



Minnesota  
Pollution  
Control  
Agency

Water Quality

Wastewater  
Technical  
Review and  
Guidance

# HIGH pH LIME SLUDGE STABILIZATION – REVIEW CHECKLIST

Water/Wastewater/#5.33, May 2001

FACILITY NAME

DATE

CONSULTING ENGINEER

SITE INSPECTION (DATE & INSPECTOR)

## PLANNING OR DESIGN PHASE

Alkaline material may be added to liquid primary or secondary sludges for sludge stabilization in lieu of digestion facilities; to supplement digestion or for interim sludge handling.

To achieve PSRP sludge with lime, sufficient lime is added to the sewage sludge to raise the pH of the sewage sludge to 12 after 2 hours of contact.

1. Peak sludge production?  
High pH stabilization should be designed for 150% of peak sludge production including sludge needed to retreat due to decay of pH. \_\_\_\_\_
2. Sludge flow solids concentration? \_\_\_\_\_
3. Lime dosage?  
(.1 to .3 kg pure  $\text{Ca}(\text{OH})_2$  per kg of dry solids – pH dependent) \_\_\_\_\_
4. Contact time (for PSRP)?  
(Minimum 2 hours of vigorous mixing) \_\_\_\_\_
5. Minimum pH?  
(Minimum pH of 12 for 2 hours) \_\_\_\_\_
6. For Vector Attraction Reduction (per 503.33 part (b)(6) of the Federal Regulations) “The pH of sewage shall be raised to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours. \_\_\_\_\_

wq-wwtp5-33





7. Nearest residence?  
(Odor control recommended for mixing within ½ mile of residential or commercial development.) \_\_\_\_\_
8. Mixing tanks:  
Number? (Minimum of two recommended.) \_\_\_\_\_  
Size? \_\_\_\_\_  
(Based on:  
peak sludge rates  
storage between batches  
dewatering or thickening in tanks (Y/N)  
sludge thickening prior to treatment  
type of mixing device  
spreading immediately after mixing) \_\_\_\_\_
9. Mixing Equipment:  
Mechanical? \_\_\_\_\_  
(Impellers designed to minimize fouling and provide continuity of service during freezing. Also insure homogeneous mixture.)  
Aeration? \_\_\_\_\_  
(Diffuser to supply 30 cfm/1000 cubic feet,  
Nonclogging type diffuser) \_\_\_\_\_  
Ventilation required for indoor mixing? \_\_\_\_\_
10. Chemical Feed:  
Is all storage air tight? \_\_\_\_\_  
Is feed equipment batch or automated? \_\_\_\_\_  
Piping greater than 2" \_\_\_\_\_  
Are duplicate units for feeding provided? \_\_\_\_\_  
What type of lime is being used? \_\_\_\_\_
- (Hydrated lime (Ca(OH)<sub>2</sub>) recommended for small plants over quick lime (CaO) (less than a car load per month). Quicklime for manually operated batch slaking of quick lime should be avoided due to safety considerations (unless adequate clothing and equipment are provided, quicklime requires hydration). \_\_\_\_\_
- Chemical storage capacity?  
Minimum storage 30-day supply.  
Minimum slopes on steel hoppers 55°.  
Hopper vibration helps to prevent arch formation. \_\_\_\_\_
- Are provisions provided for cleaning? \_\_\_\_\_  
Mixing tanks? \_\_\_\_\_  
Storage tanks? \_\_\_\_\_  
Piping? \_\_\_\_\_