2. 排水基準

一般排水基準

Parameter	Maximum permitted in effluent discharge
BOD5 (20oC)	20 mg/l
Suspended solids	30 mg/l
Cyanide (as HCN)	0.1 mg/l
Sulphide (as S')	0.1 mg/l
Oil and grease	nil
Phenols	0.5 mg/l
Total toxic metals (alone or in combination)	0.5 mg/l
pH	6.5-9.0
Temperature	+/- 3oC of receiving water

Note: (1) an 8 or 10 to 1 dilution of the effluent by the receiving water is assumed
(2) the receiving water BOD is assumed to be <2 mg/l.

出典: Omwenga J.M.: 4th Water Technology Conference "Water in Africa in the Next Decade"

3．水路に放流する工場の排水基準

製糖工場

Effluent Source ..... Sugar processing factory (from sugarcane)
Production Rate ..... About 7,500 tons/d
Effluent Dilution ratio with receiving water 1:10

Effluent Characteristics	Required Discharge Characteristics
pH 4.5	Should range 6.5-8.5
BOD_5 at 20°C .... 5,000 mgO_2/l	Should not exceed 20 mg/l
COD ..... 10,000 mgO_2/l	Should not exceed 50 mg/l
Total suspended solids .. 6,000 mg/l	Should not exceed 30 mg/l
Total dissolved solids .. 3,000 mg/l	Should not exceed 1500 mg/l
Sulphides	Should not exceed 2 mg/l
Oil/grease	Trace

出典：水資源開発省（地方自治省へのレター）、1993

皮革なめし工場

Effluent source - Tannery
Effluent discharge Characteristics
Dilution with receiving water .....

Effluent Characteristics	Required Discharge Characteristics
pH - Beamhouse liquor 11.8 Tan liquor 4.0	Range 6.5-8.5
BOD_5 at 20°C .... 3,500 mgO_2/l	Should not exceed 20 mgO_2/l
COD ..... 6,500 mgO_2/l	Should not exceed 50 mgO_2/l
T.S.S. ..... 1,000 mg/l	Should not exceed 30 mg/l
Sulphides ..... 50 mgS/l	Should not exceed 2.0 mg/l
Total Chromium .. } 900 mgCr/l	Should not exceed 0.1 mg/l
Hexavalent Cr ... } 900 mgCr/l	Should not exceed 0.05 mg/l
TDS ..... 7,000 mg/l	Should not exceed 1000 mg/l
Oil/grease	Trace
Phenols	Should not exceed 0.02 mg/l
Free Ammonia	Should not exceed 5 mg/l
Other heavy metals (in combination)	Should not exceed 1.0 mg/l

出典：水資源開発省から地方自治省へのレター、1993

4．公共下水道に放流する排水基準

Parameters	Max. allowable limits
pH	Should range as 6.5-8.0
BOD_5 at 20°C	Should not exceed 500 mgO_2/l
COD	Should not exceed 1000 mgO_2/l
Temperature	Should not exceed 35°C
TSS	Should not exceed 600 mg/l
Oil/grease	Should not exceed 10 mg/l
Ammoniacal Nitrogen	Should not exceed 20 mg/l
TKN	Nil
Free Ammonia (NH_3)	Should not exceed 10 mg/l
TDS	Should not exceed 3000 mg/l
Chlorides as Cl	Should not exceed 1500 mg/l
Total Dissolved Phosphates	Should not exceed 30 mg/l
Sulphides (S)	Should not exceed 2 mg/l
Sulphates (SO_4)	Should not exceed 1500 mg/l
Pesticides	Nil
Phenols	Should not exceed 10 mg/l
Total Chromium	Should not exceed 3.0 mg/l
Hexavalent Chromium (Cr^{+6})	Should not exceed 0.05 mg/l
Other heavy metals (in Combination) except iron	Should not exceed 1.0 mg/l
Detergents	Should not exceed 15 mg/l

出典：水資源開発省（地方自治省へのレター）、1993

5．飲料水基準

Parameter	Units	Limit
pH	pH scale	6.5-8.5
Colour	mg/t/l	<15
Turbidity	NTU	<15
Permanganate Value @ 20 min. boiling	mgO_2/l	20
Conductivity @ 25°C	μ/cm	2000
Iron	mgFe/l	0.3
Manganese	mgMn/l	0.1
Sodium	mgNa/l	200
Total Hardness	$mgCaCo_3/l$	500
Total Alkanility	$mgCaCo_3/l$	500
Chloride	mgCl/l	250
Fluoride	mgF/l	1.5
Nitrate	mgN/l	10
Sulphate	$mgSo_4/l$	400
T.S.S.	mg/l	Nil (Free from T.S.S.)
TDS	mg/l	1000

上記の基準値はWHO(World Health Organization）の基準を採用している。

6．ナクル湖に流入する排水基準

(i)	pH range 7.0 - 9.0	
(ii)	BOD_5 at 20°C should not exceed	10 mgO_2/l
(iii)	COD " " "	30 mgO_2/l
(iv)	Temperature " " "	25±2°C
(v)	Total Suspended Solids "	15 mg/l
(vi)	Oil/grease	Trace
(vii)	Ammoniacal Nitrogen should not exceed	1.0 mg/l
(viii)	Total Nitrogen as Nitrates " "	5.0 mg/l
(ix)	Free Ammonia (NH_3) " " "	1.0 mg/l
(x)	Dissolved Solids " " "	1200 mg/l
(xi)	Chloride (as Cl) " " "	1500 mg/l
(xii)	Dissolved Phosphates " " "	5.0 mg/l
(xiii)	Sulphides " " "	0.5 mg/l
(xiv)	Sulphates " " "	500 mg/l
(xv)	Pesticides " " "	0.05 mg/l
(xvi)	Phenols " " "	2.0mg/l
(xvii)	Hexavalent chromium (Cr^{+6}) " " "	0.05 mg/l
(xviii)	Total Chromium " " "	0.1 mg/l
(xix)	Copper should not exceed	0.05 mg/l
(xx)	Zinc " " "	0.5 mg/l
(xxi)	Other metals in combination (except iron) should not exceed	1.0 mg/l
(xxii)	Detergents " " "	5.0 mg/l
(xxiii)	Fecal Coliforms " " "	5000/100 ml

出典：水資源開発省（地方自治省へのレター）、1993

7. 水路に放流される下水処理場の排水基準

下水処理場

Parameters	Max. allowable limits
pH	range - 7.0-9.0
BOD_5 at 20°C	Should not exceed 10 mgO_2/l
COD	Should not exceed 30 mgO_2/l
Temperature	25 ± 2°C
T.S.S.	Should not exceed 15 mg/l
Oil/grease	Trace
Ammoniacal Nitrogen	Should not exceed 1.0 mg/l
TKN	Should not exceed 5 mg/l
Free Ammonia (NH_3)	Should not exceed 1.0 mg/l
TDS	Should not exceed 1200 mg/l
Chlorides as Cl	Should not exceed 1500 mg/l
Total dissolved phosphates	Should not exceed 5.0 mg/l
Sulphides	Should not exceed 0.5 mg/l
Sulphates	Should not exceed 500 mg/l
Phenols	Should not exceed 2.0 mg/l
Detergents	Should not exceed 5.0 mg/l
Total Chromium	Should not exceed 0.05 mg/l
Other heavy metals in combination (except iron)	Should not exceed 0.1 mg/l
Total Coliforms	Should not exceed 1000/ml
Feacal Coliforms	Should not exceed 10/ml
Pesticides	Should not exceed 0.05 mg/l

JICA