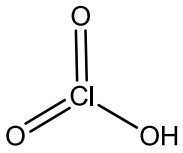
3	CAS No.: 7790-93-4 (chloric acid) 3811-04-9 (potassium chlorate (K salt)) 7775-09-9 (sodium chlorate (Na salt))	Substance: Chloric Acid

Chemical Substances Control Law Reference No.: 1-229 (potassium chlorate)
1-239 (sodium chlorate)

PRTR Law Cabinet Order No.:

Molecular Formula: $ClHO_3$ (chloric acid) Structural Formula:

Molecular Weight: 84.46 (chloric acid)



1. General information

The aqueous solubility of potassium chlorate is 8.61×10^4 mg/1,000 g (25°C), and that of sodium chlorate 1×10^6 mg/1,000 g (25°C). Although biodegradation cannot be defined as a conversion of organic to inorganic substances, sodium chlorate will undergo biodegradation in soil if the conditions are anaerobic.

The main uses of sodium chlorate are thought to be in herbicides, analytical reagents, oxidants, uranium extraction, dyestuffs, metal surface treatment agents, explosives, matches and fireworks, and as a raw material for the chlorine dioxide used in pulp bleaching. The main uses of potassium chlorate are thought to be in explosives, matches, fireworks, analytical reagents, printing inks, dyestuffs, oxygen production, oxidants, pesticides, paper making, sterilization, bleaching, herbicides, preservatives, and pharmaceutical formulations (mouthwashes, astringents). The production and import quantity in fiscal 2010 for sodium chlorate was 100,000 t. Japanese production of chloric acid salts as agricultural chemical active ingredients was 840 t.

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2. Exposure assessment

Because this substance is not classified as a Class 1 Designated Chemical Substance under the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (PRTR Law), release and transfer quantities could not be obtained. A reliable vapor pressure could not be obtained for this substance. Accordingly, proportions distributed to individual media were not predicted.

The predicted environmental concentration (PEC), which indicates exposure to aquatic organisms, was around 270 µg/L for public water bodies and generally less than 1 µg/L for seawater.

3.Initial assessment of ecological risk

With regard to acute toxicity, the following reliable data were obtained: a 72-h EC_{50} of 1,900 µg ClO_3^-/L for growth inhibition in the alga *Nitzschia closterium*, a 24-h EC_{50} of 599,000 µg ClO_3^-/L for swimming inhibition in the crustacean *Daphnia magna*, a 96-h LC_{50} in excess of 784,000 µg ClO_3^-/L for the fish species *Oncorhynchus mykiss* (rainbow trout), and a 7-d EC_{50} of 105,000 µg ClO_3^-/L for growth inhibition in the duckweed *Lemna minor*. Accordingly, based on these acute toxicity values and an assessment factor of 100, a predicted no effect concentration (PNEC) of 19 µg ClO_3^-/L was obtained.

With regard to chronic toxicity, the following reliable data were obtained: a 72-h NOEC of less than 500 µg ClO_3^-/L for growth inhibition in the diatom *N. closterium*, a 21-d NOEC of more than 392,000 µg ClO_3^-/L for reproductive inhibition or mortality in the crustacean *D. magna*, a 36-d NOEC of more than 392,000 µg ClO_3^-/L for mortality or growth inhibition in the fish species *Danio rerio* (zebrafish), and a 7-d NOEC of 7,840 µg ClO_3^-/L for growth inhibition in the duckweed *L. minor*. Accordingly, based on these chronic toxicity values and an assessment factor of 100, a PNEC of less than 50 µg ClO_3^-/L was obtained.

The definitive value of 19 µg ClO_3^-/L obtained from acute toxicity to the algae was used as the PNEC for this substance.

The PEC/PNEC ratio was 14 for freshwater bodies and less than 0.05 for seawater. Accordingly, the substances are considered as candidates for further work.

Hazard assessment (basis for PNEC)			Assessment factor	Predicted no effect concentration PNEC (µg/L)	Exposure assessment		PEC/PNEC ratio	Judgment based on PEC/PNEC ratio	Assessment result
Species	Acute/ chronic	Endpoint			Water body	Predicted environmental concentration PEC (µg/L)			
Alga	Acute	EC_{50} growth inhibition	100	19	Freshwater	270	14	■	■
					Seawater	<1	<0.05		

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4. Conclusions

	Conclusions	Judgment
Ecological risk	Candidates for further work.	■

［Risk judgments］ ○: No need for further work ▲: Requiring information collection

■: Candidates for further work ×: Impossibility of risk characterization

（○）: Though a risk characterization cannot be determined, there would be little necessity of collecting information.

（▲）: Further information collection would be required for risk characterization.