

This Report Details BioCor test at Sims Bayou near Houston on Sludge

People: Jim McClung – PGT, Inc.
Wayne Rucker – Synagro Technologies
Facility Operator Days – Gary Tucker
Facility Operator Nights – Tim Leroy
City of Houston – Tim Grisham (713-928-4700)
City of Houston Lab – Chang Lee or Akee Ahped
(ph: 281-575-2814)
NW Corner of Bellaire & Bethany
7500 Bellaire Blvd. (opens @ 8

[START TEST

5-15-03 Treatment started at 1:30 pm @ 500ppm dose (4.375 GPH)

5-16-03 8:00 am increased dose to 1,000 ppm

0:00 HRS usage 15.4 Gallons Total of product or 2.57 GPH or 294ppm –
an increase in stroke to 40 would yield desired 500ppm dose; pump rated
at 20 GPHX24 =480 psi

480 X % stroke X frequency;

Ppm product: 150 ppm flow X 1440 minutes/day X 8.34 lbs/gallon =

1,000,000 = mm#; gpd X 8.6 lbs/gal divided by mm# = ppm of product feed;

Example: 150gpm X 1440 X 8.34 divided by 1,000,000 = 1.8 million lbs =
105 gpd X 8.6 lbs/gal divided by 1.8 mm# = ppm product feed rate.

Time Log:

5-15:	13:30	Start Pump @ 28/80
5-15	14:07	Stop Pump
5-15	17:23	Start Pump
5-16	00:00	Stop Pump (294ppm)
5-16	05:05	Start Pump – increase pump rate to 60/80
5-16	09:00	increase pump rate to 80/80 for 1,000 ppm dose Took sample @ CHT tank to lab for 8:30 lab work For reading at 500 ppm dose; Took control sample @ pump area for same
5-16	11:45	Stop Pump 2-5/8" used in last 2 hrs and 45 minutes (20.2125 Gallons used); 7.35 GPH @ 80/80 Pump pressure = 176.4 GPD=837ppm; Observation: No more dead fish/rotten cabbage Odor except for very faint odor directly over the CHT tank;
5-16	15:30	Pump on & increased dose to 100/100
5-16	21:00	Pump Stop
5-17	03:15	Pump Start
5-17	03:30	Pump Stop – Repair Leak at Injections Point due to plumbing problem (was supposed to be stainless NPT pipe);
5-17	04:00	Pump Start
5-17	05:00	At 07:00 there was 5 inches of rain – freeway was shut down but made it to lab anyway;
5-17	09:00	Seven inches of rain and still raining hard; Talked to engineer re: odor applications for product;
5-17	09:25	Took sample from CHT tank (Observation: no odor In Sample);
5-17	09:45	Took control sample from thickener pump and Went to lab;

5-17 13:00 Got back to site – sometimes while I was gone
Somebody turned pump off for me;
Observation: 80 gallons left in product tank;

END TEST]

TEST SUMMARY OF 500PPM:

TOTAL VOLUME PUMPED: 98,850 GALLONS 799,389 #

TOTAL PRODUCT USED: 42.35 GALLONS = 364.21 #

TOTAL PPM TREATMENT: 455 PPM

SWAG: ACTUAL ASSUMPTION WAS A DOSE OF NOT MORE THAN 280PPM
DUE TO DILUTION FACTORS OF SYSTEM;

TEST SUMMARY OF 1,000PPM:

TOTAL VOLUME PUMPED: 125,250 GAL = 1,044,585 #

TOTAL PRODUCT USED: 146.3 GALLONS = 1258.18 #

TOTAL PPM TREATMENT: 1204PPM

SWAG: ACTUAL ASSUMPTION WAS DOSE OF NOT MORE THAN 750 DUE TO
DILUTION FACTORS OF SYSTEM.

NARRATIVE TO WAYNE:

I DID A SWAG ON ACTUAL TREATMENT ASSUMING 7,500 GALLONS IN THE LINE
AND 100,000 GALLONS IN THE CHT TANK TOTALING 107,500 GALLONS OF
FLOW VOLUME;

FURTHER ASSUMING THAT 8.5 FEET IS FULL – (STOP PUMP) AND 4 FEET IS
WHERE WE START PUMP.

FURTHER KNOWING THAT ON THE 500 PPM TEST SAMPLE, WE HAD A FEED OF
95,850 GALLONS OF TREATED VOLUME AND TAKING INTO ACCOUNT THE
DILUTION FACTOR IN THE TANK, I HAVE AN ACTUAL TREATMENT ASSUMPTION
LISTED ABOVE OF APX 280PPM;

HINDSIGHT IS ALWAYS 20/20 OF THESE THINGS AND IF I KNEW WHAT I KNOW
NOW, I WOULD HAVE HAULED 48.5 GALLONS OF BIOCOR UP THE CATWALK,
WAITED UNTIL THE TANK WAS AT ABOUT 7.5 FEET, AND THEN INITIATED THE
TREATMENT AT THE THICKENER PUMP THEN AT A PUMP SETTING OF 50/80.

THEN 45 MINUTES TO AN HOUR LATER, WHEN THEY SHUT THE THICKENER PUMP OFF, DUMP THE PRODUCT INTO THE CHT ROOM, WAIT 3 HOURS OR WHENEVER 7:00 AM ROLLED AROUND, THEN PULL OUR SAMPLE; THEN WE WOULD HAVE A HIGHLY ACCURATE 500PPM SAMPLING; REPEAT THE SAME FOR THE 1,000 TEST WITH THE PUMP SET AT 80/100.

THE VARIABLES WILL BE DIFFERENT AND ADJUSTMENTS SHOULD BE MADE TO ACCOMMODATE THE MECHANICS OF A TEST; THIS TEST AT SIMS BAYOU TOLD US A LOT THAT A LAB REPORT CANNOT ACCOUNT FOR.

FURTHER, I BELIEVE THAT WE CAN ACHIEVE SATISFACTORY ODOR REDUCTIONS AT 500PPM AND ODOR ELIMINATION AT 600-700 PPM; AS FOR THE FECAL COLIFORM REDUCTIONS, A 50% REDUCTION WOULD OCCUR AT APX 1,000 PPM DUE TO THE HIGH CONCENTRATION OF THE SLUDGE;

AS FOR THE RAIN ON FRIDAY, THE 1,000PPM TEST COULD BE CONSIDERED SOMEWHAT INVALID DUE TO HEAVY RAINS, ALTHOUGH PRIOR TO THE RAIN THERE WERE NO ODORS OBSERVED FROM EITHER THE TANKS OR THE SAMPLES (OTHER THAN MILDLY DIRECTLY OVER THE CHT TANK); I WOULD ESTIMATE THE ODOR REDUCTION TO BE 95-98%; IF YOU REFER TO THE TIME LOG, YOU WILL SEE THAT THE PPM DOSE WAS AT ABOUT 837PPM INTO THE LINES, WITH MUCH OF THE FLOW STILL PRESENT WITHIN THE LINES, AND COULD NOT EVEN CONCEIVABLY BEEN MORE THAN ACTUALLY 500-550PPM AT THE TANK BY THAT TIME; THIS WAS A VERY EXCITING OBSERVATION FOR EVERYBODY AROUND THE SITE WHICH INCLUDED MYSELF, THE OPERATORS AND ENGINEERS.

I HAVE ENJOYED WORKING WITH YOU, SYNAGRO AND THE CITY OF HOUSTON DURING THESE DAYS OF TESTING AND FEEL CERTAIN BIOCOR IS THE ANSWER TO REDUCING THE TARRIFFS AND CERTAINLY THE ODORS.

JIM MCCLUNG