

**LAMPIRAN**

Lampiran 1

Form. 1

**Formulir Pengambilan dan Analisa Sampel Limbah Cair  
RS AN-NISA Tangerang**

Tanggal sampling : .....

Subjek : Limbah cair

Lokasi pengambilan : efluen

Parameter uji : Faktor Fisika

Laboratorium : .....

No	Parameter	Satuan	Kadar	Keterangan
1	Temperatur/suhu	°C	.....	
2	TSS	mg/L	.....	

Keterangan:

Standar Baku Mutu Limbah Cair: Kep. Men Lingkungan Hidup nomor 58 tahun 1995 tentang Baku Mutu Limbah Cair Rumah Sakit

**Formulir Pengambilan dan Analisa Sampel Limbah Cair  
RS AN-NISA Tangerang**

Tanggal sampling : .....

Subjek : Limbah cair

Lokasi pengambilan : efluen

Parameter uji : Faktor Kimia

Laboratorium : .....

No	Parameter	Satuan	Kadar	Keterangan
1	pH	-	.....	
2	Amonia bebas	mg/L	.....	
3	Phospat	mg/L	.....	
4	BOD	mg/L	.....	
5	COD	mg/L	.....	

Keterangan:

Standar Baku Mutu Limbah Cair: Kep. Men Lingkungan Hidup nomor 58  
tahun 1995 tentang Baku Mutu Limbah Cair Rumah Sakit

Lampiran 2

**Gambar Instalasi Pengolahan Air Limbah (IPAL) RS AN-NISA Tangerang**

Lampiran 3

**Data Dasar Penelitian**  
**“Hubungan Waktu Tinggal (Detention Time) Terhadap Amonia**  
**Pada Proses Pengolahan Limbah Cair Sistem Biofilter Anaerob Aerob**  
**Di RS AN-NISA Tangerang Tahun 2013 – 2014”**

No	Waktu Sampling	Kualitas Amonia (mg/L)	Debit Air Limbah (m <sup>3</sup> )	Bak Anaerob (6 – 8 jam)		Bak Aerob (6 – 8 jam)	
				Kapasitas (m <sup>3</sup> )	Waktu Tinggal (jam)	Kapasitas (m <sup>3</sup> )	Waktu Tinggal (jam)
1	15 Jan 2013	0,04	37,4	7,2	4,67	11,4	7,93
2	06 Feb 2013	3,44	42,6	7,2	4,01	11,4	6,36
3	13 Maret 2103	1,01	39,2	7,2	4,43	11,4	7,01
4	10 April 2013	1,20	41,2	7,2	4,21	11,4	6,67
5	04 Mei 2013	1,48	39,4	7,2	4,43	11,4	7,01
6	04 Juni 2013	1,76	35	7,2	4,93	11,4	7,81
7	19 Juli 2013	4,13	37	7,2	4,67	11,4	7,39
8	12 Agust 2013	1,17	36,6	7,2	4,80	11,4	7,60
9	07 Sept 2013	1,77	38	7,2	4,54	11,4	7,20
10	16 Okt 2013	1,02	44,5	7,2	3,92	11,4	6,21
11	07 Nov 2013	0,45	41	7,2	4,21	11,4	6,67
12	11 Des 2013	0,95	39	7,2	4,43	11,4	7,01
13	30 Jan 2014	1,49	37	7,2	4,67	11,4	7,39
14	13 Feb 2014	0,02	41	7,2	4,21	11,4	6,67
15	09 Maret 2014	1,14	39	7,2	4,43	11,4	7,01
16	02 April 2014	0,06	36	7,2	4,80	11,4	7,60
17	21 Mei 2014	1,37	37,40	7,2	4,67	11,4	7,39
18	30 Juni 2014	1,16	37,10	7,2	4,67	11,4	7,39
19	24 Juli 2014	0,37	35	7,2	4,93	11,4	7,81
20	08 Agust 2014	0,13	37,40	7,2	4,67	11,4	7,39
21	23 Sept 2014	1,44	31,54	7,2	5,57	11,4	8,82
22	15 Nov 2014	2,10	28,47	7,2	6,17	11,4	9,77
23	06 Nov 2014	1,19	33,15	7,2	5,23	11,4	8,29
24	29 Des 2014	0,21	30,20	7,2	5,76	11,4	9,12

Lampiran 4

HASIL PENGOLAHAN DATA DENGAN PERANGKAT SPSS

1. KARAKTERISTIK DATA PENELITIAN

		<b>Statistics</b>			
		DEBIT LIMBAH CAIR (m3)	KUALITAS AMONIA (mg/L)	WAKTU TINGGAL BAK ANAEROB (JAM)	WAKTU TINGGAL BAK AEROB (JAM)
N	Valid	24	24	24	24
	Missing	0	0	0	0
	Mean	37.08	1.1604	4.7096	7.4800
	Median	37.00	1.1500	4.6700	7.3900
	Mode	37	.02 <sup>a</sup>	4.67	7.39
	Std. Deviation	3.855	1.02047	.53460	.85141
	Minimum	28	.02	3.92	6.21
	Maximum	44	4.13	6.17	9.77

a. Multiple modes exist. The smallest value is shown

2. FREKUENSI KUALITAS WAKTU TINGGAL BAK ANAEROB DAN AEROB

		<b>KUALITAS BAK ANAEROB</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6 - 8 JAM	1	4.2	4.2	4.2
	< 6 JAM dan >8 JAM	23	95.8	95.8	100.0
	Total	24	100.0	100.0	

**KUALITAS BAK AEROB**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 6 - 8 JAM	20	83.3	83.3	83.3
< 6 JAM dan > 8 JAM	4	16.7	16.7	100.0
Total	24	100.0	100.0	

3. FREKUENSI KUALITAS AMONIA LIMBAH CAIR RS AN-NISA TANGERANG

**KUALITAS EFFLUENT**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid =< 0,1mg/L	3	12.5	12.5	12.5
> 0,1mg/L	21	87.5	87.5	100.0
Total	24	100.0	100.0	

4. TABEL SILANG ANTARA WAKTU TINGGAL BAK ANAEROB DAN KUALITAS AMONIA

**KUALITAS BAK ANAEROB \* KUALITAS EFFLUENT Crosstabulation**

			KUALITAS EFFLUENT		Total
			=< 0,1mg/L	> 0,1mg/L	
KUALITAS BAK ANAEROB	6 - 8 JAM	Count	0	1	1
		% within KUALITAS BAK ANAEROB	.0%	100.0%	100.0%
		% within KUALITAS EFFLUENT	.0%	4.8%	4.2%
		% of Total	.0%	4.2%	4.2%
< 6 JAM dan > 8 JAM	JAM	Count	3	20	23
		% within KUALITAS BAK ANAEROB	13.0%	87.0%	100.0%
		% within KUALITAS EFFLUENT	100.0%	95.2%	95.8%

	% of Total	12.5%	83.3%	95.8%
Total	Count	3	21	24
	% within KUALITAS BAK ANAEROB	12.5%	87.5%	100.0%
	% within KUALITAS EFFLUENT	100.0%	100.0%	100.0%
	% of Total	12.5%	87.5%	100.0%

5. TABEL SILANG ANTARA WAKTU TINGGAL BAK AEROB DAN KUALITAS AMONIA

**KUALITAS BAK AEROB \* KUALITAS EFFLUENT Crosstabulation**

			KUALITAS EFFLUENT		Total
			=< 0,1mg/L	> 0,1mg/L	
KUALITAS BAK AEROB	6 - 8 JAM	Count	3	17	20
		% within KUALITAS BAK AEROB	15.0%	85.0%	100.0%
		% within KUALITAS EFFLUENT	100.0%	81.0%	83.3%
		% of Total	12.5%	70.8%	83.3%
		< 6 JAM dan > 8 JAM	Count	0	4
	% within KUALITAS BAK AEROB	.0%	100.0%	100.0%	
	% within KUALITAS EFFLUENT	.0%	19.0%	16.7%	
	% of Total	.0%	16.7%	16.7%	
Total		Count	3	21	24
		% within KUALITAS BAK AEROB	12.5%	87.5%	100.0%
		% within KUALITAS EFFLUENT	100.0%	100.0%	100.0%
		% of Total	12.5%	87.5%	100.0%

6. UJI CHI SQUARE ANTARA WAKTU TINGGAL BAK ANAEROB DAN KUALITAS AMONIA

**KUALITAS EFFLUENT**

	Observed N	Expected N	Residual
=< 0,1mg/L	3	12.0	-9.0
> 0,1mg/L	21	12.0	9.0
Total	24		

**KUALITAS BAK ANAEROB**

	Observed N	Expected N	Residual
6 - 8 JAM	1	12.0	-11.0
< 6 JAM dan >8 JAM	23	12.0	11.0
Total	24		

**TEST STATISTICS**

		KUALITAS EFFLUENT	KUALITAS BAK ANAEROB
Chi-Square		13.500 <sup>a</sup>	20.167 <sup>a</sup>
df		1	1
Asymp. Sig.		.000	.000
Monte Carlo Sig.	Sig.	.000 <sup>b</sup>	.000 <sup>b</sup>
	95% Confidence Interval		
	Lower Bound	.000	.000
	Upper Bound	.000	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 12,0.

b. Based on 10000 sampled tables with starting seed 624387341.



7. UJI CHI SQUARE ANTARA WAKTU TINGGAL BAK ANAEROB DAN KUALITAS AMONIA

**KUALITAS EFFLUENT**

	Observed N	Expected N	Residual
=< 0,1mg/L	3	12.0	-9.0
> 0,1mg/L	21	12.0	9.0
Total	24		

**KUALITAS BAK AEROB**

	Observed N	Expected N	Residual
6 - 8 JAM	20	12.0	8.0
< 6 JAM dan > 8 JAM	4	12.0	-8.0
Total	24		

**TEST STATISTICS**

		KUALITAS EFFLUENT	KUALITAS BAK AEROB
Chi-Square		13.500 <sup>a</sup>	10.667 <sup>a</sup>
df		1	1
Asymp. Sig.		.000	.006
Monte Carlo Sig.	Sig.	.000 <sup>b</sup>	.002 <sup>b</sup>
	95% Confidence Interval		
	Lower Bound	.000	.001
	Upper Bound	.001	.003

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 12,0.

b. Based on 10000 sampled tables with starting seed 1502173562.

8. CHI SQUARE CROSSTABULATION KUALITAS BAK ANAEROB DAN KUALITAS EFFLUENT

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
KUALITAS BAK AEROB * KUALITAS EFFLUENT	24	100.0%	0	.0%	24	100.0%

KUALITAS BAK ANAEROB \* KUALITAS EFFLUENT Crosstabulation

Count

	KUALITAS EFFLUENT		Total
	=< 0,1mg/L	> 0,1mg/L	
KUALITAS BAK ANAEROB 6 - 8 JAM	0	1	1
< 6 JAM dan >8 JAM	3	20	23
Total	3	21	24

Chi-Square Tests<sup>d</sup>

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.149 <sup>a</sup>	1	.699	1.000	.875	
Continuity Correction <sup>b</sup>	.000	1	1.000			
Likelihood Ratio	.273	1	.601	1.000	.875	
Fisher's Exact Test				1.000	.875	
Linear-by-Linear Association	.143 <sup>c</sup>	1	.705	1.000	.875	.875
N of Valid Cases	24					

a. 3 cells (75,0%) have expected count less than 5. The minimum expected count is ,13.

b. Computed only for a 2x2 table

c. The standardized statistic is -,378.

d. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

**Symmetric Measures**

	Value	Approx. Sig.	Monte Carlo Sig.		
			Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	.079	.699	1.000 <sup>a</sup>	1.000	1.000
N of Valid Cases	24				

a. Based on 10000 sampled tables with starting seed 2000000.

**9. CHI SQUARE CROSSTABLATION KUALITAS BAK AEROB DAN KUALITAS EFFLUENT**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
KUALITAS BAK AEROB * KUALITAS EFFLUENT	24	100.0%	0	.0%	24	100.0%

**KUALITAS BAK AEROB \* KUALITAS EFFLUENT Crosstabulation**

Count

	KUALITAS EFFLUENT		Total
	=< 0,1mg/L	> 0,1mg/L	
KUALITAS BAK AEROB 6 - 8 JAM	3	17	20
< 6 JAM dan > 8 JAM	0	4	4
Total	3	21	24

**Chi-Square Tests<sup>d</sup>**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.686 <sup>a</sup>	1	.408	1.000	.563	
Continuity Correction <sup>b</sup>	.000	1	1.000			
Likelihood Ratio	1.177	1	.278	.625	.563	
Fisher's Exact Test				1.000	.563	
Linear-by-Linear Association	.657 <sup>c</sup>	1	.418	1.000	.563	.563
N of Valid Cases	24					

a. 3 cells (75,0%) have expected count less than 5. The minimum expected count is ,50.

b. Computed only for a 2x2 table

c. The standardized statistic is ,811.

d. For 2x2 crosstabulation, exact results are provided instead of Monte Carlo results.

**Symmetric Measures**

	Value	Approx. Sig.	Monte Carlo Sig.		
			Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Nominal by Nominal Contingency Coefficient	.167	.408	1.000 <sup>a</sup>	1.000	1.000
N of Valid Cases	24				

a. Based on 10000 sampled tables with starting seed 299883525.