABLES:			PREPARED BY:	<u></u>	
<i>T/</i> F <i>c</i> ₂ /mol dm ⁻¹	$\zeta = 298.15$ $\gamma = 0 - 1.00$		S. H. Johnson H. L. Clever M. Iwamoto	n	
EXPERIMENTAL VALU	ES:				
Temperature	Electrolyte	Solubilit Ratio	y $\log(c_1^{\circ}/c_1)$ at lim	Salt Effec	t Parameter
t/°C T/K	$c_2/mol dm^{-3}$	c ⁹ /c ₁	$c_2 \rightarrow 0$	^k scc	kscx
25 298.15	0.250	1.037		0.063	
	0.500	1.074		0.062	
	0.753	1.106		0.058	
	1.00	1.156		0.063	
			-0.0002 ^a	0.0616 ^a	0.0652
The other k_{scc} The k_{scx} value where Φ is the $\Phi/cm^3 mol^{-1} =$ The solubility determination Note: k_{scc}/dm^3	^a Authors' values which are the intercept and slope of $\log(c_1^{\circ}/c_1)$ vs. c_2 . The other k_{SCC} values were calculated by the compiler from: $k_{\text{SCC}} = (1/c_2) \times \log(c_1^{\circ}/c_1)$ The k_{SCX} values were calculated by the authors from: $k_{\text{SCX}} = k_{\text{SCC}} + (0.036 - \Phi \times 10^{-3})/2.30$ where Φ is the apparent molar volume of the salt. For this system $\Phi/\text{cm}^3 \mod^{-1} = 27.79$. The solubility of mercury in water is based on Sanemasa's (ref. 3) earlier determination of 63.9 x 10 ⁻⁶ g dm ⁻³ . Note: $k_{\text{SCC}}/\text{dm}^3 \mod^{-1} = (1/(c_2/\text{mol dm}^{-3}))\log(c_1^{\circ}/c_1); k_{\text{SCX}} = (1/c_2)\log(x_1^{\circ}/x_1)$				
METHOD /APPARATUS /	PPOCEDURE		COURCE AND PURTTY	OF MATERIALS.	
The solubility apparatus is a closed system which consists of se- veral flasks connected by tubing. A 20 g portion of Hg is placed in one flask immersed in thermostat I, and up to 200 ml of water are placed in a second flask immersed in thermo- stat II. The Hg vapor pressure is controlled by the temperature of thermostat I. Nitrogen gas at atm pressure is circulated by the pump. The gas passes over the Hg and bub- bles through the water (or solu- tion). One hour circulation satu- rates both the gas space and water. The Hg is determined by cold-vapor atomic absorption. The method is based on a reduction-aeration method			 (1) Mercury. ified by reduced pr (2) Sodium nit gent grade (3) Water. Re aerated a were used ESTIMATED ERROR: δT/K 10[*]δc₁/g dm⁻¹ δ(c₁[*]/c₁) 	Source not of distillat ressure. trate. Analy >. Dried and edistilled wand deoxygen with no dif $x = \pm 0.05$ $x = \pm 0.1$ $x = \pm 0.005$	given. Pur- ion under /tical rea- l weighed. ater. Both ated water ference.
atomic absorption. The method is based on a reduction-aeration method found by Kimura and Miller (ref. 1). The procedure used is similar to that reported by Omang (ref. 2).			REFERENCES: 1. Kimura, Y.; Miller, V. L. Anal. Chim. Acta <u>1962</u> , 27, 325.		

2. Omang, S. H. Anal. Chim. Acta <u>1971</u>, 53, 415.

1975, 48,

Bull. Chem. Soc. Jpn.

3. Sanemasa, I.

1795.

that reported by Omang (ref. 2). The sample and working standard are put through the same procedure. Analyses are done in triplicate. Measurements were made at up to six Hg pressures at each temperature.

Mercury in Aqueous Electrolyte and Nonelectrolyte Solutions

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]	Sanemasa, I.; Haraguchi, K.; Nagai, H.		
<pre>(2) Sodium thiocyanate; NaSCN; [540-72-7]</pre>	Bull. Chem. Soc. Jpn. <u>1981</u> , 54,		
(3) Water; H ₂ O; [7732-18-5]	1040 - 3.		
VARIABLES:	PREPARED BY:		
T/K = 298.15 $c_2/mol dm^{-3} = 0 - 1.062$	S. H. Johnson H. L. Clever M. Iwamoto		
EXPERIMENTAL VALUES:			
Temperature Electrolyte Solubil Ratio	ity log(c ^o /c ₁) Salt Effect Parameter at lim		
$t/^{\circ}C$ T/K $c_2/\text{mol dm}^{-3}$ c_1°/c_1	$c_2 \rightarrow 0$ $k_{\rm scc}$ $k_{\rm scx}$		
25 298.15 0.266 0.977	-0.038		
0.531 0.964	-0.030		
0.797 0.944	-0.031		
1.062 0.917	-0.035		
	0.0008 ^a -0.0345 ^a -0.0338		
^a Authors' values which are the inte	rcept and slope of $\log(c_1^o/c_1)$ vs. c_2 .		
The other k_{SCC} values were calculat	ed by the compiler from:		
The k_{scx} values were calculated by	2) X log(c <u>i/ci)</u> Ehe authors from: Disc. — M x loci/(ci)		
where Φ is the apparent molar volum $\Phi/\text{cm}^3 \text{ mol}^{-1} = 34.49$.	$0.50 - \Psi \times 10^{-7/2.30}$ e of the salt. For this system		
The solubility of mercury in water determination of 63.9 x 10 ⁻⁶ g dm ⁻³	is based on Sanemasa's (ref. 3) earlier •		
Note: $k_{scc}/dm^3 mol^{-1} = (1/(c_2/mol d$	m^{-3}))log(c_1°/c_1); $k_{SCX} = (1/c_2)log(x_1^{\circ}/x_1)$		
AUXILIA	RY INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
The solubility apparatus is closed system which consists of se veral flasks connected by tubing. 20 g portion of Hg is placed in on	 A (1) Mercury. Source not given. Pur- ified by distillation under reduced pressure. 		
flask immersed in thermostat I, an up to 200 ml of water are placed i a second flask immersed in thermo stat II. The Hg vapor pressure i	d (2) Sodium thiocyanate. Analytical n reagent grade. Dried and weighed.		
controlled by the temperature o thermostat I. Nitrogen gas at at: pressure is circulated by the pump The gas passes over the Hg and bub	(3) Water. Redistilled water. Both aerated and deoxygenated water were used with no difference.		
bles through the water (or solu tion). One hour circulation satu	ESTIMATED ERROR:		
rates both the gas space and water. The Hg is determined by cold-vapo atomic absorption. The method i	$\begin{cases} \delta T/K = \pm 0.05 \\ 10^{6} \delta c_{1}/g \ dm^{-3} = \pm 0.1 \\ \delta (c_{1}^{6}/c_{1}) = \pm 0.005 \end{cases}$		
based on a reduction-aeration metho	REFERENCES :		
The procedure used is similar t	1. Kimura, Y.; Miller, V. L.		
that reported by Omang (ref. 2) The sample and working standard ar	Anal. Chim. Acta <u>1962</u> , 27, 325. 2. Omang, S. H.		
put through the same procedure	Anal. Chim. Acta <u>1971</u> , 53, 415.		
Measurements were made at up to si Hg pressures at each temperature.	Bull. Chem. Soc. Jpn. <u>1975</u> , 48, 1795.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury; H	lg; [7439-97-6	51	Sanemasa, I.; Haraguchi, K.; Nagai, H.		
<pre>(2) Potassium chloride; KCl; [7447-40-7]</pre>			Bull. Chem. Soc. Jpn. <u>1981</u> , 54,		
(3) Water; H ₂ (); [7732-18-5]		1040 - 3.		
VARIABLES:			PREPARED BY:		
<i>T/R</i> c ₂ /mol dm ⁻¹	(= 298.15 ' = 0 - 1.00		S. H. Johnson H. L. Clever M. Iwamoto		
EXPERIMENTAL VALU	ES:				
Temperature	Electrolyte	Solubilit	y log(c%/c1) Salt Effect Parameter		
t/°C T/K	$c_2/mol dm^{-3}$	Ratio c¶/c ₁	at $\lim_{c_2 \to 0} \frac{1}{k_{\text{SCC}}} = \frac{1}{k_{\text{SCC}}}$		
25 298.15	0.250	1.046	0.078		
	0.500	1.095	0.079		
	0.750	1.120	0.066		
	1.00	1.188	0.075		
			0.0018 ^a 0.0703 ^a 0.0743		
^a Authors' valu	es which are	the interc	ept and slope of $log(c_1^2/c_1)$ vs. c_2 .		
The other $k_{\rm scc}$, values were	calculated	by the compiler from:		
The k _{scx} value	s were calcul	$c = (1/c_2)$ ated by the	x log(c%/c1) e authors from:		
where Φ is the $\Phi/cm^3 \mod^{-1} =$	$k_{\rm scx} = k_{\rm s}$ apparent mol 26.85.	cc + (0.03) ar volume ($6 - \Phi \times 10^{-3})/2.30$ of the salt. For this system		
The solubility determination	of mercury i of 63.9 x 10	in water is ''g dm''.	based on Sanemasa's (ref. 3) earlier		
Note: k _{scc} /dm ³	$mol^{-1} = (1/($	c ₂ /mol dm ⁻	$(1/c_2)\log(c_1^2/c_1); k_{scx} = (1/c_2)\log(x_1^2/x_1)$		
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/	PROCEDURE :		SOURCE AND PURITY OF MATERIALS:		
The solubi	lity apparat	us is a	(1) Mercury. Source not given. Pur-		
closed system veral flasks o	which consist connected by	tubing. A	ified by distillation under reduced pressure.		
20 g portion of flask immersed	of Hg is place i in thermosta	ed in one	(2) Potassium chloride, Analytical		
up to 200 ml o	f water are p	laced in	reagent grade. Dried and		
a second flass	(immersed in Ha vapor pre	ssure is	weighed.		
controlled by	the temper	ature of	(3) Water. Redistilled water. Both		
thermostat I.	Nitrogen ga	is at arm the pump.	aerated and deoxygenated water were used with no difference.		
The gas passes	over the Hg	and bub-			
bles through tion). One ho	the water (ur circulati	or solu- on satu-	ESTIMATED ERROR:		
rates both the	gas space an	d water.	$\delta T/K = \pm 0.05$ 10 ^{\$} Se ₁ /g dm ⁻³ = ±0.1		
atomic absorp	tion. The m	ethod is	$\delta(c_1^{\circ}/c_1) = \pm 0.005$		
based on a redu	uction-aeratic	on method (ref. 1).	REFERENCES :		
The procedure	used is si	milar to	1. Kimura, Y.; Miller, V. L.		
that reported	d by Omang (working star	ref. 2). ndard are	Anal. Unim. Acta <u>1962</u> , 27, 325. 2. Omang, S. H.		
put through	the same pr	ocedure.	Anal. Chim. Acta <u>1971</u> , 53, 415.		
Analyses are Measurements W	done in tri vere made at 1	plicate. up to six	<i>Bull. Chem. Soc. Jpn.</i> <u>1975</u> , 48,		
Hg pressures a	t each temper	ature.	1795.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercur	y; Hg; [743	9-97-6]	Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;		
(2) L-Alanine; C ₃ H ₇ NO ₂ ; [56-41-7]			Kawamoto, T.; Hikar Sogawa, K.; Maehara	1, S.; 1, S.	
(3) Water;	н ₂ 0; 17732	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:		<u></u>	PREPARED BY:		
c₂∕mol	T/K = 310. $dm^{-3} = 0$ to pH = 7.2	15 5.6 x 10 ⁻ <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Al	anine	Mercury ^a		
t/days	$c_2/\text{mg} \text{ dm}^{-3}$	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c1/mol dm-3C (compiler)	
1	0	0		2.2	
- -	0	0	$0.025 \le 0.045 \le 0.070$	2.2	
5	0	0	$0.023 \leq 0.000 \leq 0.090$	3.0	
5	0	0	$0.078 \le 0.088 \le 0.090$	4.3	
5	U	0	$0.078 \le 0.087 \le 0.095$	4.3	
5	U	0	$0.070 \le 0.095 \le 0.120$	4.7	
5	50	5.6 x 10-*	$0.525 \leq 0.525 \leq 0.525$	26.2	
^a The compi ity equil ^b The comp: means gra ^C This valu	 ^aThe compiler assumes that the five day shaking time represents solubil- ity equilibrium. ^bThe compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10° cm³ of solution. ^cThis value calculated from the middle value of the three numbers. 				
		AUXILIARY	INFORMATION		
METHOD/APPARA	ATUS / PROCEDURE		SOURCE AND PURITY OF MAT	ERIALS:	
Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by				as given on the of materials.	
The mercury was determined by flameless atomic absorption spectro- photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000). Three determinations were per- formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 \pm 0.1. There was no mention of exclu- sion of oxygen from the samples.			ESTIMATED ERROR: $\delta c_1/ppm$ See ranges $\delta T/K$ Not given. REFERENCES: 1. Kimura, Y.; Mille Anal. Chim. Acta	in table above. r, V. L. <u>1962</u> , 27, 325.	

COMPONENTS :			ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]			Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;		
(2) L-Aspartic acid; $C_4H_7NO_4$; [56-84-8]		Kawamoto, T.; Hikar Sogawa, K.; Maehara	Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.		
(3) Water;	H ₂ O; [7732	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:			PREPARED BY:		
c ₂ /mol d	T/K = 310. $dm^{-3} = 0$ to pH = 7.2	15 4.5 x 10 ⁻⁴ <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL V	ALUES:				
Shaking	L-Aspar	tic acid	Mercury ^a		
Time - t/days d	2/mg dm-3	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c1/mol dm-3C (compiler)	
1	0	0	0.020 <u><</u> 0.045 <u><</u> 0.070	2.2	
3	0	0	0.025 <u><</u> 0.060 <u><</u> 0.096	3.0	
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3	
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3	
5	0	0	0.070 <u><</u> 0.095 <u><</u> 0.120	4.7	
5	60	4.5 x 10 ⁻⁴	0.483 <u><</u> 0.520 <u><</u> 0.552	25.9	
ity equili ^b The compil means gran ^C This value	^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10° cm³ of solution. ^c This value calculated from the middle value of the three numbers.				
		AUXILIARY	INFORMATION		
METHOD/APPARAT	US/PROCEDURE:		SOURCE AND PURITY OF MATE	CRIALS:	
Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by					
photometry using a mercury analyzer			ESTIMATED ERROR:		
(JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).			$\delta c_1/\text{ppm}$ See ranges $\delta T/K$ Not given.	in table above.	
Three de	terminatic	ons were per-	REFERENCES:		
Three determinations were per- formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 <u>+</u> 0.1. There was no mention of exclu-			l. Kimura, Y.; Mille Anal. Chim. Acta	r, V. L. <u>1962</u> , 27, 325.	

COMPONENTS :			ORIGINAL MEASUREMENTS:	
(1) Mercury; Hg; [7439-97-6] (2) L-Threonine; C ₄ H ₉ NO ₃ ; [72-19-5]			Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.; Kawamoto, T.; Hikari, S.; Soqawa, K.; Maehara, S.	
(3) Water;	н ₂ 0; [7732-	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,
VARIABLES:			PREPARED BY:	
c₂∕mol	T/K = 310.1 dm ⁻³ = 0 to pH = 7.2	15 5.0 x 10-4 <u>+</u> 0.1	Hiroshi Miyamoto	
EXPERIMENTAL	VALUES:			
Shaking	L-Thre	eonine	Mercury ^a	
t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c ₁ /mol dm-;c (compiler)
1	0	0	0.020 <u><</u> 0.045 <u><</u> 0.070	2.2
3	0	0	0.025 <u><</u> 0.060 <u><</u> 0.096	3.0
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3
5	0	0	$0.070 \le 0.095 \le 0.120$	4.7
5	60	5.0 x 10-*	$0.659 \leq 0.685 \leq 0.712$	34.1
^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10° cm ³ of solution.				
		AUXILIARY	INFORMATION	
METHOD/APPARATUS/PROCEDURE: Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by				
The mercury was determined by flameless atomic absorption spectro- photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000). Three determinations were per- formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 \pm 0.1. There was no mention of exclu- sion of oxygen from the samples.			<pre>ESTIMATED ERROR: δc₁/ppm See ranges δT/K Not given. REFERENCES: 1. Kimura, Y.; Mille Anal. Chim. Acta</pre>	in table above. r, V. L. <u>1962</u> , 27, 325.

COMPONENTS :			ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]		Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;			
(2) L-proline; $C_{5H_9NO_2}$; $(147-85-51)$		Sogawa, K.; Maehara	1, 5.; , S.		
(3) Water	; H ₂ O; [7732	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:		<u></u>	PREPARED BY:		
c2/mol	T/K = 310. dm ⁻³ = 0 to pH = 7.2	15 3.5 x 10 ^{-*} <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Pr	oline	Mercury ^a		
Time t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c1/mol dm-3C (compiler)	
1	0	0	0.020 <u><</u> 0.045 <u><</u> 0.070	2.2	
3	0	0	$0.025 \le 0.060 \le 0.096$	3.0	
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3	
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3	
5	0	0	0.070 <u><</u> 0.095 <u><</u> 0.120	4.7	
5	40	3.5 x 10-4	0.415 <u><</u> 0.445 <u><</u> 0.493	22.2	
		الله من الله من من من مع مو من من من من من من			
^a The comp ity equi	iler assumes librium.	that the five	day shaking time repr	esents solubil-	
^b The comp means gr	iler calcula ams of mercu	ted the concentry in 1 x 10° c	tration of mercury ass m³ of solution.	suming that ppm	
^C This valu	ie calculated	d from the midd	le value of the three	numbers.	
	· · · · · · · · · · · · · · · · · · ·	AUXILIARY	INFORMATION		
METHOD /APPAR	ATUS /PROCEDURE	<u></u>	SOURCE AND PURITY OF MATE		
Metallic of amino in an Erle stoppered days in a The aqu Acidified ganate so	c mercury (0 acid soluti enmeyer flas flask was thermostat leous phase (H ₂ SO ₄) pot olution wa	.3 g) and 25 ml on were placed sk. The rubber rotated 1 to 5 at 37°C. was sampled. assium perman- s added. The and the mercury	No information wa source and purity o	s given on the f materials.	
reduced described	by air and in ref. 1.	vaporized as			
flameless atomic absorption spectro-			ESTIMATED ERROR:		
photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab-			δ_{c_1}/ppm See ranges	in table above.	
sorption spectrophotometer (JEOL JAA-7000).			$\delta T^{2}K$ Not given.		
Three determinations were per-			REFERENCES:		
Three determinations were per- formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 ± 0.1. There was no mention of exclu-			l. Kimura, Y.; Mille Anal. Chim. Acta	r, V. L. <u>1962</u> , 27, 325.	
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ORIGINAL MEASUREMENTS:				
Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;				
Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.				
Shika Rikogaku Zaeshi <u>1979</u> , 20, 137 - 41.				
PREPARED BY:				
Hiroshi Miyamoto				
Mercury ^a				
-3C ppm ^b 10 ⁷ c ₁ /mol dm ^{-3C}) (compiler)				
$0.020 \leq 0.045 \leq 0.070$ 2.2				
$0.078 \le 0.086 \le 0.090$ 4.3				
$0.078 \le 0.087 \le 0.095$ 4.3				
$0.070 \leq 0.095 \leq 0.120$ 4.7				
0.588 < 0.650 < 0.712 32.4				
$0.618 \le 0.680 \le 0.742$ 33.9				
$0.790 \le 0.945 \le 1.101$ 47.1				
$1.075 \le 1.105 \le 1.132$ 55.1				
^b The compiler assumes that the five day shaking time represents solubil- ity equilibrium. ^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10° cm³ of solution. ^c This value calculated from the middle value of the three numbers.				
KILIARY INFORMATION				
SOURCE AND PURTTY OF MATERIALS.				
25 ml No information was siven on the				
No information was given on the laced source and purity of materials. ubber to 5 pled. rman- The prcury ed as				
lvzer				
c^{ab-}_{JEOL} $\delta c_{1}/ppm$ See ranges in table above. (JEOL $\delta T/K$ Not given.				
REFERENCES:				
dent. were 10 - ility 7.2 <u>+</u> xclu-				

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COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]			Kawakara, H.; Nakar Ishizaki, N.; Yamad	Kawakara, H.; Nakamura, M.; Ishizaki, N.: Yamada, T.:	
(2) L-Methionine; C ₅ H ₁₁ NO ₂ S; [63-68-3]			Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.		
(3) Water;	; H ₂ 0; [7732	-18-5]	Shika Rikogaku Zasu 137 - 41.	shi <u>1979</u> , 20,	
VARIABLES:			PREPARED BY:		
	T/K = 310.	15			
c₂/mol	$dm^{-3} = 0$ to pH = 7.2	0.01 <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:			· · · · · · · · · · · · · · ·	
Shaking	L-Meth	ionine	Mercury ⁴	1	
Time t/days			b	$107a_{\rm r}/mo1 dm^{-3}C$	
"Udys	e 27 mg um	(compiler)	ppm	(compiler)	
1	0	0	$0.020 \leq 0.045 \leq 0.070$	2.2	
3	0	0	$0.025 \leq 0.060 \leq 0.096$	3.0	
5	0	0	$0.078 \le 0.086 \le 0.090$	4.3	
5	0	0	$0.078 \le 0.087 \le 0.095$	4.3 A 7	
	U	U		-1 • /	
1	-	0.01	0.079 < 0.086 < 0.091	4.3	
3	-	0.01	$0.133 \le 0.168 \le 0.204$	8.38	
5	-	0.01	$0.237 \leq 0.262 \leq 0.287$	13.1	
5	-		$0.433 \leq 0.433 \leq 0.433$	21.6	
2	30	2.0 X 10-4	$0.097 \le 0.097 \le 0.097$	4.8	
^b The comp means gr ^C This valu	^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10° cm³ of solution. ^C This value calculated from the middle value of the three numbers.				
				·····	
		AUXILIARY	INFORMATION		
METHOD/APPAR	ATUS/PROCEDURE:		SOURCE AND PURITY OF MAT	ERIALS;	
Metallio of amino in an Erlo stoppered	c mercury (0 acid soluti enmeyer fla: flask was	63 g) and 25 ml on were placed sk. The rubber rotated l to 5	No information was source and purity of	as given on the of materials.	
days in a	thermostat	at 37°C.]		
The aqu	ieous phase	was sampled.			
Acidified	(H_2SO_4) pot	assium perman-			
ganate s	olution wa	s added. The			
reduced	by air and	vanorized as			
described	l in ref. 1.				
The me:	rcury was (determined by			
flameless atomic absorption spectro-			ESTIMATED ERROR:		
photometry using a mercury analyzer					
(JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).			$\delta c_1/\text{ppm}$ See ranges $\delta T/K$ Not given.	in table above.	
Three of formed on	determinati each sample	ons were per-	REFERENCES:		
The sol	ubility was	pH dependent.	l. Kimura, Y.; Mille	er, V. L.	
Much larg	er solubili	ty values Were	Anal. Chim. Acta	<u>1962</u> , 27, 325.	
11 ranges	All report	- 5 and ph 10 - rted solubili+v			
values ar	e for soluti	ons at pH 7.2 +			
0.1. Ther	e was no me	ntion of exclu-			
sion of or	xygen from t	he samples.			

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercur	y; Hg; [743	9-97-6]	Kawakara, H.; Nakam Ishizaki, N.; Yamad	Kawakara, H.; Nakamura, M.; Tshizaki, N.: Yamada, T.:	
(2) L-Leucine; C ₆ H ₁₃ NO ₂ ; [61-90-5]		Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.			
(3) Water;	H ₂ O; [7732-	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:			PREPARED BY:		
c ₂ /mol	T/K = 310.3 dm ⁻³ = 0 to pH = 7.2	15 9.15 x 10 ⁻⁺ <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Lei	ucine	Mercury ^a		
t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b .	10'c ₁ /mol dm-*C (compiler)	
1	0	0	0.020 <u><</u> 0.045 <u><</u> 0.070	2.2	
3	0	0	0.025 <u>≤</u> 0.060 <u><</u> 0.096	3.0	
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3	
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3	
5	0	0	$0.070 \leq 0.095 \leq 0.120$	4.7	
5	120	9.15 x 10-*	$0.330 \leq 0.375 \leq 0.382$	18.7	
ity equilibrium. ^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10° cm³ of solution. ^C This value calculated from the middle value of the three numbers.					
		AUXILIARY	INFORMATION		
METHOD/APPARA	TUS/PROCEDURE :		SOURCE AND PURITY OF MAT	ERIALS:	
Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by					
photometry using a mercury analyzer			ESTIMATED ERROR:		
(JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).			$\delta c_1/\text{ppm}$ See ranges $\delta T/K$ Not given.	in table above.	
formed on	each sample	ons were per-	REFERENCES:		
formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 <u>+</u> 0.1. There was no mention of exclu- sion of oxygen from the samples.			 Kimura, Y.; Mille Anal. Chim. Acta 	er, V. L. <u>1962</u> , 27, 325.	

COMPONENTS :			ORIGINAL MEASUREMENTS:	······
(1) Mercury; Hg; [7439-97-6]			Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.; Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.	
(2) L-Isoleucine; C ₆ H ₁₃ NO ₂ ; [73-32-5]				
(3) Water	; H ₂ O; [7732	-18-5]	Shika Rikogaku Zase 137 - 41.	hi <u>1979</u> , 20,
VARIABLES:			PREPARED BY:	
c ₂ /mol	T/K = 310. $dm^{-3} = 0$ to pH = 7.2	15 3.0 x 10 ^{-*} <u>+</u> 0.1	Hiroshi Miyamoto	
EXPERIMENTAL	VALUES:			
Shaking	L-Isol	eucine	Mercury ^a	
Time t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c1/mol dm-3C (compiler)
1	0	0	$0.020 \leq 0.045 \leq 0.070$	2.2
3	0	0	0.025 <u><</u> 0.060 <u><</u> 0.096	3.0
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3
5	0	0	$0.070 \leq 0.095 \leq 0.120$	4.7
5	40	3.0 x 10 ⁻⁴	0.205 <u><</u> 0.227 <u><</u> 0.252	11.3
ity equilibrium. ^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10 ^s cm ³ of solution. ^C This value calculated from the middle value of the three numbers.				
		AUXILIARI		
METHOD/APPAR	ATUS/PROCEDURE		SOURCE AND PURITY OF MAT	ERIALS:
Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by				
photometry using a mercury analyzer			ESTIMATED ERROR:	
(JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).			$\delta c_1/\text{ppm}$ See ranges $\delta T/K$ Not given.	in table above.
formed on	each sample	ons were per-	REFERENCES:	······································
formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 \pm 0.1. There was no mention of exclu-			l. Kimura, Y.; Mille Anal. Chim. Acta	er, V. L. <u>1962</u> , 27, 325.

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6] (2) L-Phenylalanine: C-HNO-:			Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.; Kawamoto, T.; Hikari, S.;		
[63-91	2]	-911	Sogawa, K.; Maehara	, S.	
(3) Water;	H ₂ O; [7732-	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:			PREPARED BY:		
c₂/mol	T/K = 310.1 dm ⁻³ = 0 to pH = 7.2	15 3.0 x 10 ⁻⁴ <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Pheny	lalanine	Mercury ^a		
t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b .	10'c1/mol dm-3C (compiler)	
1	0	0	0.020 <u><</u> 0.045 <u><</u> 0.070	2.2	
3	0	0	0.025 <u><</u> 0.060 <u><</u> 0.096	3.0	
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3	
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3	
5	0	0	$0.070 \leq 0.095 \leq 0.120$	4.7	
5	50	3.0 x 10-4	0.525 <u><</u> 0.552 <u><</u> 0.578	27.5	
^a The compi ity equil ^b The comp: means gra ^C This valu	 ^aThe compiler assumes that the five day shaking time represents solubil- ity equilibrium. ^bThe compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10⁶ cm³ of solution. ^cThis value calculated from the middle value of the three numbers. 				
		AUXILIARY	INFORMATION		
METHOD/APPAR/	TUS/PROCEDURE:	:	SOURCE AND PURITY OF MATH	ERIALS:	
Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by					
photometry using a mercury analyzer			ESTIMATED ERROR:		
(JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).			$\delta c_1/ppm$ See ranges $\delta T/K$ Not given.	in table above.	
formed on	eterminatio each sample	• • • • • • • • • • • • • • • • • • •	REFERENCES:		
formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 <u>+</u> 0.1. There was no mention of exclu-			l. Kimura, Y.; Mille Anal. Chim. Acta	r, V. L. <u>1962</u> , 27, 325.	
I SION OF OX	ygen rrom t	ne sampies.	1		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6] (2) L-Tyrosine; C ₉ H _{ll} NO ₃ ; [60-18-4]			Kawakara, H.; Nakam Ishizaki, N.; Yamad Kawamoto, T.; Hikar Sogawa, K.: Maebara	ura, M.; a, T.; i, S.; , S.	
(3) Water;	; H ₂ O; [7732	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:	· · · · · · · · · · · · · · · · · · ·		PREPARED BY:		
c₂/mol	T/K = 310. $dm^{-3} = 0$ to pH = 7.2	15 0.01 <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Tyr	osine	Mercury ^a		
t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-1C} (compiler)	ppm ^b	10'c ₁ /mol dm-3C (compiler)	
1 3 5 5 5 1 3 5 5 ^a The comp ity equi ^b The comp means gr ^C This valu	0 0 0 0 - - 40 iler assumes librium. iler calcula ams of mercu	0 0 0 0 0.01 0.01 0.01 2.2 \times 10 ⁻⁺ 5 that the five ated the concent ary in 1 \times 10 [*] cr d from the midd	$0.020 \le 0.045 \le 0.070$ $0.025 \le 0.060 \le 0.096$ $0.078 \le 0.086 \le 0.090$ $0.078 \le 0.087 \le 0.095$ $0.070 \le 0.095 \le 0.120$ $0.183 \le 0.251 \le 0.281$ $0.247 \le 0.251 \le 0.287$ $0.274 \le 0.293 \le 0.303$ day shaking time repr tration of mercury assonation. le value of the three	2.2 3.0 4.3 4.3 4.7 12.5 12.5 13.5 14.6 	
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by			SOURCE AND PURITY OF MATE No information wa source and purity c	RIALS: as given on the f materials.	
flameless photometr (JEOL AA- sorption JAA-7000) Three of formed on The sol Much larg obtained 11 ranges values ar 0.1. Ther sion of or	atomic abso y using a m HG 01) and spectropho determinati each sample ubility was ler solubili in the pH 2 . All repo e for soluti te was no me xygen from t	rption spectro- ercury analyzer an atomic ab- tometer (JEOL ons were per- s pH dependent. ty values were - 3 and pH 10 - rted solubility ons at pH 7.2 <u>+</u> ntion of exclu- the samples.	ESTIMATED ERROR: & c1/ppm See ranges & T/K Not given. REFERENCES: 1. Kimura, Y.; Mille Anal. Chim. Acta	in table above. r, V. L. <u>1962</u> , 27, 325.	

COMPONENTS :			ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]			Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;		
(2) L-Cysteine hydrochioride; C ₃ H ₇ NO ₂ S.HCl; [52-89-1]			Kawamoto, T Sogawa, K.;	.; Hikar Maehara	1, S.; , S.
(3) Water;	н ₂ 0; [7732	-18-5]	Shika Rikog 137 - 41.	аки Zавв	hi <u>1979</u> , 20,
VARIABLES:			PREPARED BY:		
c2/mol	T/K = 310. dm ⁻³ = 0 to pH = 7.2	15 0.01 ± 0.1	Hiroshi Miy	amoto	
EXPERIMENTAL	VALUES:		· · · · · · · · · · · · · · · · · · ·		
Shaking	L-Cyste	ine HCl		Mercury ^a	
t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppmb		10'c ₁ /mol dm-:C (compiler)
	0	0 0	$0.020 \leq 0.045$	≤ 0.070	2.2
5	0		$1.025 \le 0.060$	≤ 0.096	3.0
5	ŏ	õ c	.078 < 0.087	< 0.095	4.3
5	0	0 0	0.070 <a>	≤ 0.120	4.7
,	-	0 01 3/	825 239 000	<a3 18a<="" td=""><td>1944 3</td></a3>	1944 3
3	-	0.01 37	.926 <40.000	<42.074	1994.1
5	-	0.01 37	.852 <u><</u> 42.000	<u><</u> 46.185	2093.8
5	-	0.01 79	•.290 <u><</u> 80.670	<u><82.050</u>	4021.6
5	0.1	0.3 X TO . 1	095 < 1.725	<u><</u> 1.740	05.90
^a The comp ity equi	iler assumes librium.	s that the five	day shaking t	ime repr	esents solubil-
^b The comp means gr	iler calcula ams of mercu	ated the concent ary in 1 x 10° cm	ration of mer ³ of solution	cury ass 1.	suming that ppm
c _{This} valu	ue calculate	d from the midd	le value of th	ne three	numbers.
		AUXILIARY	INFORMATION		
METHOD /APPAR	TUS /PROCEDURE	•	SOURCE AND PURT	TY OF MATE	PTAIS
Metalli	c mercury ((1.3 a) and 25 ml	SOURCE AND TURI		AIRLO,
of amino	acid soluti	on were placed	No informa	ition wa	s given on the
in an Erle	enmeyer fla	sk. The rubber	source and	purity o	r materiais.
stoppered	flask was	rotated 1 to 5			
days in a	thermostat	at 37°C. wag gampled			
Acidified	(Hoso) pot	assium perman-	1		
ganate s	olution wa	s added. The			
sample was wet ashed and the mercury					
reduced by air and vaporized as described in ref. 1.					
The mercury was determined by			1		
flameless atomic absorption spectro-			ESTIMATED ERROR	:	
photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab-					
sorption spectrophotometer (JEOL			δc ₁ /ppm See	ranges	in table above.
JAA-7000).				9470110	
Three determinations were per-			REFERENCES :		
The sol	ubility was	5 pH dependent.	1. Kimura V	. • Will-	r. V I.
Much larg	er solubili	ty values were	Anal. Chi	m. Acta	1962, 27, 325.
obtained i	in the pH 2	- 3 and pH 10 -			
II ranges.	• All repo	ons at pH 7.2 +			
0.1. Ther	e was no me	ntion of exclu-	1		
sion of or	kygen from t	he samples.			

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COMPONENTS:		<u> </u>	ORIGINAL MEASUREMENTS:		
(1) Mercur	y; Hg; [743	9-97-6]	Kawakara, H.; Nakamura, M.;		
<pre>(2) L-Histidine monochloride; C₅H₁₂N₂O₃.HCl; [645-35-2]</pre>		Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.			
(3) Water;	; H ₂ 0; [7732	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:	· · · · · · · · · · · · · · · · · · ·		PREPARED BY:		
c2/mol	T/K = 310. dm ⁻³ = 0 to pH = 7.2	15 0.01 <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Histi	dine HCl	Mercury ^a		
Time t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c1/mol dm-3C (compiler)	
1	0	0	0 020 < 0 045 < 0 070	2 2	
-	õ	0	0.025 < 0.060 < 0.096	3.0	
5	0	0	$0.023 \le 0.000 \le 0.000$	1.2	
5	0	0	$0.078 \leq 0.088 \leq 0.090$	4.3	
5	0	0	$0.078 \le 0.087 \le 0.095$	4.3	
5	U	U	$0.070 \le 0.095 \le 0.120$	4.7	
5	-	0.01	$0.919 \leq 0.960 \leq 1.001$	47.9	
 ^aThe compiler assumes that the five day shaking time represents solubil- ity equilibrium. ^bThe compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10^s cm³ of solution. ^cThis value calculated from the middle value of the three numbers. 				esents solubil- suming that ppm numbers.	
		AUXILIARY	INFORMATION		
METHOD/APPARA	TUS/PROCEDURE :		SOURCE AND PURITY OF MATE	RIALS:	
Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1.			No information wa source and purity o	s given on the f materials.	
The mer flameless	cury was o atomic abso	rption spectro-	FSTIMATED EPDOD.		
photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000). Three determinations were per-			$\delta c_{1}/\text{ppm}$ See ranges $\delta T/K$ Not given.	in table above.	
Three determinations were per- formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 <u>+</u> 0.1. There was no mention of exclu- sion of oxygen from the samples.		REFERENCES: 1. Kimura, Y.; Mille Anal. Chim. Acta	r, V. L. <u>1962</u> , 27, 325.		

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(l) Mercur	(Y; Hg; [743	9-97-6]	Kawakara, H.; Nakar Ishizaki, N.; Yamad	Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;	
<pre>(2) L-Ornithine monochloride; C₅H₁₂N₂O₂.HCl; [3184-13-2]</pre>		Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.			
(3) Water;	н ₂ 0; [7732-	-18-5]	Shika Rikogaku Zase 137 - 41.	nhi <u>1979</u> , 20,	
VARIABLES:	·····		PREPARED BY:		
c₂∕mol	T/K = 310.3 dm ⁻³ = 0 to pH = 7.2	15 0.01 <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Ornit	hine HCl	Mercury ²		
t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm-3C (compiler)	ppm ^b	10'c ₁ /mol dm-*C (compiler)	
1	0	0	0.020 <u><</u> 0.045 <u><</u> 0.070	2.2	
3	0	0	0.025 <u><</u> 0.060 <u><</u> 0.096	3.0	
5	0	0	$0.078 \le 0.086 \le 0.090$	4.3	
5	0	0	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3	
5	0	0	$0.070 \leq 0.095 \leq 0.120$	4.7	
5	-	0.01	$0.158 \le 0.158 \le 0.158$	7.88	
^b The compiler calculated the concentration of mercury assuming that ppm means grams of mercury in 1 x 10 ^s cm ² of solution. ^C This value calculated from the middle value of the three numbers.					
		AUXILIARY	INFORMATION		
METHOD/APPAR	ATUS/PROCEDURE:		SOURCE AND PURITY OF MAT	ERIALS:	
Metallic of amino a in an Erle stoppered days in a The aqu Acidified ganate so sample was reduced 1 described The men	c mercury (0 acid solution flask was thermostat leous phase (H ₂ SO ₄) pot olution was s wet ashed by air and in ref. 1.	.3 g) and 25 ml on were placed sk. The rubber rotated 1 to 5 at 37°C. was sampled. assium perman- s added. The and the mercury vaporized as letermined by	NO information was source and purity of	as given on the of materials.	
flameless atomic absorption spectro-			ESTIMATED ERROR:		
photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).			$\delta c_1/\text{ppm}$ See ranges $\delta T/K$ Not given.	in table above.	
formed on	eterminationetic	ons were per-	REFERENCES:		
formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 <u>+</u> 0.1. There was no mention of exclu- sion of oxygen from the samples.			l. Kimura, Y.; Mille Anal. Chim. Acta	er, V. L. <u>1962</u> , 27, 325.	

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COMPONENTS :			ORIGINAL MEASUREMENTS:		
 (1) Mercury; Hg; [7439-97-6] (2) L-Lysine monohydrochloride; 			Kawakara, H.; Nakam Ishizaki, N.; Yamad Kawamoto, T.; Hikar	Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.; Kawamoto, T.: Hikari, S.;	
C ₆ H ₁₄ N ₂ O ₂ .HC1; [657-27-2]		Sogawa, K.; Maehara	, S.		
(3) Water;	н ₂ 0; [7732	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:			PREPARED BY:		
c₂∕mol	T/K = 310. dm ⁻³ = 0 to pH = 7.2	15 0.01 <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL	VALUES:				
Shaking	L-Lysi	ne HCl	Mercury ^a		
Time t/days	c ₂ /mg dm ⁻³	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b	10'c1/mol dm-3C (compiler)	
1	0	0	0.020 < 0.045 < 0.070	2.2	
3	0	0	0.025 < 0.060 < 0.096	3.0	
5	0	0	0.078 < 0.086 < 0.090	4.3	
5	0	0	0.078 < 0.087 < 0.095	4.3	
5	0	0	$0.070 \leq 0.095 \leq 0.120$	4.7	
5	70	3.8 x 10-*	$0.124 \leq 0.162 \leq 0.195$	8.08	
5	-	0.01	0.138 <u><</u> 0.146 <u><</u> 0.154	7.28	
^a The comp ity equi ^b The comp means gr ^C This valu	iler assumes librium. iler calcula ams of mercu le calculate	s that the five ated the concen ary in 1 x 10 ⁶ c d from the midd	day shaking time repr tration of mercury as m³ of solution. He value of the three	esents solubil- suming that ppm numbers.	
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Metallic mercury (0.3 g) and 25 ml of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as described in ref. 1. The mercury was determined by			SOURCE AND PURITY OF MATE No information wa source and purity o	RIALS: as given on the f materials.	
flameless atomic absorption spectro- photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000). Three determinations were per- formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 ± 0.1. There was no mention of exclu- sion of oxygen from the samples.			ESTIMATED ERROR: δc ₁ /ppm See ranges δT/K Not given. REFERENCES: 1. Kimura, Y.; Mille Anal. Chim. Acta	in table above. r, V. L. <u>1962</u> , 27, 325.	

COMPONENTS:			ORIGINAL MEASUREMENTS:		
 (1) Mercury; Hg; [7439-97-6] (2) L-Arginine monohydrochloride; C₆H₁AN₄O₂.HCl; [1119-34-2] 		Kawakara, H.; Nakam Ishizaki, N.; Yamad Kawamoto, T.; Hikar Sogawa, K.; Maehara	ura, M.; a, T.; i, S.; , S.		
(3) Water; H	20; [7732-	-18-5]	Shika Rikogaku Zass 137 - 41.	hi <u>1979</u> , 20,	
VARIABLES:			PREPARED BY:		
r c ₂ /mol dm	/K = 310.1 -3 = 0 to pH = 7.2	15 0.01 <u>+</u> 0.1	Hiroshi Miyamoto		
EXPERIMENTAL VAL	UES:				
Shaking	L-Argin:	ine HCl	Mercury ^a		
t/days c ₂	/mg dm - 3	c ₂ /mol dm ^{-3C} (compiler)	ppm ^b .	10 ⁷ c ₁ /mol dm ^{-3C} (compiler)	
1	0	0	$0.020 \leq 0.045 \leq 0.070$	2.2	
3	0	0	0.025 <u><</u> 0.060 <u><</u> 0.096	3.0	
5	0	0	0.078 <u><</u> 0.086 <u><</u> 0.090	4.3	
5	0	0	$0.078 \leq 0.087 \leq 0.095$	4.3	
5	0	0	$0.070 \leq 0.095 \leq 0.120$	4.7	
5	70	3.3 x 10 ⁻⁴	$0.332 \leq 0.425 \leq 0.510$	21.2	
5	-	0.01	$0.320 \leq 0.320 \leq 0.320$	16.0	
^a The compile ity equilib ^b The compile means grams	r assumes rium. r calcula s of mercu	that the five ted the concent ry in 1 x 10° c	day shaking time repr ration of mercury as: m³ of solution.	esents solubil-	
^C This value	calculated	d from the midd	le value of the three	numbers.	
		AUXILIARY	INFORMATION		
Metallic m of amino aci in an Erlenm stoppered f: days in a th The aqueo Acidified (H ganate solu sample was w reduced by described in The mercu flameless at photometry U (JEOL AA-HG sorption sp JAA-7000). Three det formed on ea The solub: Much larger obtained in l1 ranges.	ercury (0 d solution eyer flass lask was ermostat us phase 2SO4) pot ition was et ashed air and aref. 1. ery was (omic abso sing a me 01) and ectrophot ermination ch sample ility was solubili the pH 2 All report	.3 g) and 25 ml on were placed sk. The rubber rotated 1 to 5 at 37°C. was sampled. assium perman- s added. The and the mercury vaporized as determined by rption spectro- ercury analyzer an atomic ab- tometer (JEOL ons were per- pH dependent. ty values were - 3 and pH 10 - cted solubility	No information was source and purity of ESTIMATED ERROR: $\delta c_1/ppm$ See ranges $\delta T/K$ Not given. REFERENCES: 1. Kimura, Y.; Mille Anal. Chim. Acta	in table above.	
values are f 0.1. There we sion of oxyg	or soluti vas no mer en from t	ons at pH 7.2 <u>+</u> ntion of exclu- he samples.			

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COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Mercury; Hg; [7439-97-6]	Kawahara, H.; Nakamura, M.; Isbizaki, N.; Yamada, T.
(2) See following seven data sheets.	Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.
(3) Hanks' balanced salt solution; see formulation below.	Shika Rikogaku Zasshi <u>1979</u> , 20, 137 - 41.

COMMENTS AND/OR ADDITIONAL DATA:

Paul (ref. 1) says that balanced salt solutions are media in which cell growth of tissues from warm-blooded vertebrates is maintained in either an air or special carbon dioxide atmosphere. The function of the balanced salt solution is to maintain the pH and osmotic pressure and to provide an adequate concentration of essential inorganic ions without allowing calcium deposition.

In preparing a balanced salt solution, it is essential that calcium and phosphate ions should not meet until the solution is quite dilute, and that the solution should not be made basic until the last minute. Thus, the calcium chloride is sometimes dissolved separately and slowly added to the solution of other components. Also, the sodium bicarbonate solution is prepared separately and added at the end to adjust pH.

Hanks (ref. 2 and 3) has described the solution. According to Paul (ref. 1), the solution is for use with an air atmosphere, but it has also been used with special carbon dioxide atmospheres. The solution used in the present work had the composition below.

Component	Registry Number	$c/mg dm^{-3}$	c/mol dm ⁻³
NaCl	[7647-14-5]	8000	0.137
KCl	[7447-40-7]	400	0.00536
CaCl	[10043-52-4]	140	0.00126
Maso .7HoO	[7487-88-9]	200	0.00021
NaoHPOA· 2HoO	[10028-24-7]	48	0.00031
KH2PO	[7778-77-0]	60	0.00044
D-Glucose	[50-99-7]	1000	0.00555
Kanamycin	[8063-07-8]	60	-
(Kanamycin A)	[59-01-8]		
Phenol Red	[143-74-8]	6	-
NaHCO3	[144-55-8]	350	0.0042

The balanced salt solution is prepared in several steps:

- (1) Solution 1 is prepared by dissolving the first eight components listed above in a little less than one liter of distilled water.
- (2) Solution 2 is prepared by dissolving one gram of phenol red in 100 cm³ of one molar dm⁻³ NaOH solution.
 (3) An 0.6 cm³ volume of solution 2 is added to solution 1 and the
- solution is sterilized under high pressure.
 (4) Solution 3 is prepared to be 6 wt % NaHCO3. It is sterilized by filtration and then 3 cm³ is added to the sterilized solution 1. The total solution is brought to one liter.

Note that sterilization by heat when the NaHCO₃ is present converts the bicarbonate to carbonate with evolution of CO₂. The reverse reaction occurs at room temperature, $2NaHCO_3(aq) = Na_2CO_3(aq) + CO_2(aq)$.

REFERENCES:

- 1. Paul, J. Cell and Tissure Culture, 4th Ed., Williams and Wilkins, Baltimore, 1970, Chapter VI.
- 2. Hanks, J. H. J. Cell Comp. Physiol. 1948, 31, 235.
- 3. Hanks, J. H.; Wallace, R. E. Proc. Soc. exp. Biol. NY <u>1949</u>, 71, 196.

COMPONENTS :		ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]		Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.;		
(2) Hanks' Balanced Salt Solution		Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.		
(3) Water;	H ₂ O; [7732-18-5]	Shika Rikogaku Zasshi <u>1979</u> , 20, 137 - 41.		
VARIABLES:		PREPARED BY:		
	T/K = 310.15			
Gammad	$pH = 7.2 \pm 0.1$	H. L. Clever		
Composi	tion: refer to page 8/ .			
EXPERIMENTAL	VALUES:			
Shaking		Mercury ^a		
Time	. Co	ncentration Mole Molality		
	ppm ^D	Fraction		
t/days	10	$r_{c_1/mol dm^{-3}} 10^{s_{x_1}} 10^{r_{m_1/mol kg^{-1}}}$		
Water				
5	0.078 ≤ 0.086 ≤ 0.090	4.2 <u>+</u> 0.2		
5	0.078 <u><</u> 0.087 <u><</u> 0.095	4.3 ± 0.3		
5	$0.070 \leq 0.095 \leq 0.120$	4.7 <u>+</u> 1.0		
		$4.4 \pm 0.7^{\circ}$ 8.0 4.4		
Hanks' Bal	anced Salt Solution			
5	$0.173 \leq 0.208 \leq 0.243$ 1	0.4 ± 1.7 10.4		
^a The compiler assumes that the five day shaking time represents solubil- ity equilibrium.				
b _{The compi}	ler calculated the concer	tration of mercury assuming that ppm		
means gra	ms of mercury in i x 10° C			
^C The avera	ge for water is from the t	he five days of shaking time.		
	AUXILIAR	Y INFORMATION		
METHOD/APPAR	ATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Metallic	mercury (0.3 g) and 25 ml	No information was given on the		
of amino a	cid solution were placed	source and purity of materials.		
stoppered	flask was rotated 1 to 5			
days in a	thermostat at 37°C.			
Acidified	(H_SO_) notassium perman-			
ganate so	olution was added. The			
sample was	wet ashed and the mercury			
described	in ref. 1.			
The mer	cury was determined by			
flameless	atomic absorption spectro-	ESTIMATED ERROR:		
(JEOL AA-HG 01) and an atomic ab-		Se (non coo ranges in table above		
sorption spectrophotometer (JEOL JAA-7000).		δτ/K Not given.		
Three d formed on	eterminations were per- each sample.	REFERENCES :		
The solu	ubility was pH dependent.	1. Kimura, Y.; Miller, V. L.		
Much large	er solubility values were	Anal. Unim. Acta <u>1962</u> , 27, 325.		
11 ranges.	All reported solubility			
values are	e for solutions at pH 7.2 \pm			
sion of ox	ygen from the samples.			

COMPONENTS :			ORIGINAL MEASUREMENT	ïS:
(1) Mercury;	Hg; [7439-97-6]		Kawakara, H.; Nakamura, M.; Ishizaki, N.: Yamada, T.:	
(2) L-Methionine; C ₅ H ₁₁ NO ₂ S; [63-68-3]		Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.		
(3) Hanks' ba	lanced salt soluti	on	Shika Rikogaku 137 - 41.	Zasshi <u>1979</u> , 20,
VARIABLES: T/	K = 310.15		PREPARED BY:	
p compositio	<pre>H = 7.2 ± 0.1 n = See descriptio</pre>	n	Hiroshi Miyamot	o
EXPERIMENTAL VALU	JES:			
Shaking Time	L-Methionine		Mercury	a
t/days	c ₂ /mg dm ⁻ 3		ppm ^b	10' <i>c₁/</i> mol dm ^{-3C} (compiler)
5	0	0.173	<u><</u> 0.208 <u><</u> 0.243	10.4
5	0.01	0.374	<u>< 0.456 < 0.556</u>	22.7
^a The comp solubili	>iler assumes that ty equilibrium.	t the f	ive day shaking	time represents
b _{The comp that ppm}	piler calculated f	the com ercury	ncentration of m in 1 x 10° cm³ of	ercury assuming solution.
Cml to un l				
This val	ue calculated from	n the m	liddle value of th	he three numbers.
	AU	XILIARY	INFORMATION	
METHOD/APPARATUS	/PROCEDURE:		SOURCE AND PURITY OF	F MATERIALS:
Metallic me	ercury (0.3 g) and	25 ml	No information	n who given on the
of amino acio	i solution were player flask. The r	laced	source and puri	ty of materials.
stoppered fla	ask was rotated 1	to 5	_	-
days in a the	rmostat at 37°C. s phase was sam	pled.		
Acidified (H2	SO ₄) potassium pe	rman-		
ganate solu	tion was added.	The		
reduced by	air and vaporize	ed as		
described in	ref. 1.	d hu		
flameless ato	mic absorption spe	ctro-	ESTIMATED ERROR.	
photometry us	ing a mercury ana	lyzer	DOTTINITED ERROR.	
JAA-7000).	ctrophotometer	(JEOL	δ <i>c</i> ₁ /ppm See ran δ <i>T</i> 7K Not giv	ges in table above. en.
Three dete	rminations were	per-	REFERENCES :	
The solubi	lity was pH depen	dent.	1. Kimura. V. M	liller, V. L.
Much larger	solubility values	were	Anal. Chim. A	cta <u>1962</u> , 27, 325.
11 ranges. R	All reported solub	ility		
values are fo	r solutions at pH	7.2 ±		
sion of oxyge	n from the samples	5.		

COMPO	NENTS:			ORIGINAL MEASUREMENTS:	
(1) (2)	 Mercury; Hg; [7439-97-6] L-Histidine monohydrochloride; CcHoN2O2.HCl; [645-35-2] 		Kawakara, H.; Na Ishizaki, N.; Ya Kawamoto, T.; Hi Sogawa, K.; Maeh	kamura, M.; mada, T.; kari, S.; ara, S.	
(3)	Hanks' bal	anced salt solutio	on	Shika Rikogaku Z 137 - 41.	asshi <u>1979</u> , 20,
VARIA	BLES: T/K	= 310.15		PREPARED BY:	
	pH composition	<pre>1 = 7.2 ± 0.1 1 = See description on page 87.</pre>	n	Hiroshi Miyamoto	
EXPER	IMENTAL VALUE	:5:			
1	Shaking	L-Histidine HCl		Mercury ^a	
	Time t/days	c ₂ /mg dm ⁻³		ppm ^b	10'c1/mol dm ^{-3C} (compiler)
	5	0	0.173	<u>< 0.208 < 0.243</u>	10.4
	5	0.01	3.244	<u>≺</u> 3.600 <u>≺</u> 3.956	179.5
	^a The comp solubilit	iler assumes that y equilibrium.	the f	tive day shaking t	ime represents
	^b The comp that ppm	iler calculated t means grams of me	he co rcurv	ncentration of me in 1 x 10° cm³ of s	rcury assuming solution.
	C _{whis valu}	e calculated from	the T	niddle value of the	three numbers
Į	11110 1010	e ourourubeu rrom	C 11 C 11	addie value of ene	. enree numbers.
	· +				
		AUX	ILIARY	INFORMATION	
METHO	DD/APPARATUS/I	ROCEDURE:		SOURCE AND PURITY OF	MATERIALS:
M of a sto days T Acio gan sam red des	etallic meanino acid an Erlenme ppered fla s in a ther he aqueous dified (H2S ate solut ple was we uced by a cribed in p	ccury (0.3 g) and 2 solution were pl yer flask. The ru sk was rotated 1 mostat at 37°C. phase was samp O4 potassium per ion was added. ashed and the men ir and vaporize ref. 1. y was determine	25 ml aced bber to 5 oled. The rcury d as d by	No information source and purit	was given on the y of materials.
phot	heress atom tometry us:	ing a mercury anal	lyzer	ESTIMATED ERROR:	
(JE) sor JAA	OL AA-HG 0 ption spec -7000).	1) and an atomic trophotometer (ab− JEOL	$\delta c_1/\text{ppm}$ See rang $\delta T/K$ Not give	es in table above. n.
for	nree deter med on each	minations were sample.	per-	REFERENCES:	
TI Muc obta 11 valu 0.1. sion	he solubil h larger s: ained in th ranges. A ues are for There wa n of oxygen	ity was pH depend olubility values e pH 2 - 3 and pH ll reported solubits solutions at pH s no mention of ex from the samples	lent. were 10 - ility 7.2 <u>+</u> clu-	l. Kimura, Y.; Mi Anal. Chim. Ac	ller, V. L. <i>ta <u>1962</u>, 27,</i> 325.

COMPONENTS:	ORIGINAL MEASUREMENTS:
 (1) Mercury; Hg; [7439-97-6] (2) L-Cysteine hydrochloride; CoHonos, HC1: [52-89-1] 	Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.; Kawamoto, T.; Hikari, S.; Sogawa, K.; Maehara, S.
(3) Hanks' balanced salt solution	Shika RikogakuZasshi <u>1979</u> , 20, 137 - 41.
VARIABLES:	
$\begin{array}{rcl} P/K = 310.15 \\ pH = 7.2 \pm 0.1 \\ composition = See description \\ on page 87 \end{array}$	Hiroshi Miyamoto
EXPERIMENTAL VALUES:	
Shaking L-Cysteine HCl	Mercury ^a
Time t/days c ₂ /mg dm ⁻³	ppm ^b 10'c ₁ /mol dm ^{-;C} (compiler)
	· · · · · · · · · · · · · · · · · · ·
5 0 0.173	<u>< 0.208 < 0.243</u> 10.4
5 0.01 89.310	\leq 100.000 \leq 110.700 4985
^a The compiler assumes that the fiv bility equilibrium.	e day shaking time represents solu-
^b The compiler calculated the concen means grams of mercury in 1 x 10 ⁵	tration of mercury assuming that ppm
Curbic value calculated from the mid	dle value of the three numbers
This value calculated from the mit	die value of the three humbers.
AUXILIAR	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
of amino acid solution were placed in an Erlenmeyer flask. The rubber stoppered flask was rotated 1 to 5 days in a thermostat at 37°C. The aqueous phase was sampled. Acidified (H ₂ SO ₄) potassium perman- ganate solution was added. The sample was wet ashed and the mercury reduced by air and vaporized as	No information was given on the source and purity of materials.
described in ref. 1. The mercury was determined by	
flameless atomic absorption spectro- photometry using a mercury analyzer (JEOL AA-HG 01) and an atomic ab- sorption spectrophotometer (JEOL JAA-7000).	ESTIMATED ERROR: $\delta c_{7}/\text{ppm}$ See ranges in table above. $\delta T/K$ Not given.
formed on each sample. The solubility was pH dependent. Much larger solubility values were obtained in the pH 2 - 3 and pH 10 - 11 ranges. All reported solubility values are for solutions at pH 7.2 <u>+</u> 0.1. There was no mention of exclu- sion of oxygen from the samples.	REFERENCES: 1. Kimura, Y.; Miller, V. L. Anal. Chim. Acta <u>1962</u> , 27, 325.

COMPON	NENTS:			ORIGINAL MEASUREMENTS	5:
(1)	(1) Mercury; Hg; [7439-97-6]			Kawakara, H.; N Ishizaki, N.; Y	akamura, M.; amada, T.;
(2)) L-Ornithine monohydrochloride; C ₆ H ₁₂ N ₂ O ₂ .HCl; [3184-13-2]		Kawamoto, T.; H Sogawa, K.; Mae	ikari, S.; hara, S.	
(3)	Hanks' bal	anced salt soluti	on	Shika Rikogaku 137 - 41.	Zaeshi <u>1979</u> , 20,
VARIA	BLES: T/H	: = 310.15		PREPARED BY:	
c	pI composition	$H = 7.2 \pm 0.1$ h = See descriptions on page 87.	n	Hiroshi Miyamot	o
EXPER	IMENTAL VALU			I	
	Shaking	L-Ornithine HCl		Mercury	a
	Time t/days	c ₂ /mg dm ⁻		ppmp	l0 ⁷ c ₁ /mol dm ^{-3C} (compiler)
	5	0	0.173	< 0.208 < 0.243	10.4
	-	•			
	5	0.01	0.952	$2 \leq 0.988 \leq 1.023$	49.3
	^a The comp solubilit	iler assumes that y equilibrium.	the f	five day shaking	time represents
^C This value calculated from the middle value of the three numbers.					e three numbers.
		AU	(ILIARY	INFORMATION	
METHO	D/APPARATUS/	PROCEDURE:			
Me of a in a stop days Th Acid	etallic me amino acid an Erlenme ppered fla s in a the he aqueous dified (H _c)	rcurv (0.3 g) and	25 ml	SOURCE AND PURITY OF	MATERIALS:
gan samj red dese Tl	ate solut ple was we uced by a cribed in he mercur	solution were p yer flask. The r sk was rotated 1 mostat at 37°C. phase was sam 50 ₄) potassium pe ion was added. t ashed and the me ir and vaporize ref. 1. y was determine	laced ubber to 5 pled. rman- The rcury ed as ed by	SOURCE AND PURITY OF No informatior source and puri	MATERIALS: a was given on the ty of materials.
gan samj red des Tl flar phot	ate solut ple was we uced by a cribed in he mercur meless atometry us	solution were p yer flask. The r sk was rotated 1 mostat at 37°C. phase was sam SO ₄) potassium pe ion was added. t ashed and the me ir and vaporize ref. 1. y was determine nic absorption spe ing a mercury ana	laced ubber to 5 pled. rman- The rcury ed as ed by ctro- lvzer	SOURCE AND PURITY OF No informatior source and puri	MATERIALS: a was given on the ty of materials.
gan samj red desc Tl flan phot (JEC sorj JAA-	ate solut ple was we uced by a cribed in he mercur meless atom tometry us OL AA-HG (ption spec -7000).	solution were p yer flask. The r sk was rotated 1 cmostat at 37°C. phase was sam SO ₄) potassium pe ion was added. t ashed and the me ir and vaporize ref. 1. y was determine nic absorption spe ing a mercury ana 1) and an atomic trophotometer	laced ubber to 5 pled. rman- The rcury ed as ed by ctro- lyzer c ab- (JEOL	SOURCE AND PURITY OF No information source and puri ESTIMATED ERROR: &c1/ppm See ran &T/K Not giv	MATERIALS: h was given on the ty of materials. ges in table above. en.
gan sam red desc Tl flan phot (JE(Sor) JAA Th	ate solut ple was we uced by a cribed in he mercur meless atom tometry us OL AA-HG (ption spec -7000). hree deter	solution were p yer flask. The r sk was rotated 1 mostat at 37°C. phase was sam 504) potassium pe ion was added. t ashed and the me ir and vaporize ref. 1. y was determine nic absorption spe ing a mercury ana (1) and an atomic trophotometer	laced ubber to 5 pled. rman- The rcury ed as ed by ctro- lyzer cab- (JEOL per-	SOURCE AND PURITY OF No information source and puri ESTIMATED ERROR: &c1/ppm See ran &T7K Not giv REFERENCES:	MATERIALS: h was given on the ty of materials. ges in table above. en.

Components :			ORIGINAL MEASUREMENT	S:
 Mercury; Hg; [7439-97-6] L-Lysine monohydrochloride; 			Kawakara, H.; N Ishizaki, N.; Y Kawamoto, T.; H	akamura, M.; amada, T.; likari, S.;
C ₆ H ₁₄ N ₂ O ₂ .HCl; [657-27-2]		Sogawa, K.; Mae	hara, S.	
(3) Hanks' balanced	salt solution		Shika Rikogaku 137 - 41.	Zasshi <u>1979</u> , 20,
VARIABLES: $T/K = 310$.15		PREPARED BY:	
pH = 7.2 composition = See on	\pm 0.1 description page 87 .		Hiroshi Miyamot	o
EXPERIMENTAL VALUES:				
Shaking L-Lys	ine HCl		Mercury	a
Time t/days c ₂ /m	g dm ⁻ ³		ppm ^b	10 ⁷ c ₁ /mol dm ^{-;C} (compiler)
5 0	0.	173	< 0.208 < 0.243	10.4
5 0	.01 1.	084	\leq 1.218 \leq 1.387	60.72
^a The compiler a solubility equi	ssumes that the stat the stat the state st	he f	ive day shaking	time represents
^b The compiler calculated the co that ppm means grams of mercury ^C This value calculated from the m			ncentration of m in 1 x 10° cm³ of iddle value of th	ercury assuming solution. he three numbers.
	AUXILI	ARY	INFORMATION	
METHOD/APPARATUS/PROCEDUR	E:		SOURCE AND PURITY OF	F MATERIALS:
Metallic mercury of amino acid solut in an Erlenmeyer fl stoppered flask was days in a thermostat The aqueous phas Acidified (H ₂ SO ₄) po ganate solution w sample was wet ashed reduced by air an described in ref. 1.	(U.3 g) and 25 ion were plac ask. The rubb s rotated 1 to at 37°C. e was sample otassium perma as added. T and the mercu d vaporized	ml ed er 5 ed. he in-	No information source and puri	n was given on the ty of materials.
The mercury was flameless atomic abs photometry using a r (JEOL AA-HG 01) and sorption spectroph JAA-7000). Three determinat formed on each samp The solubility wa Much larger solubil obtained in the pH 2 11 ranges. All rep values are for solut 0.1. There was no m	determined forption spectr mercury analyz a an atomic a otometer (JE ions were pe le. as pH dependen ity values we - 3 and pH 10 orted solubili fions at pH 7.2 ention of excl	by cer bo r t.e y t.e y t.e y t.e y t.e y	ESTIMATED ERROR: & c1/ppm See ran & T/K Not giv REFERENCES: 1. Kimura, Y.; M Anal. Chim. A	ges in table above. en. iller, V. L. <i>cta</i> <u>1962</u> , 27, 325.
sion of oxygen from	the samples.			

COMPONENTS :	ORIGINAL MEASUREMENTS:			
 Mercury; Hg; [7439-97-6] L-Arginine monohydrochloride; 	Kawakara, H.; Nakamura, M.; Ishizaki, N.; Yamada, T.; Kawamoto, T.; Hikari, S.;			
$C_{6}H_{14}N_{4}O_{2}.HC1;$ [1119-34-2]	Sogawa, K.; Maehara, S.			
(3) Hanks' balanced salt solution	Shika Rikogaku Zasshi <u>1979</u> , 20, 137 - 41.			
VARIABLES: $T/K = 310.15$	PREPARED BY:			
$pH = 7.2 \pm 0.1$	Virachi Vivomoto			
on page 87 .	hiroshi miyamoto			
EXPERIMENTAL VALUES:				
Shaking L-Arginine HCl	Mercury ^a			
Time	$10^{7} a^{-1} m^{-3}$			
	(compiler)			
5 0 0.173	$\leq 0.208 \leq 0.243$ 10.4			
5 0.01 0.315	< 0.340 < 0.365 16.9			
	<u> </u>			
^a The compiler assumes that the f solubility equilibrium.	ive day shaking time represents			
but a service a laulated the as	noontration of morevey occuming			
that ppm means grams of mercury	in 1 x 10° cm ³ of solution.			
Continue and subset from the set	dille welve of the three numbers			
This value calculated from the m	liddle value of the three humbers.			
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Metallic mercury (0.3 g) and 25 ml	No information was given on the			
in an Erlenmever flask. The rubber	source and purity of materials.			
stoppered flask was rotated 1 to 5				
days in a thermostat at 37°C.				
Acidified (H ₂ SO,) potassium perman-				
ganate solution was added. The				
sample was wet ashed and the mercury				
described in ref. 1.				
The mercury was determined by				
flameless atomic absorption spectro-	ESTIMATED ERROR:			
(JEOL AA-HG 01) and an atomic ab-	$\delta c_{\star}/\text{ppm}$ See ranges in table above.			
sorption spectrophotometer (JEOL	δT/K Not given.			
Three determinations were per-				
formed on each sample.	REFERENCES:			
The solubility was pH dependent.	1. Kimura, Y.; Miller, V. L.			
obtained in the pH 2 - 3 and pH 10 -	Anal. Unim. Acta <u>1962</u> , 27, 325.			
11 ranges. All reported solubility				
Values are for solutions at pH 7.2 +				
sion of oxygen from the samples.				

COMPONENTS :				ORIGIN	AL MEASUREN	ENTS:	
(1) Mercury; Hg; [7439-97-6]					ssing, E.	T.; Ro	gne, A. K. G.
(2) Humus (3) Water; H ₂ O; [7732-18-5]					ten <u>1982</u>	, 38, 4	06 - 8.
VARIABLES:				PREPAR	ED BY:		
T/K Not roor	given, a n tempera	ssumed t ture.	co be	H. 1 M.	L. Clever Iwamoto		
XPERIMENTAL V	ALUES:						
Sample	рн	[Col Pt,/mg	or dm-3	TO /mg d	с m ^{-з}	Mercury Solubility
	Before	After	Before	After	Before	After	<i>c</i> 1/µgdm ⁻³
Ser. A							
^H 2 ^O	 4.5	5.9	-	0 181	-	<0.5	7
2	6.7	6.7	26	30	_	4.2	7
3	6.8	6.8	24	28	-	4.9	8
4 5	6.8 6.6	6.8 6.7	51 24	55 26	-	6.2 4.3	10 8
Sor B							Ū
HoO		5.7	-	0		0.6	9
6	4.4	4.4	74	80	13.3	11.6	19
7	4.4	4.5	96	104	14.8	16.1	21
8	5.4	5.5	78	82	9.9	10.1	13
Ser. C							
Blank	4.8	5.0	0	0	7.0	3.0	13
9 10	5.6 5.7	6.6 57	67 128	71	6.3	4.8	28
11	5.2	5.2	185	195	14.0	14.8	27
12	4.9	5.0	205	215	16.0	17.0	28
13	4.6	4.7	278	271	24.5	26.0	36

The before and after refer to before and after saturation with metallic mercury.

The H₂O samples are distilled water. The water solubility of 7 - 9 micrograms of mercury per liter of water correspond to a mole fraction solubility of (6 - 8) x 10^{-10} or a molality of (3.5 - 4.5) x 10^{-10} .

The blank was prepared to be an artificial "surface water" without organic material. Its composition is $5.62 \text{ mg dm}^{-3} \text{ NaHCO}_3$, $1.18 \text{ mg dm}^{-3} \text{ MgCO}_3$, $7.17 \text{ mg dm}^{-3} \text{ CaSO}_4$, and $10.96 \text{ mg dm}^{-3} \text{ CaCl}_2$.

The samples are described further in the table below.

Sample Number	Location of Sample Taken	Date	Dilution of Mixing
1 2 3 4 5 6 7 8 9 10 11 12 13	Hellerudmyra Byvann Smavann Smavannsbekk Øvre Heffelivann Hellerudmyra Hellerudmyra	1980, Feb. 28 1980, Mar. 4 1980, Mar. 4 1980, Mar. 4 1980, Mar. 4 1980, May 1	None None None None None #1 and #6 mixed 1:1 #1 and #5 mixed 1:1 Blank and #13 mixed 3:1 Blank and #4 mixed 1:1 Blank and #4 mixed 1:2 Blank and #4 mixed 1:3 None

COMPONENTS:	ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6]	Gjessing, E. T.; Rogne, A. K. G.		
(2) Humus	Vatten <u>1982</u> , 38, 406 - 8.		
(3) Water; H ₂ O; [7732-18-5]			
VARIABLES:	PREPARED BY:		
T/K Not given, assumed to be room temperature.	H. L. Clever M. Iwamoto		

EXPERIMENTAL VALUES:

The color and the total organic carbon, TOC, are measures of the humus in the samples. The authors show that "dissolvable" mercury increases linearly with both color and TOC.

The problem with the results of this study is that the reported mercury concentration in water is about one-tenth the value reported by most other workers at 298.15 K.

AUXILIARY INFORMATION

Some of the

Thus the

METHOD/APPARATUS/PROCEDURE:

different locations.

on other data sheet].

try (Perkin Elmer 460).

The experiment was performed by adding an aliquot amount of pure mercury (5 drops per 500 cm³ from a

polarographic analyzer) to natural

humus water samples from several

samples were diluted with artificial

"surface water" without organic material [see description of 'blank'

experiment covered a wide range of humus concentrations. All samples

were filtered through glass-fiberfilters (Whatman GF/C) before adding the mercury. The samples were left on a shaking table for 19 hours and the supernatant analyzed for mercury by atomic absorption spectrophotome-

SOURCE AND PURITY OF MATERIALS:

(1)	Mercury.		Source		not	given.	
	Stated	τo	be	pure	me	rcury	•

- (2) Humus. Natural humus water. See information on other sheet.
- (3) Water. Distilled.

ESTIMATED ERROR:

REFERENCES:

96

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6] Mercury-203; ²⁰³ Hg; [13982-78-0]	Hursh, J. B.		
(2) Whole blood	JAT, J. Appl. Toxicol. <u>1985</u> , 5, 327 - 32.		
VARIABLES:	PREPARED BY:		
T/K = 283 - 310	H. L. Clever		
EXPERIMENTAL VALUES:			
Temperature Ca Sample Ga	rrier Ostwald Concentration ^b s Coefficient ^a		
<i>t/°C T/K</i>	Av. \pm SE (no.) $10^{7}c_{1}/mol dm^{-3}$		
10 283.15 Whole blood Whole blood	Air $10.50 \pm 0.25(5)$ 3.06		
(heparin no ethanol) Whole blood	Air 10.36 \pm 0.22(3) 3.02		
(heparin no ethanol)	N_2 11.12 ± 0.30(4) 3.24		
22 295.15 Whole blood	Air 6.62 <u>+</u> 0.06(5) 5.37		
37 310.15 Whole blood	Air 4.20 <u>+</u> 0.08(5) 10.9		
 ^a The Ostwald coefficient is ((ng H above is the average <u>+</u> standard er; ^b The concentrations were calculated equilibrium with pure liquid mercur of Ambroge and Sprake (ref. 1). 	g/mL fluid)/(ng Hg/mL air)). Given ror (number of determinations). by the compiler for mercury vapor in y from the vapor pressure evaluation be mercury vapor pressure and vapor		
concentration used at each temperat	ure are: 295 310 869 19.90 66.89		
$c_1^2/(\text{ng Hg/mL air})$ 5	.85 16.27 52.03		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: The equilibrium cell is a 50 mL syringe thermostated in a Dewar flask. A 10 mL liquid sample and a 40 mL carrier gas with Hg vapor sample are drawn into the cell. The cell is turned and rolled on the cylinder axis for 120 to 300 sec. Equilibrium is rapidly attained through the large contact area be- tween liquid and vapor phases. Both the liquid and vapor phases are sampled. The liquid phase is aer- ated and the Hg adsorbed on Hopca- lite. The Hg radioactivity is meas- ured on a liquid scintillation coun- ter. Corrections are applied for the counter efficiency, and for radioactive decay of the Hg. The whole blood results were adjusted to a hematocrit of 42 %. Blood speci- fic gravity was taken as 1.057. An	 SOURCE AND PURITY OF MATERIALS: (1) Mercury. Prepared by reduction of ²⁰³HgCl₂. The Hg vapor is swept into a leak-proof Saran bag. (2) Whole blood. Red Cross fresh blood was used within 72 hours of withdrawal. As received, each 450 mL of blood was mixed with 63 mL CPDA-1 anticoagulant containing 2.0 g dextrose, 1.66 g Na citrate, 206 mg citric acid, 149 mg Na₂HPO₄, and 17.3 mg adenine. At time of use 30 µL 95 % ethanol was added to 10 mL blood samples to inhibit Hg oxidation. Samples labelled (heparin no ethanol) were fresh drawn blood to check effect of additives. The effect was considered negligible. 		
empirical correction was made for Hg oxidized during the experiment. The added ethanol inhibits the oxida- tion.	REFERENCES: 1. Ambrose, D.; Sprake, C. H. S. J. Chem. Thermodynam. <u>1972</u> , 4, 603.		

COMPONENTS :	ORIGINAL MEASUREMENTS:	
(1) Mercury; Hg; [7439-97-6] Mercury-203: 203Hg: [13982-78-0]	Hursh, J. B.	
(2) Plasma	JAT, J. Appl. Toxicol. <u>1985</u> , 5, 327 - 32.	
VARIARLES :	PREPARED RV.	
T/K = 283 - 310	H. L. Clever	
EXPERIMENTAL VALUES:		
Temperature Carrier Ostw	ald Concentration ^b	
t/°C T/K Av.	<u>+</u> SE (no.) $10^{7}c_{1}/mol dm^{-3}$	
10 283.15 Air 5.76	<u>+</u> 0.15(5) 1.68	
22 295.15 Air 3.36	± 0.04(5) 2.94	
37 310.15 Air 2.40	± 0.03(5) 6.23	
^a The Ostwald coefficient is air)). Given above is the (number of determinations).	((ng Hg/mL fluid)/(ng Hg/mL average <u>+</u> standard error	
b The concentrations were cal mercury vapor in equilibrin from the vapor pressure of Sprake (ref. 1). The mercu concentration used at each	culated by the compiler for om with pure liquid mercury evaluation of Ambrose and ry vapor pressure and vapor temperature are:	
T/K 2 p ² /Pa c ² /(ng Hg/mL air)	83 295 310 6.869 19.90 66.89 5.85 16.27 52.03	
	ΙΝΕΩΡΑΤΙΟΝ	
	SOURCE AND DURTTY OF MATERIALS.	
METHOD/APPARATUS/PROCEDURE: The equilibrium cell is a 50 mL syringe thermostated in a Dewar flask. A 10 mL liquid sample and a 40 mL carrier gas with Hg vapor sample are drawn into the cell. The cell is turned and rolled on the cylinder axis for 120 to 300 sec. Equilibrium is rapidly attained through the large contact area be- tween liquid and vapor phases. Both the liquid and vapor phases are sampled. The liquid phase is aer- ated and the Hg adsorbed on Hopca- lite. The Hg radioactivity is meas- ured on a liquid scintillation coun- ter. Corrections are applied for the counter efficiency, and for radioactive decay of the Hg.	 SOURCE AND PURITY OF MATERIALS: (1) Mercury. Prepared by reduction of ²⁰³HgCl₂. The Hg vapor is swept into a leak-proof Saran bag. (2) Plasma. Prepared from the Red Cross fresh whole blood de- scribed on the previous data sheet. ESTIMATED ERROR: REFERENCES: 1. Ambrose, D.; Sprake, C. H. S. J. Chem. Thermodument, 1972, 4 	
	603.	

COMPONENTS :	ORIGINAL MEASUREMENTS:		
(1) Mercury; Hg; [7439-97-6] Mercury-203; ²⁰³ Hg; [13982-78-0]	Hursh, J. B.		
(2) Hemoglobin	JAT, J. Appl. Toxicol. <u>1985</u> , 5, 327 - 32.		
(3) Water; H ₂ O; [7732-18-5]			
VARIABLES:	PREPARED BY:		
T/K = 295	H. L. Clever		
EXPERIMENTAL VALUES:			
Temperature Hemoglobin Carrie	r Ostwald Concentration ^b		
t/°C T/K wt.%	$10^{\circ}c_{1}/\text{mol dm}^{-3}$		
22 295.15 0 ^c -	(3.05) (2.47)		
2.32 Air 6.50 Air	3.44, 3.51 2.79, 2.85 4.49, 4.65 3.64, 3.77		
(14.0) -	(6.05) (4.91)		
^a The Ostwald coefficient is ('ng Hg/mL fluid)/(ng Hg/mL air)).		
 ^b The concentrations were calculations were calculated values at 295. 19.90 Pa and vapor concentrate ^c The value for water, 0 wt. % extrapolation of the other paper). The value is about 3.22 at 295.15 K calculated by in the mercury + water evaluated hemoglobin is a value calculated coefficient assuming a lipid and the remaining solub water (see Fig. 3). 	alated by the compiler for mer- th pure liquid mercury from the of Ambrose and Sprake (ref. 1). 15 K are mercury vapor pressure tion 16.27 ng Hg/mL air. Themoglobin, is from a graphical three values (Fig. 3 in the 5 % smaller than the value of y the compiler from the results ation. The value at 14.0 wt. % ated from the whole blood Ost- contribution of 0.57 from the ility due to the hemoglobin and		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
The equilibrium cell is a 50 mL syringe thermostated in a Dewar flask. A 10 mL liquid sample and a 40 mL carrier gas with Hg vapor sample are drawn into the cell. The cell is turned and rolled on the cylinder axis for 120 to 300 sec. Equilibrium is rapidly attained through the large contact area be- tween liquid and vapor phases. Both the liquid and vapor phases are sampled. The liquid phase is aer- ated and the Hg adsorbed on Hopca- lite. The Hg radioactivity is meas- ured on a liquid scintillation coun- ter. Corrections are applied for the counter efficiency, and for radioactive decay of the Hg.	 (1) Mercury. Prepared by reduction of ²⁰³HgCl₂. The Hg vapor is swept into a leak-proof Saran bag. (2) Hemoglobin. Fisher Hemoglobin powder. Content determined in subsequent analysis. (3) Water. Distilled. (3) Water. Distilled. ESTIMATED ERROR: 		
L	1		



COMPONENTS :	ORIGINAL MEASUREMENTS:
(1) Mercury; Hg; [7439-97-6] (From various dental amalgams)	Kawahara, H.; Yamada, T.; Nakamura, M.; Tomoda, T.; Kobayashi, H.; Saijo, A.; Kawata, Y.: Hikari, S.
(2) Tissue culture medium; YLH	
	Shika Rikogaku Zassi <u>1981</u> , 22, 295 - 9.
	Chem. Abstr. <u>1982</u> , 96, 91615a.
VARIABLES:	PREPARED BY:
T/K = 310	H. Mivamoto
SOURCE AND PURITY OF MATERIALS (contin	uued):
(2) Tissue culture medium (YLH).	
The following components are dise	olved in water.
Component	c/mg dm ⁻³
KCl	400.0
Na ₂ HPO ₄ ·2H ₂ O	60.0
M_2PO_4 $M_3SO_4 \cdot 7H_2O$	200.0
CaCl ₂ (anhyd.)	140.0
Glucose Lactalbumin Hydrolys	ate 5000.0
Yeast extract	1000.0
NaHCO3 Phenol red	5.0
Streptomycin	100.000 unit 100 mg
The figure is reproduced in a review	paper.
Kawahara, H.; Tomoda, T.; Kukizaki, H Nomura, Y.; Ikeda, H.; Kooda, Y.; Yok Yamanaka, M. <i>Bosei Kanri</i> <u>1982</u> , 26(3 Chem. Abstr. <u>1983</u> , 98, 90150z.	I.; Ogitani, Y.; Mitsutani, M.; ota, S.; Sakaguchi, K.; Iseki, T.;), 84 - 92;
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE:	REFERENCES:
The solutes were six dental amal- gams. The alloy powder and pure mercury were mechanically tritu- rated. The triturated dental amal-	Two additional studies on the solu- bility of metal from dental amalgams in saliva and in tissue culture media are:
gam was placed in the tissue culture medium (YLH) at 37°C and rotated at	Kawabara, H.: Tomoda, T.: Tomoda,
200 rpm for seven days. The amalgam	S.; Sakae, H.; Yokoyama, A.;
surface area/YLH solution volume ratio is 1 cm²/50 ml.	Suganami, S. J. Jpn. Soc. Biomater. <u>1983</u> , 1(1), 69 - 76.
Solution samples were taken on days	Kawahara, H.; Tomoda, T.; Tomoda,
tration in the YLH solution was determined by atomic absorption spectroscopy.	S.; Nomura, Y.; Matsumoto, A.; Kohda, H. J. Jpn. Soc. Biomater. <u>1983</u> , 1(1), 77 - 84.
The results are presented graphi- cally. A copy of the figure is shown on the previous page. The solubility is still increasing after seven days. The effect is greatest for the copper amalgam.	
It is not clear that air (oxygen) was excluded.	