

Quaternary
Ammoniums

Methanogens

“QUATS”

- Found in cleanup chemicals
- Longer lifespan and doesn't have the “bleach” odor
- Strong cationic charge
- Concentrates in sludge
- Methanogens stop producing methane

Treatment options for “Quats”

- Use lower dosage of <20ppm
- Use Quat Lock
 - Quat Lock is a surfactant
 - Prevents Quats from binding (Locking) up in the anaerobic sludge

What to do with Quats

- 1st Determine how much quat using Hach total quats colorimeter test
- Apply Quat Lock or Quat Lock 41
- Use low and high range detergent test to determine correct dosage
- Use Hach total test. Raw influent minus anaerobic influent = "Free Quats"

How much Quat Lock is needed

- 1gallon QL41 to “lock up” 2gallons of quats sanitizer.
- Use detergent test
- Best results using 250ppm QL41 (detergent)
- High range for influent to lagoon
- Low range for anaerobic effluent. Looking for a 10ppm Quat Lock residual

250ppm Quat Lock



CHEMets Detergent Test Kit



DI
Nate

	SS 4Quat Purchasing Records Gallons	Bio-gas Burned Cu.Ft.	
May-07	4,400		
Jun-07	3,575		
Jul-07	4,400		
Aug-07	3,575		
Sep-07	3,300		
Oct-07	4,400		
Nov-07	4,400		
Dec-07	4,340		
Jan-08	3,850		
Feb-08	4,125		
Mar-08	2,810	12,102,000	
Apr-08	4,400	14,358,000	
May-08	3,300	9,603,668	
Jun-08	3,025	14,512,045	
Jul-08	4,950	12,489,692	
Aug-08	3,300	8,321,276	
Sep-08	4,125	8,675,304	
Oct-08	5,775	11,254,140	
Nov-08	3,577	12,323,456	
Dec-08	5,225	9,029,352	
Jan-09	5,775	8,732,636	
Feb-09	6,050	6,832,536	
Mar-09	6,875	7,088,824	
Apr-09	6,050	1,780,216	
May-09	5,500	2,656,048	
Jun-09	5,500	4,959,952	
Jul-09	4,950	4,920,000	Estimated

	Bulk Bleach- Prochlor Usage (Gallons)	Complete Foam Usage (Gallons)
May-07	7,600	8,000
Jun-07	7,773	4,000
Jul-07	3,833	4,000
Aug-07	7,589	8,000
Sep-07	3,888	8,000
Oct-07	7,717	0
Nov-07	7,313	12,000
Dec-07	7,723	4,000
Jan-08	7,698	8,000
Feb-08	7,621	8,000
Mar-08	3,862	4,000
Apr-08	3,859	8,000
May-08	7,555	4,000
Jun-08	3,778	4,000
Jul-08	8,075	8,000
Aug-08	3,683	8,000
Sep-08	7,649	8,000
Oct-08	7,603	4,000
Nov-08	3,800	8,000
Dec-08	7,643	8,000
Jan-09	3,319	4,000
Feb-09	3,800	0
Mar-09	7,459	0
Apr-09	3,942	0
May-09	3,717	0
Jun-09	7,808	0
Jul-09	3,801	0

**John Morrell & Co. Waste Water
Quaternary Ammonium Testing**

: Values as total quaternary ammonium compounds

Influent Grab mg/l	DAF Effluent Grab mg/l	City Sample Composite mg/l	City Flow GPM	KO Quat Killer Usage Gallons	
23.6			0	75	
24.5					
24					
16.6			0	75	
19.4			0	150	
38			0	150	
22.4					
25					
23					
28			0	150	
26					
21.5					
29.5			0	150	
25.5					
25.5					
29			0	150	
16					
23.5					
18.8			0	150	
25.5					
31					
25.6			0	150	
25					
26					
26			0	150	
24.4			0	150	
28			0		
20			25 gpm	150	
27.5					
19.6		20.8	25 gpm	150	
26					
18					
10			25 gpm	75	
1.6			25 gpm	75	
2.4			50 gpm	400 mls/min.	152 gal.
28	25				
22					
22.8	7	22	50 gpm	152	
25.5	28				
15.3	19.9				
19.6	17.6	19.6	100 gpm	152	
19.2	17.2	24	100gpm	152	

22-May	18.8	18.8	15.2	100 gpm	152	
	16.5	21.5				
	14.5	20.5				
23-May	18.5		20 grab	Flow off	152	
	12.5		24.5 grab			
24-May	7		3.0 grab	Flow off	130	
	1.4		1.1 grab			
25-May	3.2	1.4		Flow off	120	
26-May	17.2	23.2		Flow off	500 mls./min.	200 gal.
	25.5	22.5				
27-May	21.6	15.6		Flow Off		
28-May	21.5	26.5		Flow Off		
29-May	19	14		Flow Off		
30-May	17.2	21.2		Flow Off		
31-May	8.6	15.4		Flow Off		
1-Jun	25.0	17.2	22.0	100gpm	150 gal/day	
2-Jun	23.0	14.0	21.0	100gpm	150 gal/day	
3-Jun	30.0	15.0	10.0	100gpm	150 gal/day	
4-Jun	16.0	6.0	9.0	100gpm	150 gal/day	
5-Jun	20.4	16.4	18.4	100gpm	150 gal/day	
6-Jun	14.5	7.5		100gpm	150 gal/day	
7-Jun				100gpm	150 gal/day	
8-Jun	22.0	12.8	5.6	100gpm	150 gal/day	
9-Jun	23.5	20.0	10.8	100gpm	South DAF EFF	North DAF Eff
10-Jun	21.5	13.6	20.4	100gpm	25 grab	25 grab
11-Jun	22.5	14.8	14.8		150 gal/day	
12-Jun	14.0		20.8		150 gal/day	
13-Jun	21.0	20.5			150 gal/day	
14-Jun	3.0	6.5			150 gal/day	
15-Jun	10.0	5.0	2.5		150 gal/day	
16-Jun	22.0	18.0	22.0		150 gal/day	
17-Jun	19.5	19.0	20.5		150 gal/day	
18-Jun	20.5	21.0	19.0		150 gal/day	
19-Jun	23.0	21.5	17.0		150 gal/day	
20-Jun					150 gal/day	
21-Jun					150 gal/day	
22-Jun	25.0	14.5			150 gal/day	
23-Jun	21.5	22.0	17.5		150 gal/day	
24-Jun	22.0	22.0	18.5		150 gal/day	
25-Jun	19.0	22.5	20.5		150 gal/day	
26-Jun	20.0	22.0	19		150 gal/day	
27-Jun	12.0	12.5			150 gal/day	
28-Jun	2.5	12.5			150 gal/day	
29-Jun	2.0	4.5	6		150 gal/day	
30-Jun	21.5	20.5	17.5		150 gal/day	

1-Jul	21.0	19.5	18.5		150 gal/day
2-Jul	20.5	19.5	20		150 gal/day
3-Jul	18.0	19.0	17		150 gal/day
4-Jul					150 gal/day
5-Jul					150 gal/day
6-Jul	3.0	4.5	2.5		150 gal/day
7-Jul	12.0	10.5	8.5		150 gal/day
8-Jul	17.0	17.5	19		150 gal/day
9-Jul	19.0	17.5	20		150 gal/day
10-Jul	18.0	16.0	19.5		150 gal/day
11-Jul	17.0		18		150 gal/day
12-Jul	12.4				150 gal/day
13-Jul	12.5	7.0		off	150 gal/day
14-Jul	11.5	5.5		off	150 gal/day
15-Jul	20.5	19.0		off	150 gal/day
16-Jul	20.5	19.0		off	150 gal/day
17-Jul	15.5	20.0		off	150 gal/day
18-Jul	15.5	18.5		off	150 gal/day
19-Jul	5.0	9.5		off	150 gal/day
20-Jul	2.5	5.0		off	150 gal/day
21-Jul	15.0	18.5		off	150 gal/day
22-Jul	18.0	23.0		off	150 gal/day
23-Jul	16.5	19.0		off	150 gal/day
24-Jul	20.5	20.1		off	150 gal/day
25-Jul	19.0			off	150 gal/day
26-Jul				off	150 gal/day
27-Jul	4.0	15.0		off	150 gal/day