AQUA CHLOR G

(ChemWatch name: CALCIUM HYPOCHLORITE, DRY)

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

AQUA CHLOR G

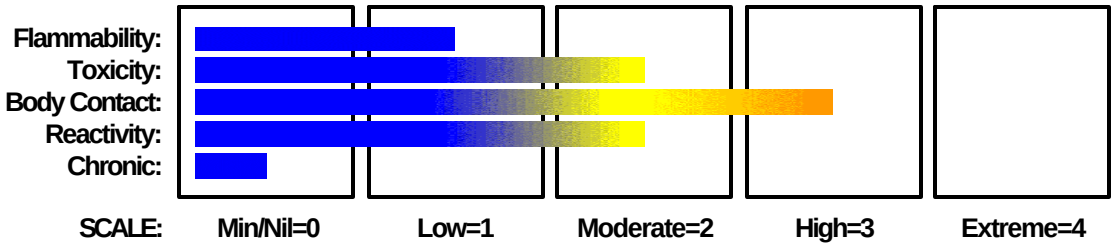
STATEMENT OF HAZARDOUS NATURE

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation.

SUPPLIER

Company: Andrew Limited
Address:
3 Porana Road
Glenfield
AUCKLAND
Telephone: 09 444 3733
Telephone: 0800 429 628
Emergency Tel: 0800 243 622
Fax: 09 444 3838

HAZARD RATINGS



PRODUCT USE

Used as an algicide, fungicide, bactericide, disinfectant, steriliser, sanitiser and deodorant; an oxidising agent; and a bleaching agent. It is also used in the refining of sugar.
WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material. Material is mixed and used in accordance with manufacturers directions

continued...

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ...

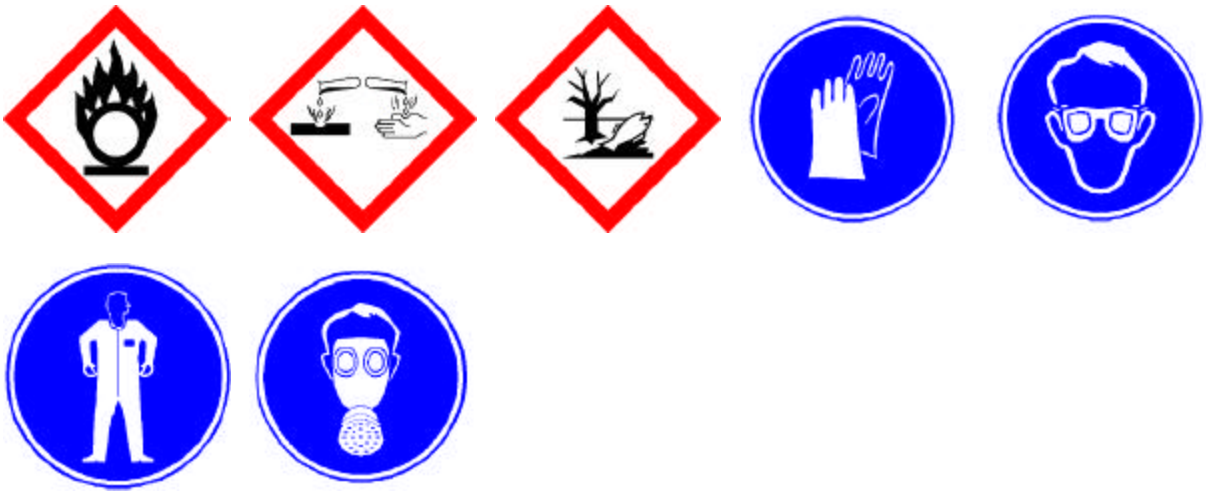
SYNONYMS

Cl2-O2.Ca	Ca-Cl2-O2
Ca-O2-Cl2	Ca (ClO) 2
hypochlorous acid, calcium salt	calcium chlorohydrochlorite
calcium hypochloride	calcium oxychloride
bleaching powder	B-K powder
Camporit	Cal Hypo
Pool Chlorine (Victorian DG Regs)	Hy-Chlor
Pittchlor	CCH
HTH	

Section 2 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
calcium hypochlorite, dry	7778-54-3	94 app.
may contain		
calcium hydroxide hypochlorite	12394-14-8	(< 6 ^
calcium chloride	10043-52-4	(^
calcium hydroxide	1305-62-0	(
(Available chlorine >39%)		
Decomposes when wet and gives off toxic chlorine	7782-50-5	

Section 3 - HAZARDS IDENTIFICATION



EMERGENCY OVERVIEW

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Section 3 - HAZARDS IDENTIFICATION ...

HAZARD

5.1.1B Oxidising substance: medium hazard
6.1D Harmful if swallowed
8.3A Corrosive to eyes
9.1A Very ecotoxic in the aquatic environment

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.

EYE

The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.
When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.

SKIN

The material can produce chemical burns following direct contact with the skin.

INHALED

Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system in a substantial number of individuals following inhalation.

CHRONIC HEALTH EFFECTS

Principal routes of exposure are usually by skin contact with the material , with the material in solution and inhalation of generated dust
Hypochlorite in pool water at concentrations of 1 ppm chlorine or less is non irritating to eyes if the pH is higher than 7.2 (slightly alkaline); At lower pH sensation of stinging, smarting of eyes with transient reddening may occur but generally no injury.
Ingestion irritates the mouth, throat, and stomach. The hypochlorous acid liberated in the stomach can cause wall perforation, toxaemia, haemorrhage and death.
As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

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Section 4 - FIRST AID MEASURES

SWALLOWED

- For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Transport to hospital or doctor without delay.

EYE

If this product comes in contact with the eyes:

- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or repeated exposures to hypochlorite solutions:

- Release of small amounts of hypochlorous acid and acid gases from the stomach following ingestion, is usually too low to cause damage but may be irritating to mucous membranes. Buffering with antacid may be helpful if discomfort is evident.
- Evaluate as potential caustic exposure.
- Decontaminate skin and eyes with copious saline irrigation. Check exposed eyes for corneal abrasions with fluorescein staining.

continued...

Section 4 - FIRST AID MEASURES ...

- Emesis or lavage and catharsis may be indicated for mild caustic exposure.
- Chlorine exposures require evaluation of acid/base and respiratory status.
- Inhalation of vapours or mists may result in pulmonary oedema.

ELLENHORN and BARCELOUX: Medical Toxicology.

Section 5 - FIRE FIGHTING MEASURES

FIRE FIGHTING

- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Consider evacuation (or protect in place).

Alert Fire Brigade and tell them location and nature of hazard.
DO NOT approach containers suspected to be hot.
Cool fire exposed containers with water spray from a protected location.
Fight fire from a safe distance, with adequate cover.

FIRE/EXPLOSION HAZARD

Combustible . Combustible. Will burn if ignited.
Heating may cause expansion or decomposition leading to violent rupture of containers

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

Clean up all spills immediately. Remove all ignition sources.
Wear protective clothing, impervious gloves and safety glasses.
Avoid contact with skin and eyes.
Use dry clean up procedures and avoid generating dust.
Refer to major spills.

MAJOR SPILLS

Restrict access to area. Clear area of personnel and move upwind DO NOT touch the spill material
Alert Fire Brigade and tell them location and nature of hazard.
May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Consider evacuation.
Shut off all possible sources of ignition and increase ventilation.
Use dry clean up procedures and avoid generating dust.
Recover uncontaminated product in clean, dry containers
Cover remainder with a weak reducing agent to destroy available chlorine and mix with water.

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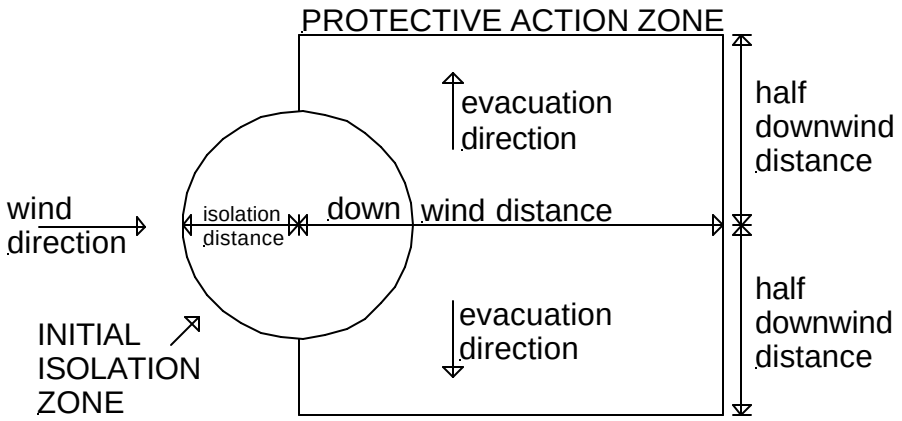
Section 6 - ACCIDENTAL RELEASE MEASURES ...

Transfer sludge to suitable container and neutralise with soda ash.
Wash spill area with detergent, reducer and water.

PROTECTIVE ACTIONS FOR SPILL



From IERG (Canada/Australia)

Isolation Distance	25 metres
Downwind Protection Distance	100 metres

FOOTNOTES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.

2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.

3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills".
LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 140 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

continued...

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

Use good occupational work practice. and WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.
Avoid generating and breathing dust. Avoid contact with skin and eyes.
Avoid contact with incompatible materials.
Avoid all ignition sources. Avoid sources of heat.
Transport containers on a trolley
Avoid physical damage to containers.
Handle and open container with care . Use in a well-ventilated area
DO NOT return unused product to containers.
Always wash hands with soap and water after handling. Work clothes should be laundered separately.

SUITABLE CONTAINER

Packaging as recommended by manufacturer.
Plastic drum or Metal can or Metal drum
- Check that containers are clearly labelled

STORAGE INCOMPATIBILITY

Avoid storage with incompatible substances. , strong acids , combustible materials

STORAGE REQUIREMENTS

Store in a cool, dry place. Store in a well-ventilated area.
Store in a flame proof area.
Keep storage area free of debris, waste and combustibles.
Store away from incompatible materials.
No smoking, naked lights, heat or ignition sources.
Keep containers securely sealed
Protect containers against physical damage

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

No exposure limits set by NOHSC or ACGIH

ODOUR SAFETY FACTOR (OSF)

OSF=1.6 (calcium hydroxide hypochlorite)
Exposed individuals are NOT reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.
Odour Safety Factor (OSF) is determined to fall into either Class C, D or E.
The Odour Safety Factor (OSF) is defined as:
OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm
Classification into classes follows:

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Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV-TWA for example) is being reached, even when distracted by working activities
B	26-550	As "A" for 50-90% of persons being distracted
C	1-26	As "A" for less than 50% of persons being distracted
D	0.18-1	10-50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As "D" for less than 10% of persons aware of being tested

EXPOSURE STANDARDS FOR MIXTURE

"Worst Case" computer-aided prediction of vapour components/concentrations:

Composite Exposure Standard for Mixture (TWA) (mg/m³): 1.5 mg/m³
If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.
Component Breathing Zone ppm Breathing Zone mg/m³ Mixture Conc: (%)

Component	Breathing zone (ppm)	Breathing Zone (mg/m³)	Mixture Conc (%)
chlorine	0.50	1.5000	0.1

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.
If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.
At the "Composite Exposure Standard for Mixture" (TWA) (mg/m³): 0.1 mg/m³

INGREDIENT DATA

CALCIUM HYDROXIDE:
Calcium hydroxide
WES TWA 5 mg/m³
TLV TWA: 5 mg/m³ [ACGIH]
PEL Total particulate: 15mg/m³ [OSHA Z1]
PEL Respirable fraction : 5mg/m³ [OSHA Z1]

continued...

TLV TWA: 5 mg/m³
ES TWA: 5 mg/m³
OES TWA: 5 mg/m³
In the absence of reports of adverse effects from exposure and the recognised lesser alkalinity of the alkaline earths compared with the the alkali hydroxides the relatively high value of TLV-TWA is recommended. This value corresponds in total alkalinity to 5 mg/m³ of sodium hydroxide or 2.5 times the TLV-TWA of sodium hydroxide.

CHLORINE:
Chlorine
WES TWA 0.5 ppm TWA 1.5 mg/m³ STEL 1 ppm STEL 2.9 mg/m³
TLV TWA: 0.5 ppm A4 [ACGIH]
TLV STEL: 1 ppm A4 [ACGIH]
PEL Ceiling: 1 ppm, 3 mg/m³ [OSHA Z1] [OSHA Z1]
TLV TWA: 0.5 ppm, 1.5 mg/m³; STEL: 1 ppm, 2.9 mg/m³ A4
NOTE: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans
ES Peak: 1 ppm, 3 mg/m³
OES TWA: 0.5 ppm, 1.5 mg/m³; STEL: 1 ppm, 2.9 mg/m³
MAK value: 0.5 ppm, 1.5 mg/m³
MAK Category I Peak Limitation: For local irritants Allows excursions of twice the MAK value for 5 minutes at a time, 8 times per shift.
MAK Group C: There is no reason to fear risk of damage to the developing embryo when MAK and BAT values are observed.
MAK values, and categories and groups are those recommended within the Federal Republic of Germany
IDLH Level: 10 ppm
Odour Threshold Value: 0.08 ppm (detection) - olfactory fatigue may develop
NOTE: Detector tubes for chlorine, measuring in excess of 0.2 ppm, are commercially available. Long-term measurements (8 hrs) may be conducted to detect concentrations exceeding 0.13 ppm.
Smell is not a good indicator of severity of exposure in the range 0.5 to 2 ppm. In this range subjects found exposure unpleasant with itching and burning of the throat reported and occasionally an urge to cough. Significant differences in the responses of males and females were also recorded with females often reporting headache and drowsiness.
Exposure at 1 ppm chlorine for 8 hours produced significant changes in pulmonary function and increased subjective irritation. Similar 8 hour exposures at 0.5 ppm produced no significant pulmonary function changes and less severe subjective irritation. Exposures for 2 hours at 2 ppm chlorine produced no significant changes in pulmonary irritation.
An 8 hour exposure at 1.5 ppm produced increased mucous secretion from the nose and increased mucous in the hypopharynx.
Exposure at or below the TLV-TWA and STEL is thought to protect the worker against annoying symptoms in nose, throat and conjunctiva and declines in pulmonary function.

PERSONAL PROTECTION

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ...




EYE

- Chemical goggles.
- Full face shield.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS/FEET

Impervious, gauntlet length gloves or Elbow length PVC gloves
Neoprene gloves
Protective footwear or PVC boots

OTHER

Cotton washable overalls buttoned to the neck and wrist and washable hat and PVC apron
Ensure there is ready access to an emergency shower
- Ensure that there is ready access to eye wash unit
- Impervious protective clothing

In case of emergency: ,
- Full protective suit.

ENGINEERING CONTROLS

DO NOT handle directly. Wear gloves and use scoop / tongs / tools
Use in a well-ventilated area
Provide adequate ventilation in warehouse or closed storage areas.
If exposure to workplace dust is not controlled, respiratory protection is required; wear SAA approved dust respirator.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.
Mixes with water.
Contact with acids liberates toxic gas.

Molecular Weight: 142.98
Melting Range (°C): 100 decomposes
Solubility in water (g/L): Miscible
pH (1% solution): 11.5 @ 5%
Volatile Component (%vol): Nil @ 38 C.

Boiling Range (°C): Not applicable.
Specific Gravity (water=1): 2.35
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not applicable
Evaporation Rate: Non Volatile

continued...

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES ...

Relative Vapour Density (air=1): Not applicable.
Lower Explosive Limit (%): Not available
Autoignition Temp (°C): Not applicable
State: Divided solid

Flash Point (°C): Non flammable
Upper Explosive Limit (%): Not available.
Decomposition Temp (°C):

APPEARANCE

White powder with a pungent chlorine odour; soluble in water.
Powerful oxidising agent; unstable to heat, friction or direct sunlight.
Wetting of solid material can cause heating and decomposition, giving off oxygen and highly toxic chlorine gas.

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

Presence of incompatible materials . Storage in unsealed containers
Presence of heat source and direct sunlight
Presence of elevated temperatures. Presence of water

Section 11 - TOXICOLOGICAL INFORMATION

Aqua Chlor G

TOXICITY IRRITATION
Oral (rat) LD50: 850 mg/kg
Nil reported

CALCIUM HYDROXIDE:
TOXICITY IRRITATION
Oral (rat) LD50: 7340 mg/kg Eye (rabbit): 10 mg - SEVERE

CHLORINE:
TOXICITY IRRITATION
Inhalation (human) LCLo: 2530 mg/m3/30 minutes
Inhalation (human) LCLo: 500 ppm/5 minutes
Inhalation (rat) LC50: 293 ppm/1 hour

Section 12 - ECOLOGICAL INFORMATION

The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

continued...

Section 12 - ECOLOGICAL INFORMATION ...

Appendix8, Table 1
Compiler's Guide for the Preparation of International Chemical Safety Cards:
1993 Commission of the European Communities
The material is classified as an ecotoxin* because the Daphnia EC50 (48 hours)
is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)
Appendix8, Table 1
Compiler's Guide for the Preparation of International Chemical Safety Cards:
1993 Commission of the European Communities
DO NOT discharge into sewer or waterways.

Section 13 - DISPOSAL CONSIDERATIONS

Recycle wherever possible. Consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION

Shipping Name:
CALCIUM HYPOCHLORITE, DRY with more than 39% available chlorine (8.8% available oxygen)
(8.8% available oxygen)
Hazard Class: 5.1
UN/NA Number: 1748
ADR Number: 50
Packing Group: II
Labels Required: oxidizing agent
Additional Shipping Information:
International Transport Regulations:
IMO: 5.1

Section 15 - REGULATORY INFORMATION

SAFETY

Keep away from combustible material.

continued...

Section 15 - REGULATORY INFORMATION ...

Do not breathe dust.
Avoid contact with eyes.
Wear suitable protective clothing.
To clean the floor and all objects contaminated by this material, use water.
Take off immediately all contaminated clothing.
In case of accident or if you feel unwell IMMEDIATELY contact Doctor or Poisons Information Centre (show label if possible).
If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre (show this container or label).

Section 16 - OTHER INFORMATION

NEW ZEALAND POISONS INFORMATION CENTRE
0800 POISON (0800 764 766)
NZ EMERGENCY SERVICES: 111

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