

# The Changing Regulatory Environment

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**Health**

# Public Health Act 1991

- In force
- Public Health (Swimming Pools and Spa Pools) Regulation 2000
- Guidelines, June 1996

# Public Health Act 2010

- Promulgated in December 2010
- Not yet commenced – Feb 2012 ?
- Part 3, Division 3, Control of public swimming pools and spa pools, S 34 to 37
- Part 3, Division 5, Improvement Notices and Prohibition Orders, S 40 to 49
- Part 3, Division 5, Environmental Health Registers, S 50
- Regulations, S 134
- Code → Information Bulletin

# PH Act 2010, Control of Public Swimming Pools and Spa Pools, S34 to 37

- Definitions
  - Prescribed operating requirements
  - Public swimming pool or spa pool
  - Spa pool
- Operation of premises
  - Must comply with prescribed operating requirements
  - Max Penalty: Individual \$10,000 Corporation \$50,000
  - Notice of existence: Penalty \$1,000

# PH Act 2010, Control of Public Swimming Pools and Spa Pools, Sections 34 to 37 (cont)

- Disinfection and cleaning
  - Disinfected to minimise disease spread
    - Max Penalty = \$10,000 or jail
  - Pool surrounds clean and not spread disease
    - Max Penalty = \$10,000 or jail
  - Compliance with standards prescribed in regulation a defence
- Prohibition orders must be displayed at entrance to pool
  - Max Penalty = \$1000

# PH Act 2010, Improvement Notices and Prohibition Orders, S 40 to 49

- “Enforceable requirement” is a **prescribed operating requirement**
- Improvement notices
  - a direction to comply with a specific enforceable requirement within 72 hours (or longer)
  - May specify actions
  - Must specify the regulation to which it relates
  - Compliance to be noted by authorised officer and a copy is to be given to the occupier

# PH Act 2010, Improvement Notices and Prohibition Orders, S 40 to 49 (cont)

- Failure to comply with Improvement Notice
  - may result in authority taking improving action and recovering costs, OR
  - Prohibition Order effectively closing the pool or spa until a clearance certificate is issued. Re-inspection may be requested in writing
- Contravention of Prohibition Order – Maximum Penalty
  - Individual - \$22,000 / 12 months jail / \$11,000 daily
  - Corporation - \$55,00 / 12 months jail / \$27,500 daily

# PH Act 2010, Improvement Notices and Prohibition Orders, S 40 to 49 (cont)

- Review of decision to refuse certificate of clearance through Administrative Appeals Tribunal
- Compensation if order was not made in good faith or no grounds for making the order

# PH Act 2010, Environmental Health Registers, S50

- The Regulation may specify that local councils must keep registers of public swimming pools
- Pool operators of public pools must notify the local council of their existence using a prescribed form and supplying the prescribed details

# Public Health (General) Regulation 2012 – under development

- No draft available – work in progress
- Parliamentary Counsel
- On the spot fines – penalties ?
- Schedule 1 = Prescribed Operating Requirements
- Draft Regulation and Regulatory Impact Statement – July ?

# Prescribed Operating Requirements – under consideration

- Bacteriological Criteria – not prescribed in Regulation
- Disinfectant Dosing Systems – metered dosing
- Disinfectant Concentrations – status quo - chlorine and bromine systems only
- Combined chlorine – 1.0 mg/L maximum
- pH
- Cyanuric Acid 50 mg/L max

# Prescribed Operating Requirements – under consideration (cont)

- Temperature effects and max 38°C
- Total Alkalinity
- Turbidity 2 NTU maximum
- ORP 750mV equivalence set point
- Test Kits and Methodology
- Testing Frequency
- Results Log

# Bacteriological Criteria

- Heterotrophic Plate Count  
100 cfu / mL maximum
- Thermotolerant coliforms  
Nil cfu / 100 mL
- *Pseudomonas aeruginosa*  
Nil cfu / 100 mL

# Disinfectant Dosing Systems

- Hand dosing – no patrons ie pool closed
- Metered disinfectant dosing -
- Automated dosing – amperometric / ORP
- Automated pH control

# Chlorine as a Disinfectant

**FAC + CC = TC,      FAC = HOCL and OCL**

- FAC Outdoor > 1.0 mg/L
- FAC Indoor < 26°C > 1.5 mg/L
- FAC Indoor >26°C > 2.0 mg/L
- FAC pH >7.6 to 7.8 + 1.0 mg/L
- FAC Spa > 2.0 mg/L
- TC (max) < 10.0 mg/L
- CC (max) < 1.0 mg/L or ½ of FAC
- FAC (Cyanurate) > 3.0 mg/L

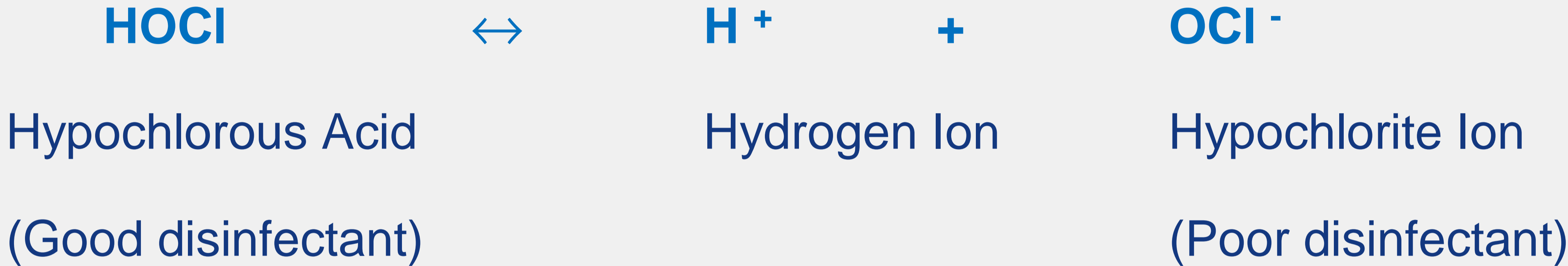
# Use of Ozone or UV or H<sub>2</sub>O<sub>2</sub>

- Ozone
  - no residual ozone (low dose Ozone)
  - FAC >26° Indoor > 1.5 mg/L
  - FAC <26° Indoor > 1.0 mg/L
  - FAC Outdoor > 1.0 mg/L
  - FAC Spa > 2.0 mg/L
  - No discount in Br levels
- UV no objection - no discount
- H<sub>2</sub>O<sub>2</sub> no objection - no discount
- ClO<sub>2</sub> required FAC levels

# Bromine as a Disinfectant

- Total Bromine Outdoor > 2.25
- TB Indoor <26°C >3.5 mg/L
- TB Indoor >26°C > 4.5 mg/L
- TB Spa > 4.5 mg/L
- TB (max) < 9.0 mg/L
- No cyanurate
- Dimethylhydantoin < 200 mg/L

# The Equation - FAC & pH

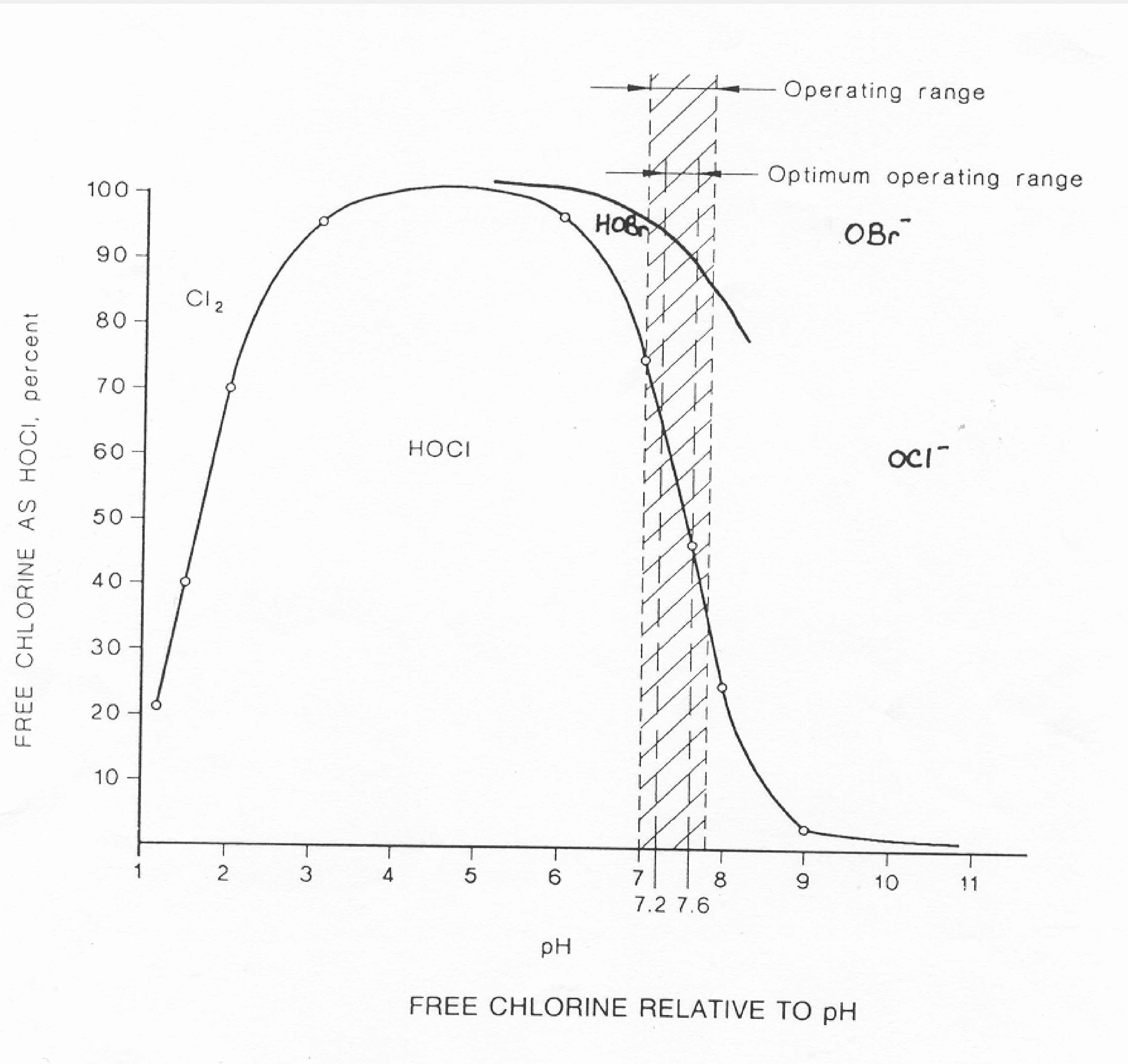


CONSIDER: 1.00mg/L of free chlorine at a pH of 7.5

This reaction depends on pH (50% : 50%)

	<b>HOCl<sup>+</sup></b>	<b>OCl<sup>-</sup></b>	<b>FAC</b>
	(mg/L)	(mg/L)	(mg/L)
Initial	0.50	0.50	1.00

# pH Curve Cl and Br



# pH Table – Cl & Br

pH	Percentage of free chlorine as	
	HOCl	OCl-
6.0	97	3
7.0	75	25
7.2	63	37
7.5	49	51
7.6	39	61
7.8	28	72
9.0	3	97

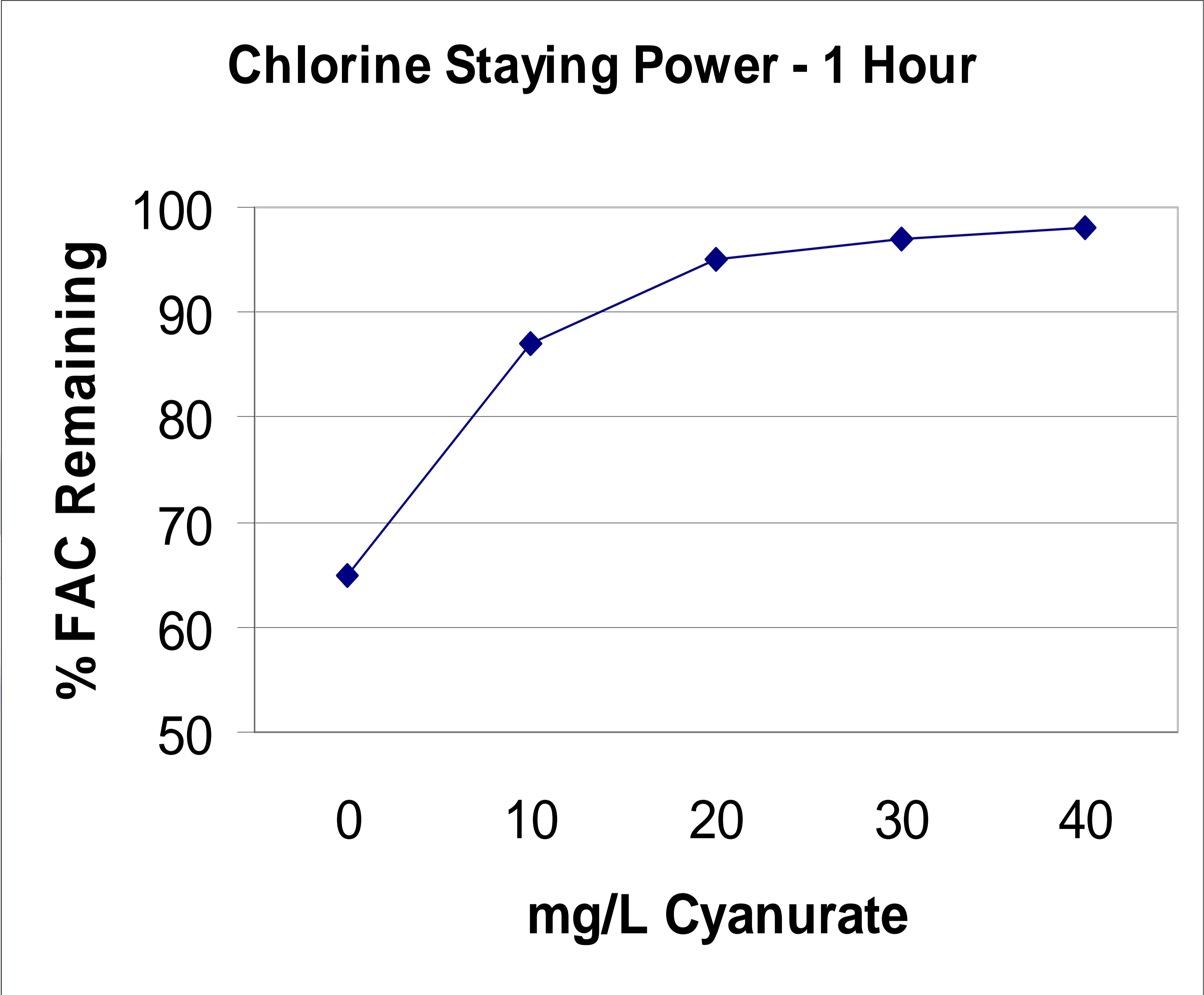
pH	Percentage of free bromine as	
	HOBr	OBr-
6.0	100	0
7.0	98	2
7.2	96	4
7.5	94	6
7.6	91	9
7.8	87	13
8.0	83	17

# pH Concentration

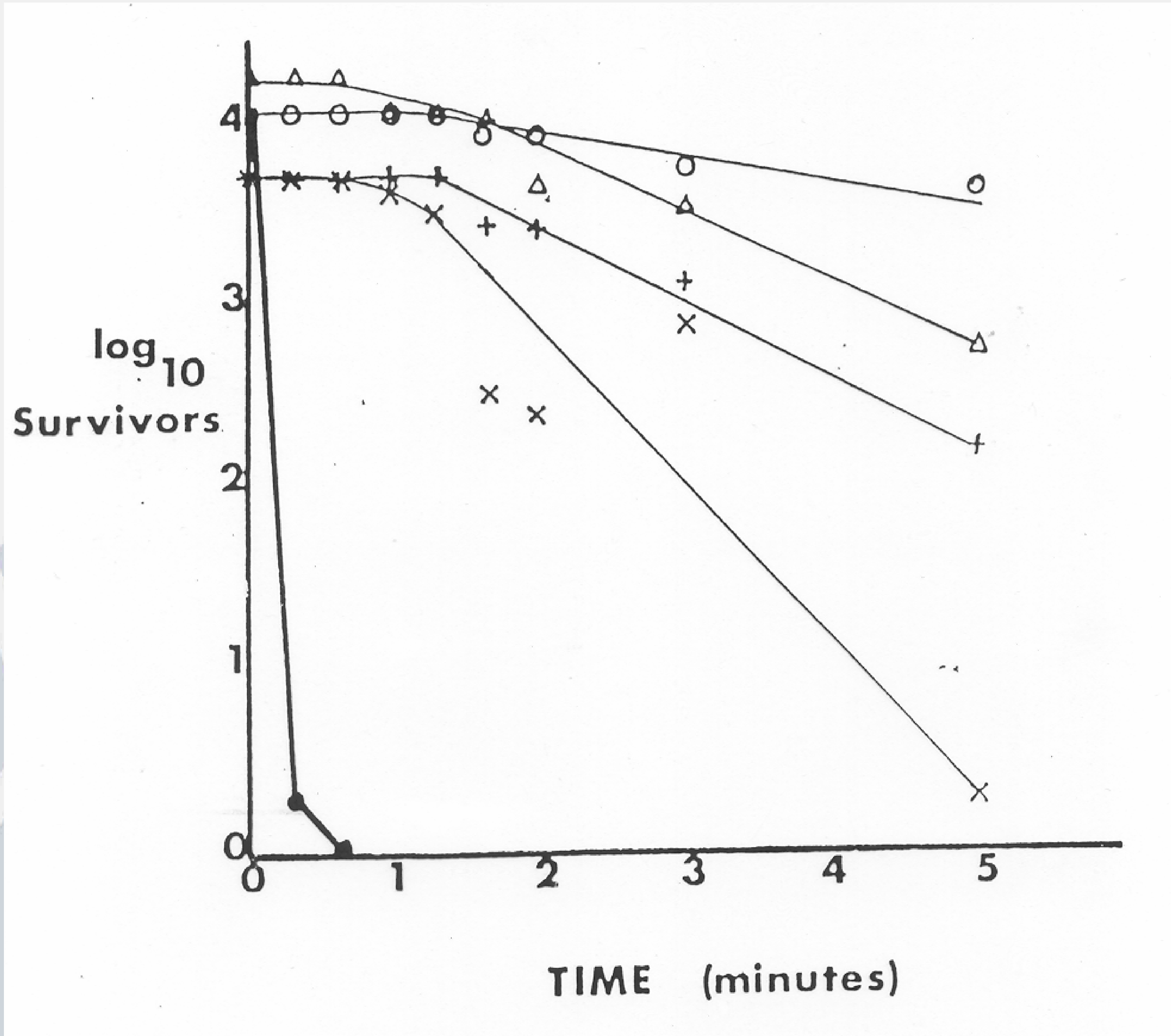
- 7.2 to 7.8 range for chlorine
- 7.6 to 7.8 additional chlorine ~ 1.0 mg/L
- Less important for bromine

# Cyanurate Action

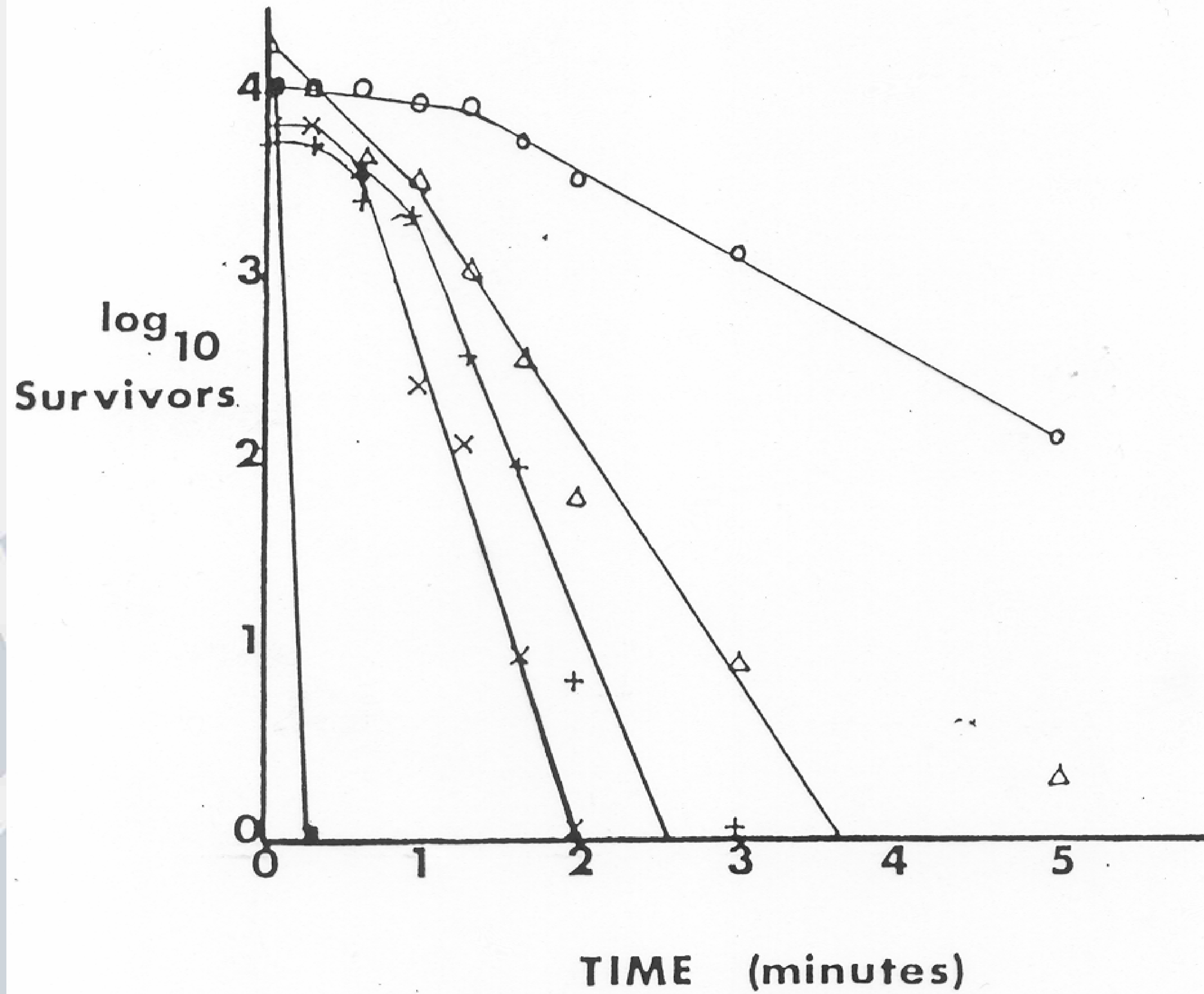
UV Light Stabiliser



# Cyanurate at 1mg/L FAC



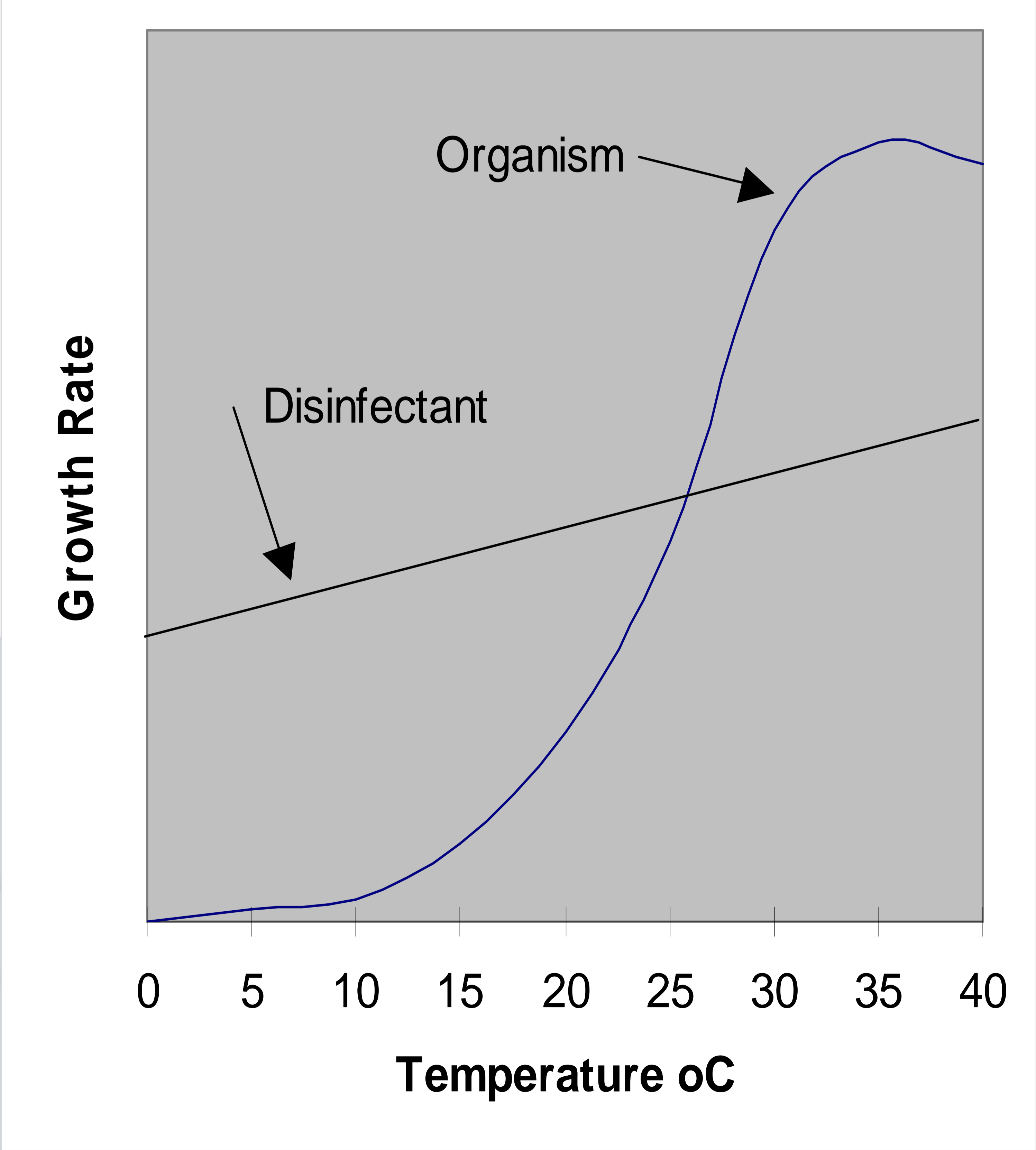
# Cyanurate at 2 mg/L FAC



# Cyanuric Acid Concentrations

- Ideal 25 to 50 mg/L
- Cyanurate slug dose and back washing
- Danger ! Constant addition and accumulation
- FAC > 3.0 mg/L
- Cyanurate not effective with bromine

# Temperature Effect and Maximum



# Reserve (Total) Alkalinity

- Recommended levels

80 to 200 mg/L

- Minimum enforced

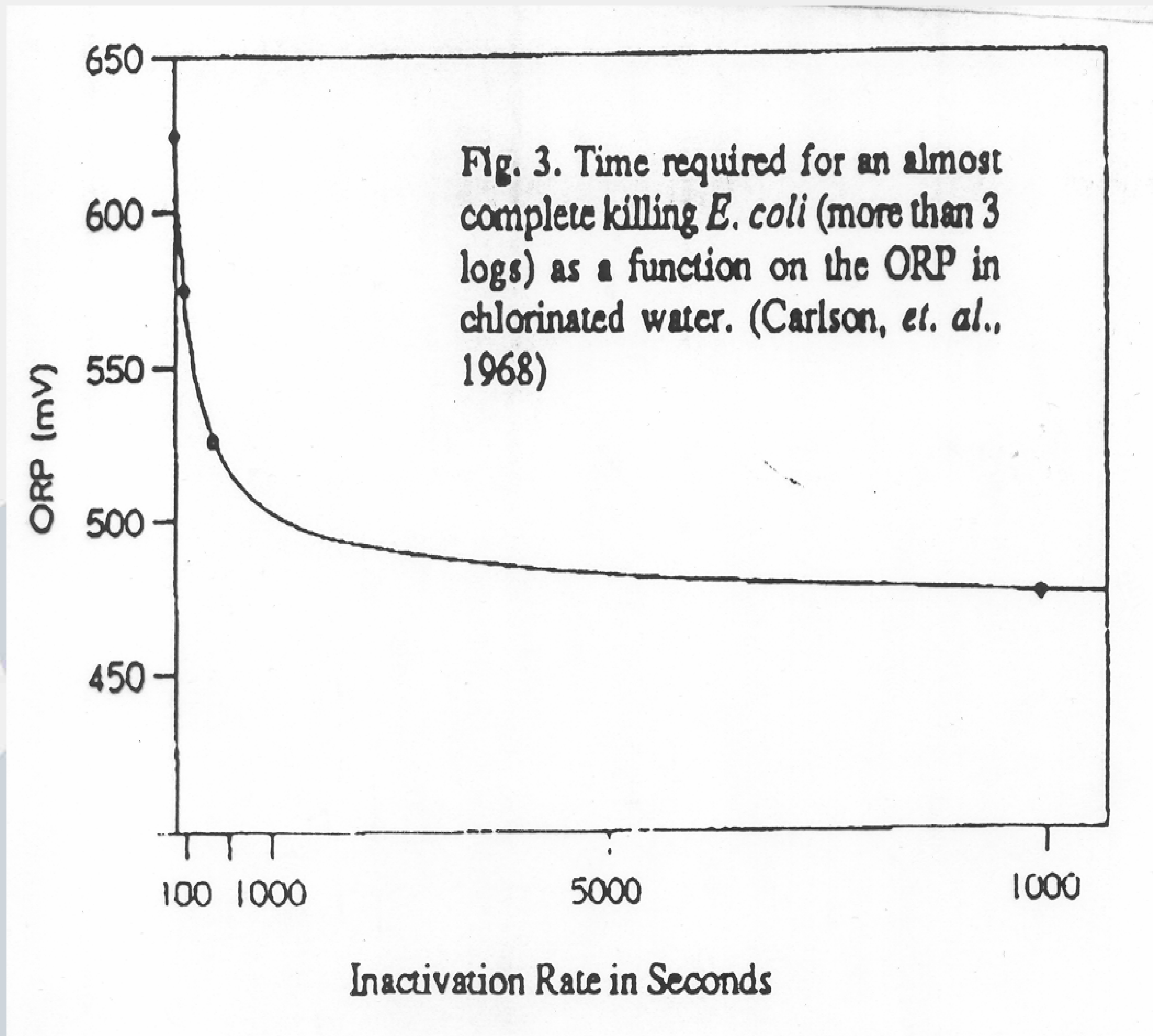
# Turbidity

- Maximum 2 Nephelometric Turbidity Units
- Water supplies  $> 1.0$  NTU

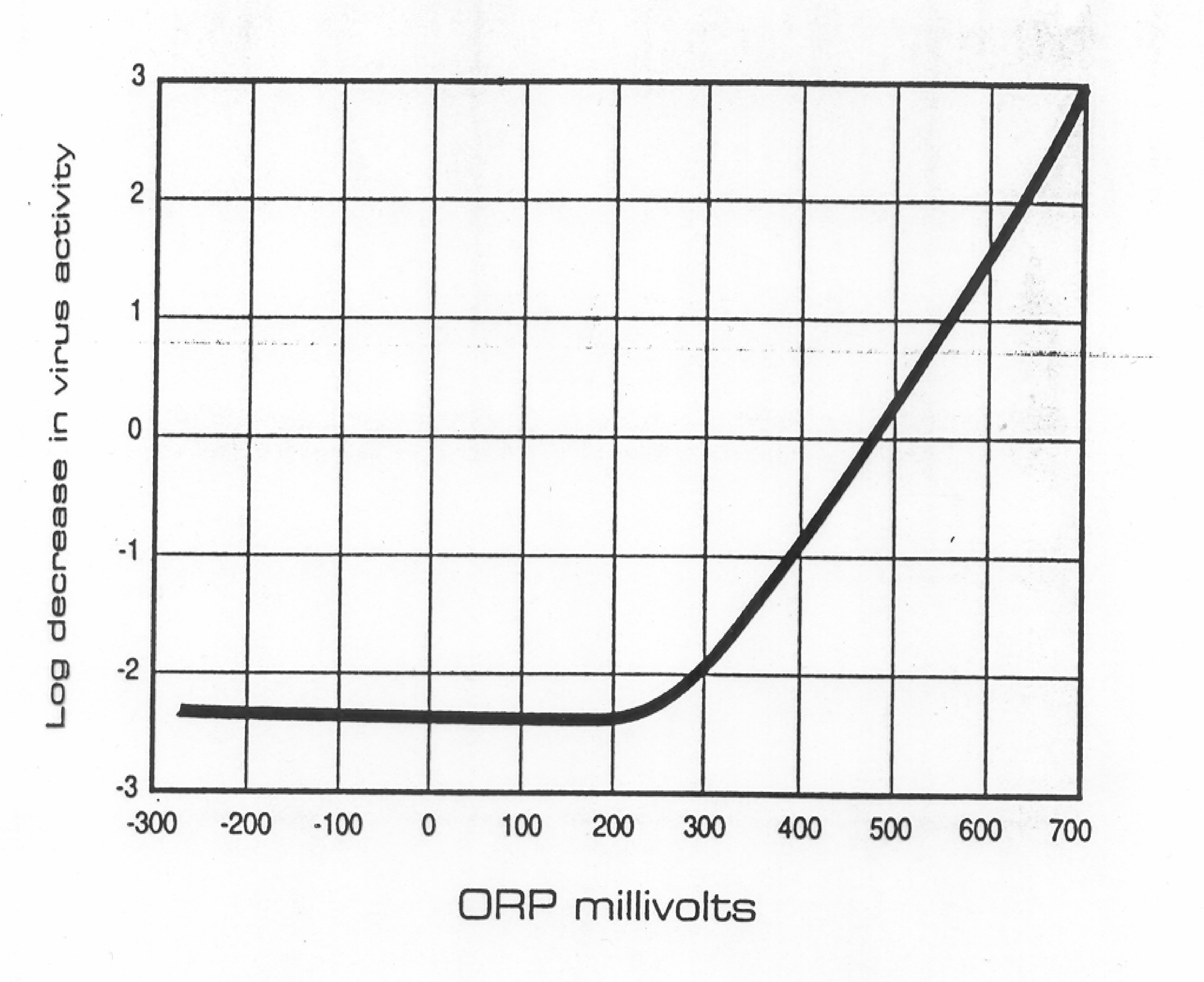
# Oxidation Reduction Potential (ORP)

- ORP = RedOx
- A direct measure of the rate of oxidative disinfection
- Predicts oxidant demand
- 650mV in water supplies
- 720 to 750 mV in pools

# ORP & E. coli



# ORP & Poliovirus



# Testing

- Test Kits
  - Photometric or meter
  - Probe
  - Laboratory
- Test Frequency
  - Test Dependent
  - Disinfectant & pH – 2 to 4 hourly
  - Other Daily to weekly

# Record Keeping

- Daily Log of each pool
- Store for 12 months

# QUESTIONS ?

[http://www.health.nsw.gov.au/PublicHealth/environment/water/water\\_spa.asp](http://www.health.nsw.gov.au/PublicHealth/environment/water/water_spa.asp)