COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

THE BINARY SYSTEM

Data for the solubility of sodium chlorate in water have been reported in 22 publications (1-21,30). Many of these studies deal with ternary systems, and the solubility in the binary $NaClO$-H_2O system is given as one point on a phase diagram. Many investigators (4, 6-8, 10-20) reported that the stable solid in equilibrium with the saturated solutions over the temperature range between 273 K and 373 K was anhydrous sodium chlorate. Nabiev, Tukhtaev, Musaev, Kuchrov and Shimmasov (21) measured the solubility for the binary $NaClO_3$-H_2O system at 254.7 K, and the stable phases were $NaClO_3$ and ice.

Blanc and Schmandt (1), Bell (3) and Treadwell and Ammann (9) reported solubilities in the binary $NaClO_3$-H_2O system only. Bittler (2), Bell (3) and Nies and Hulbert (18) reported solubilities over a wide temperature range.

A summary of solubility studies for the binary $NaClO_3$-H_2O system is given in Table 1.

1. Evaluation for the solubility based on mol kg^{-1} units.

Solubility at 273.2 K. The solubility has been reported in 3 publications (3, 7, 18). The value by Babaeva (7) is very distinctly larger than that of two other investigators. The arithmetic mean of two results (7, 18) is 7.465 mol kg^{-1}. The mean is designated as a tentative value.

Solubility at 283.2 K. The solubility has been reported in 2 publications (3, 18). The value recommended for the solubility at this temperature is taken as 8.220 mol kg^{-1}, which is the arithmetic mean of the two results.

Solubility at 293.2K. The solubility has been reported in 6 publications (3, 5-7, 9, 18) at 293.2 K, and in one article (1) at 293.0 K. The value of 8.994 mol kg^{-1} by Blanc and Schmandt (1) is larger than that of Nies and Hulbert (18). The reported solubilities at this temperature are widely distributed from 8.976 to 9.282 mol kg^{-1}. The tentative value was obtained as the arithmetic mean of 7 results (1, 3, 5-7, 9, 18). The value is 9.14 mol kg^{-1}, and the standard deviation is 0.14 mol kg^{-1}.

Solubility at 298.2 K. The solubility at this temperature has been reported in 10 publications (3, 8, 10-13, 17,19,20,30). The value of Vlasov and Shishkina (2) is distinctly lower than that of the other investigators, and the study of Arkhipo, Kashina and Kuzina (17) reported the highest value. Therefore, these two values are rejected. The arithmetic mean of the remaining 7 results (3,8,10-13,19,30) is 9.43 mol kg^{-1}, and the standard deviation is 0.02 mol kg^{-1}. The mean is designated as a recommended value.

Solubility at 303.2 K. The value has been reported in 3 publications (1, 3, 18). The arithmetic mean of 3 results is 9.86 mol kg^{-1}, and the standard deviation is 0.04 mol kg^{-1}. The mean is designated as a recommended value.

Solubility at 308.2 K. The solubility has been reported in one publication (3) at 308.2 K and in one publication (1) at 308.3 K. Both values are identical. The estimated error in temperature measurement is $\pm$ 0.02 K by Bell (1) and nothing specified by Blanc and Schmandt (1). The tentative value at 308.2 K is taken as 10.33 mol kg^{-1}.

Solubility at 313.2 K. The solubility has been reported in 4 publications (3, 4, 7, 18). The value of Babaeba (18) was markedly higher than those of the other researchers (3, 4, 7) and is therefore rejected. The arithmetic mean of the remaining 3 results (3, 4, 7) is 10.86 mol kg^{-1}, and the standard deviation is 0.07 mol kg^{-1}. The mean is designated as a recommended value.

Solubility at 318.2 K. The recommended value for the solubility at this temperature is taken as 11.27 mol kg^{-1} which is the arithmetic mean of two results (8, 18).

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

Table 1. Summary of Solubility Data for the Binary $NaClO_3$-H_2O System

T/K	m_1/mol kg^{-1}	Reference
268.2	7.096	(18) Nies; Hulbert
273.2	7.451	(18) Nies; Hulbert
273.2	7.478	(3) Bell
273.2	7.690	(7) Babaeva
277.9	7.834	(1) Blanc; Schmandt
283.2	8.208	(18) Nies; Hulbert
283.2	8.232	(3) Bell
288.2	8.641	(8) Ricci; Yenick
291.2	8.976	(14) Windmaisser; Stockl
292.2	8.770	(11) Ricci; Weltman
293.0	8.994	(1) Blanc; Schmandt
293.2	8.976	(18) Nies; Hulbert
293.2	9.008	(3) Bell
293.2	9.20	(9) Treadwell; Ammann
293.2	9.231	(5) Di Capua; Scaletti
293.2	9.28	(6) Di Capua; Bertoni
293.2	9.282	(7) Babaeva
297.4	9.26	(4) Il'inskli
298.2	9.410	(30) Ricci; Offenbach
298.2	9.352	(20) Vlasov; Shishkina
298.2	9.402	(13) Ricci; Linke
298.2	9.417	(11) Ricci; Weltman
298.2	9.421	(10) Swenson; Ricci
298.2	9.433	(12) Ricci
298.2	9.444	(3) Bell
298.2	9.448	(8) Ricci; Yanick
298.2	9.470	(19) Arkhipov; Kashina
298.2	9.504	(17) Arkhipov; Kashina; Kuzina
303.2	9.818	(18) Nies; Hulbert
303.2	9.865	(1) Blanc; Schmandt
303.2	9.896	(3) Bell
308.2	10.33	(3) Bell
308.3	10.33	(1) Blanc; Schmandt
313.2	10.81	(18) Nies; Hulbert
313.2	10.83	(3) Bell
313.2	10.94	(4) Il'inskii
313.2	12.13	(7) Babaeva
317.9	11.25	(1) Blanc; Schmandt
318.2	11.25	(18) Nies; Hulbert
318.2	11.29	(8) Ricci; Yenick
323.2	11.71	(11) Ricci; Weltman
323.2	11.74	(10) Swenson; Ricci
323.2	11.76	(18) Nies; Hulbert
333.2	12.88	(18) Nies; Hulbert
348.2	14.79	(18) Nies; Hulbert
348.2	14.94	(8) Ricci; Yenick
371.2	18.47	(18) Nies; Hulbert
373.2	19.16	(3) Bell

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6] (2) Water; H_2O; [7732-18-5]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan June, 1984

CRITICAL EVALUATION:

Solubility at 323.2K. The solubility has been reported in 3 publications (10, 11, 18). The arithmetic mean of 3 results is 11.74 mol kg^{-1}, and the standard deviation is 0.03 mol kg^{-1}. The mean is designated as a recommended value.

Solubility at 348.2 K. The recommended value for the solubility at this temperature is taken as 14.87 mol kg^{-1} which is the arithmetic mean of two results (8, 18).

Solubility at other temperatures. The solubilities at 277.9 K (1), 288.2 K (8), 292.2 K (11), 297.4 K (4), 317.9 K (1), 333.2 K (18), 371.2 K (18) and 373.2 K (3) are singular values, and are designated as tentative solubilities. A summary of all solubility data in the binary for which anhydrous $NaClO_3$ is the sole solid phase is given in Table 1.

The recommended and tentative solubilities for the binary $NaClO_3$-H_2O system for which the solid phase is the anhydrous salt is given in Table 2. The experimental mol kg^{-1} solubilities were fitted to the following smoothing equation:

$$\ln (m_1/\text{mol kg}^{-1}) = 34.97670 - 48.488690/(T/100\ \text{K}) - 31.26105 \ln (T/100\ \text{K}) + 5.929873\ (T/100\ \text{K}) \qquad \sigma = 0.08$$

The mole fraction solubilities calculated by the evaluator was fitted to the general solubility equation (see the PREFACE and eqs. [1] and [2] in the critical evaluation for the binary $LiClO_3$-H_2O system):

$$Y = -4838.039/(T/K) - 27.7668\ \ell n(T/K) + 156.124 + 0.0521925(T/K)$$

$$\sigma_y = 0.0108 \qquad \sigma_x = 0.00099$$

The tentative solubilities in the binary system based on mol dm^{-3} based on the results of Billiter (2) were fitted by the evaluator to the following equation:

$$\ln (c_1/\text{mol dm}^{-3}) = 2.456277 - 3.660476/(T/100\ \text{K}) + 0.6567005 \ln (T/100\ \text{K}) \qquad \sigma = 0.03$$

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

Table 2. Recommended and Tentative Solubilities in the Binary System Based on mol kg^{-1} and mole fraction units.[a]

T/K	m/mol kg^{-1}	χ/mole fraction	R or T[b]
268.2	7.096	0.1133	T
273.2	7.465	0.1185	T
277.9	7.834	0.1237	T
283.2	8.220	0.1290	R
288.2	8.641	0.1347	T
292.2	8.770	0.1364	T
293.2	9.14	0.1414	T
297.4	9.26	0.1430	T
298.2	9.43	0.1452	R
303.2	9.86	0.1508	R
308.2	10.33	0.1569	T
313.2	10.86	0.1636	R
317.9	11.25	0.1685	T
318.2	11.27	0.1688	R
323.2	11.74	0.1746	R
333.2	12.88	0.1833	T
348.2	14.87	0.2133	T
371.2	18.47	0.2497	T
373.2	19.16	0.2566	T

[a]Mole fractions calculated by the evaluator.

[b]R (recommended) and T (tentative) solubility values.

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

TERNARY SYSTEMS

Many studies for the solubility of the aqueous ternary system with two saturating components have been reported. A summary of the studies is given in Tables 3-6.

Systems with alkali halides. Solubility studies of the ternary systems containing sodium chlorate and alkali halides have been reported in 11 publications (2, 5, 12, 16, 17, 20, 22, 24, 28). A summary of these studies with that of the ternary $NaClO_3$-$BaCl_2$-H_2O system is given in Table 3.

Table 3. Summary of Solubility Studies in Ternary Systems with Alkali Metal and Barium Halides.

Ternary System	T/K	Solid phase	Reference
$NaClO_3$ - NaCl - H_2O	293, 303, 333, 353, 373	Not given	2
$NaClO_3$ - NaCl - H_2O	293	Not given	5
$NaClO_3$ - NaCl - H_2O	298, 308, 318	$NaClO_3$; NaCl	16
$NaClO_3$ - NaCl - H_2O	298	$NaClO_3$; NaCl	17
$NaClO_3$ - NaCl - H_2O	293	Not given	22
$NaClO_3$ - NaCl - H_2O	247 - 373	$NaClO_3$; $NaCl.2H_2O$ NaCl; Ice	24
$NaClO_3$ - NaCl - H_2O	298	Not given	28
$NaClO_3$ - NaBr - H_2O	298	$NaClO_3$; $NaBr.2H_2O$	12
$NaClO_3$ - NaI - H_2O	298	$NaClO_3$; $NaI.2H_2O$	12
$NaClO_3$ - NaF - H_2O	298	$NaClO_3$; NaF	20
$NaClO_3$ - KCl - H_2O	298	Not given	5
$NaClO_3$ - $BaCl_2$ - H_2O	293	Not given	6

Solubilities in the ternary $NaClO_3$-NaCl-H_2O system have been reported in 7 publications (5, 7, 16, 17, 22, 24, 28). Di Capua and Scaletti (5) and Arkhipov, Kashina and Kuzina (17) measured solubilities (mass % units) of the two saturating components ($NaClO_3$ and NaCl) over a wide concentration range at 293 and 298 K, respectively. No double salts are formed in this system.

Nallet and Paris (24) reported only one value (mass % units) at each temperature between 246 and 373 K. The details of solid phases are described on the compilation sheets. No double salts formed.

Solubilities in the aqueous ternary system based on g cm^{-3} units have been reported by Winteler (22), and by Billiter (2). Because of insufficient experimental information, it was not possible to compare these two studies.

The paper by Perel'man and Korzenyak (28) contained only a phase diagram, and was therefore not compiled.

The solubilities in ternary systems $NaClO_3$-NaBr-H_2O and $NaClO_3$-NaI-H_2O at 298 K were studied by Ricci (2) and the system $NaClO_3$-NaF-H_2O at 298 was studied by Vlasov and Shishkina (20). These salt pairs formed neither double salts nor solid solutions at this temperature. The ternary $NaClO_3$-NaF-H_2O system was of simple eutonic type.

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

Only one result in the $NaClO_3$-KCl-H_2O system was reported by Di Capua and Scaletti (5), and solubilities in the $NaClO_3$-$BaCl_2$-H_2O were reported by Di Capua and Bertoni (6). The solid phases in both papers were not reported.

Systems with other halates. Solubility studies of ternary systems containing sodium chlorate and other halates have been reported in 8 publications (4-6, 10, 17, 19, 23, 24). A summary of these studies with that of the ternary system $NaClO_3$-$NaClO_2$-H_2O is given in Table 4.

Table 4. Summary of Solubility Studies in Ternary Systems with other Halates

Ternary System	T/K	Solid Phase	Reference
$NaClO_3$ - $KClO_3$ - H_2O	297, 313	$NaClO_3$; $KClO_3$	4
$NaClO_3$ - $KClO_3$ - H_2O	293	Not given	5
$NaClO_3$ - $KClO_3$ - H_2O	273, 313	Not given	23
$NaClO_3$ - $KClO_3$ - H_2O	291	$NaClO_3$; $KClO_3$; Ice	24
$NaClO_3$ - $RbClO_3$ - H_2O	298	$NaClO_3$; $RbClO_3$	17
$NaClO_3$ - $CsClO_3$ - H_2O	298	$NaClO_3$; $CsClO_3$	19
$NaClO_3$ - $Ba(ClO_3)_2$ - H_2O	298	$NaClO_3$; $Ba(ClO_3)_2$	6
$NaClO_3$ - $NaBrO_3$ - H_2O	298, 373	$NaClO_3$; $NaBrO_3$ Solid Solution	10
$NaClO_3$ - $NaClO_2$ - H_2O	288, 298, 308	$NaClO_3$; $NaClO_3.3H_2O$	15
	318	$NaClO_2$	
$NaClO_3$ - $NaClO_2$ - H_2O	298	Not given	28

Solubilities in the $NaClO_3$-$KClO_3$-H_2O system were studied by Il'inskii (4) at 297.4 and 313 K, and by Di Capua and Scaletti (5) at 293 K. No double salts were formed. The results for the composition at the isothermally invariant point were reported by Munter and Brown (23).

Nallet and Paris (24) reported only one solubility at each temperature between 255.3 K and 373 K. The details of solid phases are described in the compilation. No double salts were formed.

Solubilities in the ternary $NaClO_3$-$RbClO_3$-H_2O and $NaClO_3$-$CsClO_3$-H_2O systems have been reported by Arkhipov, Kashina and Kuzina (17), and Arkhipov and Kashina (19), respectively. Solubilities in the ternary $NaClO_3$-$Ba(ClO_3)_2$-H_2O system have been reported by Di Capua and Bertoni (6). All systems were simple eutonic, and no double salts were formed.

Solubilities in the ternary $NaClO_3$-$NaBrO_3$-H_2O system were measured by Swenson and Ricci (10). The salts studied at 298 K formed a series of solid solutions which is apparently discontinuous. The solubility curve at 298 K appears to be divided into three portions corresponding to the following solid phases: (1) pure sodium bromate, (2) a sodium bromate solid solution containing up to about 5-10 mass % sodium chlorate, (3) a sodium chlorate solid solution containing from 0 to 60-65 mass % sodium bromate.

Cunningham and Oey (15) have reported solubilities in the ternary system $NaClO_3$-$NaClO_2$-H_2O. The system is simple and the solid phases were sodium chlorate and sodium chlorite trihydrate. No hydrate of sodium chlorate was formed.

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

The system with sodium sulfate. Solubilities in the ternary $NaClO_3$-Na_2SO_4-H_2O system have been reported in 3 publications (7, 8, 14). A summary of the studies is given in Table 5.

Table 5. A Summary of Solubility Studies in the Ternary System $NaClO_3$-Na_2SO_4-H_2O

T/K	Solid Phase	Reference
273	$NaClO_3$; $Na_2SO_4.10H_2O$	7
288	$NaClO_3$; $Na_2SO_4.10H_2O$	8
291	$NaClO_3$; $Na_2SO_4.10H_2O$; Na_2SO_4	14
293	$NaClO_3$; $Na_2SO_4.10H_2O$	7
298	$NaClO_3$; $Na_2SO_4.10H_2O$; Na_2SO_4	8
	$NaClO_3.3Na_2SO_4$ (double salt)	
313	$NaClO_3$; Na_2SO_4	7
318	$NaClO_3$; Na_2SO_4; $NaClO_3.3Na_2SO_4$	8
348	$NaClO_3$; Na_2SO_4; $NaClO_3.3Na_2SO_4$	8

Solubilities in this system were determined over a wide temperature range. Ricci and Yanick (8) reported the existence of stable double salt with the formula $NaClO_3.3Na_2SO_4$. The double salt was formed at 298 K and above, having always a very short range of stable existence, and persisting in metastable equilibrium over a very considerable range of concentrations. Although Babaeva (7) measured solubilities in this system at 313 K, the existence of the double salt was not found. Below 298 K no double salts were formed. The solid phases in the binary systems $NaClO_3$-H_2O and Na_2SO_4-H_2O were $NaClO_3$ and $Na_2SO_4.10H_2O$ at 298 K and below, respectively, and $NaClO_3$ and Na_2SO_4 at 313 K and above, respectively. The composition of the solid phase between 298 and 313 K was not studied.

Systems with the other compounds. A summary of solubility studies in the system containing the other compounds except the salts discussed above is given in Table 6.

Table 6. Summary of Solubility Studies in Miscellaneous Ternary Systems

Ternary System	T/K	Solid Phase	Reference
$NaClO_3$ - Na_2CO_3 - H_2O	297, 313	$NaClO_3$; $Na_2CO_3.10H_2O$; $Na_2CO_3.7H_2O$; Na_2CO_3	4
$NaClO_3$ - Na_2CrO_4 - H_2O	292	$NaClO_3$; $Na_2CrO_4.6H_2O$; $Na_2CrO_4.10H_2O$	11
$NaClO_3$ - $NaCrO_4$ - H_2O	298	$NaClO_3$; $Na_2CrO_4.4H_2O$; $Na_2CrO_4.6H_2O$	11
$NaClO_3$ - $NaCrO_4$ - H_2O	323	$NaClO_3$; $Na_2CrO_4.4H_2O$	11
$NaClO_4$ - $NaNO_3$ - H_2O	298	$NaClO_3$; $NaNO_3$	12
$NaClO_3$ - Na_2MoO_4 - H_2O	298	$NaClO_3$; $Na_2MoO_4.2H_2O$	13
$NaClO_3$ - $NaOH$ - H_2O	291	$NaClO_3$; $NaOH.H_2O$	14
$NaClO_3$ - $BaBO_2$ - H_2O	254	$NaClO_3$; $NaBO_2.4H_2O$; ice	18
$NaClO_3$ - $NaBO_2$ - H_2O	268, 273, 293, 303	$NaClO_3$; $NaBO_2.4H_2O$	18
$NaClO_3$ - $NaBO_2$ - H_2O	318, 323	$NaClO_3$; $NaBO_2.4H_2O$; $NaBO_4.2H_2O$	18
$NaClO_3$ - $NaBO_2$ - H_2O	333, 348	$NaClO_3$; $NaBO_2.2H_2O$	18

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

Solubilities in the $NaClO_3$-Na_2CO_3-H_2O system by Il'inskii (4), in the $NaClO_3$-Na_2CrO_4-H_2O system by Ricci and Weltmann (11), in the $NaClO_3$-$NaNO_3$-H_2O system by Ricci (12) and in the $NaClO_3$-Na_2MoO_4-H_2O system by Ricci and Linke (13) have been reported. Neither compound formation nor solid solution between any two salts were reported. Solubilities in the ternary $NaClO_3$-NaOH-H_2O system were reported by Windmaisser and Stockl (14), and no double salts were formed. Solubility isotherms at temperature between 353.9 and 348 K were determined for the $NaClO_2$-$NaBO_3$-H_2O system by Nies and Hulbert (18). The solid phases were $NaBO_2.4H_2O$, $NaBO_2.2H_2O$ and $NaClO_3$. No double salts formed.

OTHER MULTICOMPONENT SYSTEMS

A summary of solubility studies in other multicomponent systems is given in Table 7.

Table 7. Summary of Solubility Studies in Multicomponent Systems

Multicomponent System	T/K	Reference
$NaClO_3$ - $KClO_3$ - NaCl - H_2O	293	5
$NaClO_3$ - $NaClO_2$ - NaCl - H_2O	283, 293, 303	26
$NaClO_3$ - $NaClO_2$ - NaCl - H_2O	298, 303, 318	27
$NaClO_3$ - $NaClO_2$ - NaCl - H_2O	298	28
$NaClO_3$ - NaCl - $RbClO_3$ - RbCl - H_2O	298	17
$NaClO_3$ - NaCl - $CsClO_3$ - CsCl - H_2O	298	19
$NaClO_3$ - NaCl - $KClO_3$ - KCl - H_2O	273, 313	23
$NaClO_3$ - NaCl - $KClO_3$ - KCl - H_2O	247 - 373	25
$NaClO_3$ - $NaClO_2$ - NaCl - Na_2CO_3 - H_2O	298	29

Only one solubility value in the $NaClO_3$-$KClO_3$-NaCl-KCl-H_2O system at 293 K was reported by Di Capua and Scoletti (5). No other information was given.

Solubilities in the $NaClO_3$-$NaClO_2$-NaCl-H_2O system were measured by Nakamori, Nagino, Hideshima and Hirai (26) at 283, 293 and 303 K, and by Oey and Cunningham (27) at 298, 303 and 318 K. No double salts formed within the temperature interval 283-318 K.

Perel'man and Korgenyak (28) reported only a phase diagram, and the paper was therefore not compiled.

The $NaClO_3$-NaCl-$RbClO_3$-RbCl-H_2O system was studied by Arkhipov, Kashina and Kuzina (17). Solubilities in the quaternary systems $NaClO_3$-NaCl-$RbClO_3$-H_2O and $RbClO_3$-NaCl-RbCl-H_2O, have been reported, but the solubility data in five component systems were not reported. There were four salt crystallization regions in the system: NaCl, RbCl, $NaClO_3$ and $RbClO_3$. Two ternary points were obtained corresponding to solutions saturated with: (i) NaCl+$NaClO_3$+$RbClO_3$; (ii) NaCl+RbCl+$RbClO_3$. The main part of the diagram is occupied by the crystallization field of rubidium chlorate (95%), followed in area by the sodium chloride field (3.5 %). The four salts did not form either double salts or solid solutions.

The $NaClO_3$-NaCl-$CsClO_3$-CsCl-H_2O system was studied by Arkhipov and Kashina (19). Solubilities in the quaternary systems $NaClO_3$-$CsClO_3$-NaCl-H_2O and $CsClO_3$-CsCl-NaCl-H_2O have been reported, but the solubility data for five component systems were not reported. The crystallization field of cesium chlorate occupies the greatest area on the diagram, and this is followed by the field of sodium chloride. The crystallization fields of sodium chlorate and of solid solutions of cesium and sodium chlorides are small.

COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

Munter and Brown (23) measured solubilities in the $NaClO_3$-NaCl-$KClO_3$-KCl-H_2O system at the isothermal invariant point. The solid phase at this point is simple: no double salts were formed.

Nallet and Paris (25) also measured solubilities in the $NaClO_3$-NaCl-$KClO_3$-KCl-H_2O system over a wide temperature range, but only one value at each temperature was reported. No double salts or solid solutions were reported.

The $NaClO_3$-$NaClO_2$-Na_2CO_3-NaCl-H_2O system was studied by Perel'man and Korzhenyak (29). The compositions of the eutectic points of the ternary and quaternary systems were determined.

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COMPONENTS:	EVALUATOR:
(1) Sodium chlorate; $NaClO_3$; [7757-82-6]	Hiroshi Miyamoto Department of Chemistry Niigata University Niigata, Japan
(2) Water; H_2O; [7732-18-5]	June, 1984

CRITICAL EVALUATION:

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