TEST REPORT

Technical Report **(6216)273-0292-R1** December 30, 2016
Date Received September 29, 2016

The report is amendment of and supersedes the previous report (6216)273-0292 dated November 03, 2016.

Factory Company Name:	5089
Project No.:	/
Client Reference No.:	/
Sample Type:	Wastewater - Time-Weighted Composite Grab Samples*
Sample Pick Up Date:	October 11, 2016
Test Period:	October 11, 2016 to November 03, 2016
Discharge Option:	Direct Discharge (into factory owned ETP)
Sample Description:	I001) < Incoming Water – Fresh Water> I002) < Wastewater Before Treatment – Raw Waste Water > I003) < Wastewater After Treatment – Treated Waste Water > I004) < Sludge in Clarifier>

REMARK

If there are questions or concerns on this report, please contact the following persons:

Technical enquiry-Chemical: chemical.inquiry@tw.bureauveritas.com

This report shown the test result of the auxiliary chemical and/or raw material samples, which collected during particular factory audit. The results of this report shall not be used for any regulatory compliance purposes.

* The sampling is agreed with client.

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Photo of the Sample/ Sampling Location

I001)

I002)

I003)

I004)

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Executive Summary

1A) Conventional Parameters	I001	I002	I003	I004
Temperature	N/A		See result in page 5 – 8	N/A
TSS				
COD				
Total-N				
pH Value				
Color (Pt-Co)				
BOD_5				
Ammonium-N				
Total-P				
AOX				
Oil and Grease				
Phenol				
Coliform				
Foam				
ANIONS - Sulfide				
ANIONS - Sulfite				
1B) ConventionaParameters – METALS	●	N/A	●	

ZDHC MRSL Substances	I001	I002	I003	I004
2A) APs and APEOs	o	o	o	●
2B) Chlorobenzenes and Chlorotoluenes	●	o	o	o
2C) Chlorophenols	o	o	o	o
2D) Azo Dyes	o	o	o	o
2E) Carcinogenic Dyes	o	o	o	o
2F) Disperse Dyes	o	o	o	o
2G) Flame Retardants	o	o	o	o
2H) Glycols	o	o	o	o
2I) Halogenated Solvents	o	o	o	o
2J) Organotin Compounds	o	o	o	o
2K) Perfluorinated and Polyfluorinated	o	●	●	●
2L) Phthalates	●	●	●	●
2M) Poly Aromatic Hydrocarbons	o	o	o	o
2N) Volatile Organic Compounds	o	o	o	o

Note / Key :

- ● – Detected
- o – Not Detected

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Objective

The environment samples were tested for below parameters.

1A) Conventional Parameters
1B) Conventiona1 Parameters – METALS
2A) APs and APEOs
2B) Chlorobenzenes and Chlorotoluenes
2C) Chlorophenols
2D) Azo Dyes
2E) Carcinogenic Dyes
2F) Disperse Dyes
2G) Flame Retardants
2H) Glycols
2I) Halogenated Solvents
2J) Organotin Compounds
2K) Perfluorinated and Polyfluorinated Chemicals
2L) Phthalates
2M) Poly Aromatic Hydrocarbons
2N) Volatile Organic Compounds

Sampling Plan

Basically, three environment samples were sampled per factory, including 1) Fresh Water; 2) Raw Waste Water, and 3) Sludge, for the factory which discharge into a communal ETP (Option 1 – Indirect discharge). And four environment samples were sampled per factory, including 1) Fresh Water; 2) Raw Waste Water, 3) Treated Waste Water, and 4) Sludge for the factory which discharge into factory owned ETP (Option 2 – Direct discharge). Total number of sample collected will be depended on the actual factory facilities and manufacturing processes.

Method of sampling used is time-weighted composite grab samples (agreed with client.). 8-hours time-weighted mixed with grab sample is taken every 1 hour over a period of 8 hours. The sampling time would be carried out during day time, preferably between 9 a.m. to 5 p.m, the factory must operate normally in the am session. The aims to see the snapshot of water quality characteristics of the operating factories. They will not provide any information about the concentrations outside that point in time.

Remark :

- Sampling & Preservation procedure is with reference to below standards:
  1) Standard Methods for the Examination of Water and Wastewater, 21st edition, Method 1060, Collection and Preservation of Samples.
  2) ISO 5667- 1, 3, 10, 13 and 15 Water quality- Sampling - Guidance for the preservation and handling of water samples.
- Field data records are attached in Appendix B.

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Test Result

1A) Conventional Parameters

Temperature

Test Method : Measurement by thermometer/ U. S. EPA170.1

Tested Item(s)	Result	Unit	Conclusion
I003	28.6	deg. C	DATA

Note:
deg. C = degree Celsius (°C)

Total Suspended Solids (TSS)

Test Method : Reference to ISO 11923/ U. S. EPA 160.2/ APHA 2540D

Tested Item(s)	Result	Unit	Conclusion
I003	4.2	mg/L	DATA

Note:
mg/L = milligram per liter

Chemical Oxygen Demand (COD)

Test Method : Reference to ISO 6060/ U. S. EPA 410.4/ APHA 5220D

Tested Item(s)	Result	Unit	Conclusion
I003	92.1	mg/L	DATA

Note:
mg/L = milligram per liter

Total Nitrogen (Total-N)

Test Method : Reference to ISO 5663/ ISO 29441/ U. S. EPA 351.2/ APHA 4500N-C

Tested Item(s)	Result	Unit	Conclusion
I003	3.77	mg/L	DATA

Note:

mg/L = milligram per liter

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Test Result

pH Value

Test Method : Reference to ISO 10523/ U. S. EPA 150.1

-	Unit	Result
Test Item(s)	-	I003
Parameter	-	-
Temp. of sample	deg. C	28.6
pH value of sample	-	7.2
Conclusion	-	DATA

Note:
Temp. = Temperature deg. C = degree Celsius (°C)

Color (Pt-Co)

Test Method : With reference to ISO 7887, method D/ U. S. EPA 110.1/ U. S. EPA 110.2/ APHA 2120B

Tested Item(s)	Result	Unit	Conclusion
I003	45	Pt-Co	DATA

Biochemical Oxygen Demand (BOD_5)

Test Method : Reference to ISO 5815-1 & -2/ DIN EN 1899-1/ U. S. EPA 405.1/ APHA 5210B

Tested Item(s)	Result	Unit	Conclusion
I003	9.9	mg/L	DATA

Note:
mg/L = milligram per liter

Ammonia Nitrogen

Test Method : Reference to ISO 11732/ ISO 7150/ U. S. EPA 350.1/ APHA 4500 NH_3-N/ HJ 535

Tested Item(s)	Result	Unit	Conclusion
I003	2.56	mg/L	DATA

Note:

mg/L = milligram per liter

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Test Result

Total Phosphorus (Total-P)

Test Method : Reference to ISO 11885/ ISO 6878/ U. S. EPA 365.4/ APHA 4500P-J

Tested Item(s)	Result	Unit	Conclusion
I003	0.028	mg/L	DATA

Note:
mg/L = milligram per liter

Adsorbable Organic Halogen (AOX)

Test Method : Reference to ISO 9562/ U. S. EPA 1650

Tested Item(s)	Result	Unit	Conclusion
I003	0.392	mg/L	DATA

Note:
mg/L = milligram per liter

Oil and Grease

Test Method : Reference to ISO 9377-2/ U. S. EPA 1664

Tested Item(s)	Result	Unit	Conclusion
I003	4.1	mg/L	DATA

Note:
mg/L = milligram per liter

Phenol

Test Method : Reference to ISO 14402/ APHA 5530B, C & D

Tested Item(s)	Result	Unit	Conclusion
I003	0.115	mg/L	DATA

Note:

mg/L = milligram per liter

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Test Result

Coliform

Test Method : Reference to ISO 9308/ U. S. EPA 9132

Tested Item(s)	Result	Unit	Conclusion
I003	< 10	bacteria/ 100 mL	DATA

Note:
bacteria/100 mL = bacteria per 100 milliliters

Foam

Test Method : Visual

Tested Item(s)	Result	Unit	Conclusion
I003	Dissipating	-	DATA

ANIONS - Sulfide

Test Method : Reference to ISO 10530/ APHA 4500 S^{2-}D

Tested Item(s)	Result	Unit	Conclusion
I003	< 0.015	mg/L	DATA

Note:
mg/L = milligram per liter

ANIONS - Sulfite

Test Method : Reference to ISO 10304-3/ U. S. EPA 377.1

Tested Item(s)	Result	Unit	Conclusion
I003	< 0.1	mg/L	DATA

Note:

mg/L = milligram per liter

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Test Result

1B) Conventional Parameters - METALS

Heavy Metals	**I001**	**I002**	**I003**	**I004**
Arsenic (As)	ND	-	ND	N/A
Cadmium (Cd)	ND	-	ND	
Mercury (Hg)	ND	-	ND	
Lead (Pb)	2	-	2	
Antimony (Sb)	ND	-	56	
Cobalt (Co)	ND	-	2	
Nickel (Ni)	2	-	5	
Copper (Cu)	32	-	46	
Zinc (Zn)	77	-	75	
Chromium (Cr)	1	-	2	
Chromium VI (Cr VI)	ND	-	ND	
Silver (Ag)	ND	-	ND	

2A) APs and APEOs

APs and APEOs	**I001**	**I002**	**I003**	**I004**
OP	ND	ND	ND	1.1
NP	ND	ND	ND	9.6
OP1EO	ND	ND	ND	ND
OPEO (2-16)	ND	ND	ND	ND
NP1EO	ND	ND	ND	ND
NPEO (2-18)	ND	ND	ND	ND

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Test Result

2B) Chlorobenzenes and Chlorotoluenes

Chlorobenzenes and Chlorotoluenes	**I001**	**I002**	**I003**	**I004**
Chlorobenzene	ND	ND	ND	ND
Dichlorobenzenes				
1,2-Dichlorobenzene	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND
Trichlorobenzenes				
1,2,3-Trichlorobenzene	0.2	ND	ND	ND
1,2,4-Trichlorobenzene	0.3	ND	ND	ND
1,3,5-Trichlorobenzene	ND	ND	ND	ND
Tetrachlorobenzenes				
1,2,3,4-Tetrachlorobenzene	ND	ND	ND	ND
1,2,3,5-Tetrachlorobenzene	ND	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	ND	ND	ND	ND
Pentachlorobenzene	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND
2-Chlorotoluene, 3-Chlorotoluene, 4-Chlorotoluene	ND	ND	ND	ND
2,3-Dichlorotoluene, 3,4-Dichlorotoluene	ND	ND	ND	ND
2,4-Dichlorotoluene, 2,5-Dichlorotoluene, 2,6-Dichlorotoluene	ND	ND	ND	ND
2,3,6-Trichlorotoluene	ND	ND	ND	ND
2,4,5-Trichlorotoluene	ND	ND	ND	ND
Pentachlorotoluene	ND	ND	ND	ND

2K) Perfluorinated and Polyfluorinated Chemicals

Perfluorinated and Polyfluorinated Chemicals	**I001**	**I002**	**I003**	**I004**
PFOA	ND	0.06	ND	9
PFBS	ND	ND	ND	ND
PFOS	ND	ND	ND	ND
PFHxA	ND	ND	0.16	3
8:2 FTOH	ND	ND	ND	ND
6:2 FTOH	ND	ND	ND	ND

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Test Result

2L) Phthalates

Phthalates	**I001**	**I002**	**I003**	**I004**
BBP	ND	ND	ND	ND
DBP	ND	ND	ND	ND
DEHP	2	3	1	15.7
DNOP	ND	ND	ND	ND
DINP	ND	ND	ND	ND
DIDP	ND	ND	ND	ND
DEP	ND	ND	ND	ND
DPRP	ND	ND	ND	ND
DIBP	ND	ND	ND	ND
DCHP	ND	ND	ND	ND
DnHP	ND	ND	ND	ND
DNP	ND	ND	ND	ND
DIOP	ND	ND	ND	ND
DMEP	ND	ND	ND	ND
DHNUP	ND	ND	ND	ND
DIHP	ND	ND	ND	ND

Others Priority Chemical Groups

	I001	**I002**	**I003**	**I004**
2C) Chlorophenols	ND	ND	ND	ND
2D) Azo Dyes	ND	ND	ND	ND
2E) Carcinogenic Dyes	ND	ND	ND	ND
2F) Disperse Dyes	ND	ND	ND	ND
2G) Flame Retardants	ND	ND	ND	ND
2H) Glycols	ND	ND	ND	ND
2I) Halogenated Solvents	ND	ND	ND	ND
2J) Organotin Compounds	ND	ND	ND	ND
2M) Poly Aromatic Hydrocarbons	ND	ND	ND	ND
2N) Volatile Organic Compounds	ND	ND	ND	ND

Remark：

- Test method, reporting limit and list of chemical are summarized in tables of Appendix A.
- ND = Not detected (Please refer to reporting limit shown in Appendix A.).
- All results are in ppb as unit.
- ppb = part(s) per billion.

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APPENDIX A

Conventional parameters

Conventional Parameters	Total-P
Temperature	AOX
TSS	Oil and Grease
COD	Phenol
Total-N	Coliform
pH Value	Foam
Color (Pt-Co)	ANIONS - Sulfide
BOD_5	ANIONS - Sulfite
Ammonium-N	

List of Conventional Parameters – METALS :

No.	**Test Method**	**Reporting Limit**		**Unit**
Others : With reference to acid digestion with ICP analysis. Cr VI : With reference to solvent extraction and derivatisation followed by UV-Vis analysis.		Water:	Cd: 0.1; Hg: 0.05; Each (Others): 1	ppb
		Sludge:	Zn: 4; Hg: 0.02; Each (Others): 1	mg/kg

No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	Arsenic (As)	7440-38-2	7	Nickel (Ni)	7440-02-0
2	Cadmium (Cd)	7440-43-9	8	Copper (Cu)	7440-50-8
3	Mercury (Hg)	7439-97-6	9	Zinc (Zn)	7440-66-6
4	Lead (Pb)	7439-92-1	10	Chromium (Cr)	7440-47-3
5	Antimony (Sb)	7440-36-0	11	Chromium VI (Cr VI)	18540-29-9
6	Cobalt (Co)	7440-48-4	12	Silver (Ag)	7440-22-4

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ZDHC MRSL Substances

List of Alkylphenols and Alkylphenol Ethoxylates :						
Test Method				**Reporting Limit**		**Unit**
Alkylphenols : With reference to ISO 18857-2 (Modified with DCM extraction). Alkylphenol Ethoxylates : With reference to ISO 18857-2. Followed by GC/MS or LC/MS analysis				Water:	Each (OP & NP): 1 Each (OPEOs & NPEOs): 5	ppb
				Sludge:	Each: 0.2	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
1	Octylphenol (OP)	Various (140-66-9, 27193-28-8, 1806-26-4, 85771-77-3)	4	Nonylphenol (NP)		Various (25154-52-3, 104-40-5, 84852-15-3, 1173019-62-9 11066-49-2)
2	Octylphenol monoethoxylates (OP1EO)	Various	5	Nonylphenol monoethoxylates (NP1EO)		Various
3	Octylphenolethoxylates, (n=2 to n=16)	Various (9002-93-1, 9036-19-5, 68987-90-6)	6	Nonylphenolethoxylates, (n=2 to n=18)		Various (9016-45-9, 26027-38-3, 127087-87-0, 37205-87-1, 68412-54-4)

List of Chlorobenzenes :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to U. S. EPA 8260B and U. S. EPA 8270D. (DCM extraction, followed by GC/MS analysis)				Water:	Each: 0.2	ppb
				Sludge:	1,3-Dichlorobenzene, 1,4-Dichlorobenzene: 0.01 (mix total); 1,2,4,5-Tetrachlorobenzene, 1,2,3,5-Tetrachlorobenzene: 0.01 (mix total); Each: 0.01	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
Dichlorobenzenes		Various	6	1,3,5-Trichlorobenzene		108-70-3
1	1,2-Dichlorobenzene	95-50-1	Tetrachlorobenzenes			Various
2	1,3-Dichlorobenzene	541-73-1	7	1,2,3,4-Tetrachlorobenzene		634-66-2
3	1,4-Dichlorobenzene	106-46-7	8	1,2,3,5-Tetrachlorobenzene		634-90-2
Trichlorobenzenes		Various	9	1,2,4,5-Tetrachlorobenzene		95-94-3
4	1,2,3-Trichlorobenzene	87-61-6	10	Pentachlorobenzene		608-93-5
5	1,2,4-Trichlorobenzene	120-82-1	11	Hexachlorobenzene		118-74-1

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List of Chlorotoluenes :					
No.	**Test Method**			**Reporting Limit**	**Unit**
With reference to U. S. EPA 8260B and U. S. EPA 8270D. (DCM extraction, followed by GC/MS analysis)				Water: Each: 0.2 Sludge: Each: 0.01	ppb mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	2-Chlorotoluene, 3-Chlorotoluene, 4-Chlorotoluene	95-49-8, 108-41-8, 106-43-4	4	2,3,6-Trichlorotoluene	2077-46-5
2	2,3-Dichlorotoluene, 3,4-Dichlorotoluene	32768-54-0, 95-75-0	5	2,4,5-Trichlorotoluene	6639-30-1
3	2,4-Dichlorotoluene, 2,5-Dichlorotoluene, 2,6-Dichlorotoluene	95-73-8, 19398-61-9, 118-69-4	6	Pentachlorotoluene	877-11-2

List of Chlorophenols :					
No.	**Test Method**			**Reporting Limit**	**Unit**
With reference to U. S. EPA 8270D. (Solvent extraction, derivatisation with KOH, acetic anhydride followed by GC/MS analysis)				Water: Each: 0.5 Sludge: 2,3,6 & 2,4,5-TCP: 0.025 (mix total); ,4,5 & 2,3,4-TCP: 0.025 (mix total); 3,5 & 2,4 & 2,5 & 2,6-DCP: 0.025 (mix total); Each: 0.025	ppb mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	Pentachlorophenol (PCP)	87-86-5	Dichlorophenol (DiCP)		Various
			10	2,3-Dichlorophenol	576-24-9
2	2,3,4,5-Tetrachlorophenol	4901-51-3	11	3,4-Dichlorophenol	95-77-2
3	2,3,4,6-Tetrachlorophenol	58-90-2	12	2,4-Dichlorophenol	120-83-2
4	2,3,5,6-Tetrachlorophenol	935-95-5	13	2,5-Dichlorophenol	583-78-8
Trichlorophenol (TriCP)		Various	14	2,6-Dichlorophenol	87-65-0
5	2,4,6-Trichlorophenol	88-06-2	15	3,5-Dichlorophenol	591-35-5
6	2,3,5-Trichlorophenol	933-78-8	Mono Chlorophenol (MonoCP)		Various
7	2,4,5-Trichlorophenol	95-95-4	16	2-Chlorophenol	95-57-8
8	3,4,5-Trichlorophenol	609-19-8	17	3-Chlorophenol	108-43-0
9	2,3,4-Trichlorophenol	15950-66-0	18	4-Chlorophenol	106-48-9

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List of Aromatic Amines in Azo Colorants :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to EN 14362. (Reduction step with sodium dithionite, solvent extraction followed by GC/MS and HPLC Analysis				Water:	Each: 0.1	ppb
				Sludge:	Each: 0.1	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
1	4-Aminodiphenyl (Biphenyl-4-ylamine or Xenylamine)	92-67-1	13	4,4`-Methylenedi-o-toluidine (3,3`-Dimethyl-4,4`-diaminodiphenylmethane)		838-88-0
2	Benzidine	92-87-5	14	p-Cresidine (6-Methoxy-m-toluidine)		120-71-8
3	4-Chloro-o-toluidine	95-69-2	15	4,4`-Methylene-bis-(2-chloraniline) (2,2`-Dichloro-4,4`-methylene-dianiline)		101-14-4
4	2-Naphthylamine	91-59-8	16	4,4`-Oxydianiline		101-80-4
5	o-Aminoazotoluene (4-Amino-2`,3-dimethylazobenzne or 4-o-tolyazo-o-toluidine)	97-56-3	17	4,4`-Thiodianiline		139-65-1
6	5-nitro-o-toluidine (2-Amino-4-nitrotoluene)	99-55-8	18	o-Toluidine (2-Aminotoluene)		95-53-4
7	4-Chloroaniline (p-Chloroaniline)	106-47-8	19	4-Methyl-m-phenylenediamine (2,4-Toluenediamine)		95-80-7
8	4-Methoxy-m-phenylenediamine (2,4-Diaminoanisole)	615-05-4	20	2,4,5-Trimethylaniline		137-17-7
9	4,4`-Diaminodiphenylmethane (4,4`-Methylenedianiline)	101-77-9	21	o-Anisidine (2-Methoxyaniline)		90-04-0
10	3,3`-Dichlorobenzidine (3,3`-Dichlorobiphenyl-4,4`-ylenediamine)	91-94-1	22	4-Aminoazobenzene (p-Aminoazobenzene)		60-09-3
11	3,3`-Dimethoxybenzidine (o-Dianisidine)	119-90-4	23	2,4-Xylidine (2,4-dimethylaniline)		95-68-1
12	3,3`-Dimethylbenzidine (4,4`-Bi-o-tolidine)	119-93-7	24	2,6-Xylidine (2,6-dimethylaniline)		87-62-7

List of Carcinogenic Dyes :						
No.	**Test Method**			**Reporting Limit**		**Unit**
Liquid extraction followed by LC/MS analysis				Water:	Each: 5000	ppb
				Sludge:	Each: 0.15	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
1	C.I. Direct Black 38	1937-37-7	7	C.I. Disperse Blue 1		2475-45-8
2	C.I. Direct Blue 6	2602-46-2	8	C.I. Disperse Blue 3		2475-46-9
3	C.I. Acid Red 26	3761-53-3	9	C.I. Basic Blue 26 (with Michler's Ketone > 0.1%)		2580-56-5
4	C.I. Basic Red 9	569-61-9	10	C.I. Basic Green 4 (malachite green chloride), (malachite green oxalate), (malachite green)		569-64-2, 2437-29-8, 10309-95-2
5	C.I. Direct Red 28	573-58-0	11	Disperse Orange 11		82-28-0
6	C.I. Basic Violet 14	632-99-5	-	-		-

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List of Disperse Dyes :					
No.	**Test Method**			**Reporting Limit**	**Unit**
Liquid extraction followed by LC/MS analysis				Water: Each: 5000 Sludge: Each: 0.15	ppb mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	Disperse Yellow 1	119-15-3	11	Disperse Red 17	3179-89-3
2	Disperse Blue 102	12222-97-8	12	Disperse Blue 7	3179-90-6
3	Disperse Blue 106	12223-01-7	13	Disperse Blue 26	3860-63-7
4	Disperse Yellow 39	12236-29-2	14	Disperse Yellow 49	54824-37-2
5	Disperse Orange 37/59/76	13301-61-6	15	Disperse Blue 35	12222-75-2
6	Disperse Brown 1	23355-64-8	16	Disperse Blue 124	61951-51-7
7	Disperse Orange 1	2581-69-3	17	Disperse Yellow 9	6373-73-5
8	Disperse Yellow 3	2832-40-8	18	Disperse Orange 3	730-40-5
9	Disperse Red 11	2872-48-2	19	Disperse Blue 35	56524-77-7
10	Disperse Red 1	2872-52-8	-	-	-

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List of Flame Retardants :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to ISO 22032, U. S. EPA 527 and U. S. EPA 8321B. (DCM extraction, followed by GC/MS analysis or LC/MS analysis)				Water:	Each (PBBs & PBDEs): 0.05; Each (Others): 0.5; SCCP: 5	ppb
				Sludge:	PBBs & PBDEs: 0.03 (in total); TCEP & TCPP: 0.05; BIS/BDBPP, TRIS/TDBPP, HBCDD, TBBPA, BBMP, TDCPP: 0.25; Others Each: 0.03	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
Polybromobiphenyls (PBBs)		59536-65-1	12	Octabromodiphenyl ether (OctaBDE)		32536-52-0
1	Monobromobiphenyl (MonoBB)	-	13	Decabromodiphenyl ether (DecaBDE)		1163-19-5
2	Dibromobiphenyl (DiBB)	-	14	Tris(2,3-dibromopropyl) phosphate (TRIS/TDBPP)		126-72-7
3	Tribromobiphenyl (TriBB)	-	15	Tetrabromobisphenol A (TBBPA)		79-94-7
4	Tetrabromobiphenyl (TetraBB)	-	16	Bis(2,3-dibromopropyl) phosphate (BIS/BDBPP)		5412-25-9
5	Pentabromobiphenyl (PentaBB)	-	17	Hexabromocyclododecane (HBCDD)		3194-55-6
6	Hexabromobiphenyl (HexaBB)	-	18	2,2-Bis(bromomethyl)-1,3-propanediol (BBMP)		3296-90-0
7	Heptabromobiphenyl (HeptaBB)	-	19	Tris(aziridinyl)-phosphineoxide (TEPA)		545-55-1
8	Octabromobiphenyl (OctaBB)	-	20	Tris(2-chloroethyl) phosphate (TCEP)		115-96-8
9	Nonabromobiphenyl (NonaBB)	-	21	Tris(1,3-dichloro-isopropyl) phosphate (TDCP)		13674-87-8
10	Decabromobipheny (DecaBB)	13654-09-6	22	Short chain chlorinated paraffins (SCCPs)		85535-84-8
11	Pentabromodiphenyl ether (PentaBDE)	32534-81-9	-			

List of Glycols :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to U. S. EPA 8270. (Liquid extraction followed by LC/MS analysis)				Water:	Each: 5000	ppb
				Sludge:	Each: 0.5	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
1	Bis(2-methoxyethyl)-ether	111-96-6	5	2-Methoxyethanol		109-86-4
2	2-Ethoxyethanol	110-80-5	6	2-Methoxyethylacetate		110-49-6
3	2-Ethoxyethyl acetate	111-15-9	7	2-Methoxypropylacetate		70657-70-4
4	Ethylene glycol dimethyl ether	110-71-4	8	Triethylene glycol dimethyl ether		112-49-2

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List of Halogenated Solvents :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to U. S. EPA 8260B. (Headspace GC-MS analysis or Purge-and Trap GC/MS analysis)				Water:	Each: 1	ppb
				Sludge:	Each: 0.3	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
1	1,2-Dichloroethane	107-06-2	3	Trichloroethylene		79-01-6
2	Methylene Chloride	75-09-2	4	Tetrachloroethylene		127-18-4

List of Organotin Compounds :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to ISO 17353. (Solvent extraction, derivatisation with $NaB(C_2H_5)$ followed by GC/MS analysis)				Water:	Each: 0.01	ppb
				Sludge:	Each: 0.01	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
Mono-, di- and tri-methyltin derivatives		Various	Mono-, di- and tri-phenyltin derivatives			Various
1	Monomethyltin (MMT)		9	Monophenyltin (MPhT)		
2	Dimethyltin (DMT)		10	Diphenyltin (DPhT)		
3	Trimethyltin (TMT)		11	Triphenyltin (TPhT)		
Mono-, di- and tri-butyltin derivatives		Various	Mono-, di- and tri-octyltin derivatives			Various
4	Monobutyltin (MBT)		12	Monooctyltin (MOT)		
5	Dibutyltin (DBT)		13	Dioctyltin (DOT)		
6	Tributyltin (TBT)		14	Trioctyltin (TOT)		
7	Tricyclohexyltin (TCyT)	Various	15	Tetrabutyltin (TeBT)		1461-25-2
8	Tripropyltin (TPT)	Various	-	-		-

List of Perfluorinated and Polyfluorinated Chemicals :						
No.	**Test Method**			**Reporting Limit**		**Unit**
With reference to DIN 38407-42 (modified) Ionic PFC : Concentration or direct injection followed by LC/MS/MS analysis; Non-ionic PFC (FTOH) : derivatisation with acetic anhydride, followed by GC/MS analysis				Water:	Each: 0.01; Each (FOTH): 1	ppb
				Sludge:	Each: 1; Each (FOTH): 10	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**		**CAS-No.**
1	Perfluoro-n-octanoic acid (PFOA)	335-67-1, 335-95-5	4	Perfluoro-n-hexanoic acid (PFHxA)		307-24-4
2	Perfluorobutanesulfonic acid (PFBS)	375-73-5, 29420-49-3, 29420-43-3	5	8:2 FTOH		678-39-7
3	Perfluorooctanesulfonic acid (PFOS)	1763-23-1, 432-50-7	6	6:2 FTOH		647-42-7

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List of Phthalates :					
No.	**Test Method**			**Reporting Limit**	**Unit**
With reference to U. S. EPA 8270D or ISO 18846. (DCM extraction, followed by GC/MS analysis or LC/MS analysis)				Water: Each: 1	ppb
				Sludge: Each: 0.3	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	Butyl benzyl phthalate (BBP)	85-68-7	9	Di-iso-butyl phthalate (DIBP)	84-69-5
2	Dibutyl phthalate (DBP)	84-74-2	10	Di-cyclohexyl phthalate (DCHP)	84-61-7
3	Di-2-ethylhexyl phthalate (DEHP)	117-81-7	11	Di-n-hexyl phthalate (DnHP)	84-75-3
4	Di-n-octyl phthalate (DNOP)	117-84-0	12	Dinonyl phthalate (DNP)	84-76-4
5	Di-iso-nonyl phthalate (DINP)	28553-12-0 & 68515-48-0	13	Di-iso-octyl phthalate (DIOP)	27554-26-3
6	Di-iso-decyl phthalate (DIDP)	26761-40-0 & 68515-49-1	14	Dimethoxyethyl phthalate (DMEP)	117-82-8
7	Diethyl phthalate (DEP)	84-66-2	15	1,2-benzenedicarboxylic acid, di-C7-11-branched and linearalkyl esters (DHNUP)	68515-42-4
8	Di-n-propyl phthalate (DPRP)	131-16-8	16	1,2-benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6

List of Poly Aromatic Hydrocarbons :					
No.	**Test Method**			**Reporting Limit**	**Unit**
With reference to DIN 38407-39. (Solvent extraction, followed by GC/MS analysis)				Water: Each: 1	ppb
				Sludge: Each: 0.1	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	Benzo[a]pyrene (BaP)	50-32-8	10	Benzo[k]fluoranthene	207-08-9
2	Anthracene	120-12-7	11	Acenaphthylene	208-96-8
3	Pyrene	129-00-0	12	Chrysene	218-01-9
4	Benzo[ghi]perylene	191-24-2	13	Dibenz[a,h]anthracene	53-70-3
5	Benzo[e]pyrene	192-97-2	14	Benzo[a]anthracene	56-55-3
6	Indeno[1,2,3-cd]pyrene	193-39-5	15	Acenaphthene	83-32-9
7	Benzo[j]fluoranthene	205-82-3	16	Phenanthrene	85-01-8
8	Benzo[b]fluoranthene	205-99-2	17	Fluorene	86-73-7
9	Fluoranthene	206-44-0	18	Naphthalene	91-20-3

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List of Volatile Organic Compounds :					
No.	**Test Method**			**Reporting Limit**	**Unit**
With reference to ISO 11423-1. (Headspace GC-MS analysis or Purge-and Trap GC/MS analysis)				Water: Each: 1	ppb
				Sludge: Each: 0.3	mg/kg
No.	**Name of Analytes**	**CAS-No.**	**No.**	**Name of Analytes**	**CAS-No.**
1	Benzene	71-43-2	4	p-cresol	106-44-5
2	Xylene	1330-20-7	5	m-cresol	108-39-4
3	o-cresol	95-48-7	-	-	-

Note / Key :

ppb = part(s) per billion

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APPENDIX B

I001) Incoming Water

General Data

Laboratory Sample Number	HY 20161011 IW
Client Name	
Field Contact Person	Phone No:
Project (Facility Name and Address)	
Sampling Location / Description	
Sample Identification	Zero discharge with sampling plan
Sample Type	Grab sample
Name of Sampler	David Lu
Discharge mode	Direct discharge to environment (Specify destination: River, Sea, Stream…) OR Indirect discharge to sewage treatment plant
Date and time collected	2016/10/11 9:30AM 10:30AM 11:30AM 12:30AM 13:30PM 14:30PM 15:30PM 16:30PM
Factory Type	Dyeing/Printing/Washing/Finishing/Other (please specify)
	*Note: It would be selected more than one

Field Data for wastewater

Field Parameters	pH :	Temp :	Color :
Control No. of field equipment	6.51	28.3 °C	Transparent yellow

Analysis Required and Preservation Method

Factory with effluent treatment plant	Yes				No			
Sample matrix	X	Incoming water						
		Wastewater before treatment						
		Wastewater after treatment – water at discharge point						
Sampler container number								
Recording time								
Volume collected, mL								
Total volume collected		Remark: Total volumn collected must be greater than total of sample size required						

Tests	Test required	Total of sample size	Type of container	Preservation method
1. Phthalate		500 mL	Amber Glass,wash with nitric acid, rinse thoroughly with distillated water and dry before use	Without adding acid Store sample at 4°C
2. Brominated and chlorinated Flame retardant		500 mL		
3. Banned Azodyes		500 mL		
4. Organotin Compounds		500 mL		
5. SCCPs		500 mL		

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7. Free primary aromatic amines		500 mL		
8. Chlorobenzenes		500 mL	Amber Glass, wash with nitric acid; Pre-add 6.5 mL of 2M HCl	Acidify to ~pH 2 with HCl and store sample at 4°C
9. Chlorophenols		500 mL		
10. APEOs/APs		500 mL		
11. Chlorinated Solvents		500 mL		Fill to full bottle without air; acidify to ~pH 2 with HCl and store sample at 4°C
12. Heavy Metals except CrVI		500 mL	Amber Glass, wash with nitric acid, pre-add 6.5mL of 2M HNO3	Acidify to pH 2 with HNO_3 and store at 4°C
13. CrVI		500 mL	Amber Glass, wash with pesticide grade acetone	Fill to full bottle without air nor adding acid and store sample at 4°C
14. PFCs		500 mL	PE, wash with pesticide grade Acetone;	Without adding acid Store sample at 4°C
15. Cyanide		500 mL	Amber Glass, wash with pesticide grade acetone	Adjust pH 12 with 50% NaOH and store at 4°C

C/N /AY/JK

I002) Wastewater before Treatment

General Data

Laboratory Sample Number	HY 20161011 BT
Client Name	
Field Contact Person	Phone No:
Project (Facility Name and Address)	
Sampling Location / Description	
Sample Identification	Zero discharge with sampling plan
Sample Type	Grab sample
Name of Sampler	David Lu
Discharge mode	Direct discharge to environment (Specify destination: River, Sea, Stream…) OR Indirect discharge to sewage treatment plant
Date and time collected	2016/10/11 9:30AM 10:30AM 11:30AM 12:30AM 13:30PM 14:30PM 15:30PM 16:30PM
Factory Type	Dyeing/Printing/Washing/Finishing/Other (please specify)
	*Note: It would be selected more than one

Field Data for wastewater

Field Parameters	pH :	Temp :	Color :
Control No. of field equipment	10	31.5 °C	Transparent purple

Analysis Required and Preservation Method

Factory with effluent treatment plant	Yes		No					
Sample matrix		Incoming water						
	X	Wastewater before treatment						
		Wastewater after treatment – water at discharge point						
Sampler container number								
Recording time								
Volume collected, mL								
Total volume collected		Remark: Total volumn collected must be greater than total of sample size required						

Tests	Test required	Total of sample size	Type of container	Preservation method
1. Phthalate		500 mL	Amber Glass,wash with nitric acid, rinse thoroughly with distillated water and dry before use	Without adding acid Store sample at 4°C
2. Brominated and chlorinated Flame retardant		500 mL		
3. Banned Azodyes		500 mL		
4. Organotin Compounds		500 mL		
5. SCCPs		500 mL		

C/N /AY/JK

6. Navy Blue		10 mL		
7. Free primary aromatic amines		500 mL		
8. Chlorobenzenes		500 mL	Amber Glass, wash with nitric acid; Pre-add 6.5 mL of 2M HCl	Acidify to ~pH 2 with HCl and store sample at 4°C
9. Chlorophenols		500 mL		
10. APEOs/APs		500 mL		
11. Chlorinated Solvents		500 mL		Fill to full bottle without air; acidify to ~pH 2 with HCl and store sample at 4°C
12. Heavy Metals except CrVI		500 mL	Amber Glass, wash with nitric acid, pre-add 6.5mL of 2M HNO3	Acidify to pH 2 with HNO_3 and store at 4°C
13. CrVI		500 mL	Amber Glass, wash with pesticide grade acetone	Fill to full bottle without air nor adding acid and store sample at 4°C
14. PFCs		500 mL	PE, wash with pesticide grade Acetone;	Without adding acid Store sample at 4°C
15. Cyanide		500 mL	Amber Glass, wash with pesticide grade acetone	Adjust pH 12 with 50% NaOH and store at 4°C

C/N /AY/JK

I003) Wastewater after Treatment

General Data

Laboratory Sample Number	HY 20161011 AT
Client Name	
Field Contact Person	Phone No:
Project (Facility Name and Address)	
Sampling Location / Description	
Sample Identification	Zero discharge with sampling plan
Sample Type	Grab sample
Name of Sampler	David Lu
Discharge mode	Direct discharge to environment (Specify destination: River, Sea, Stream…) OR Indirect discharge to sewage treatment plant
Date and time collected	2016/10/11 9:30AM 10:30AM 11:30AM 12:30AM 13:30PM 14:30PM 15:30PM 16:30PM
Factory Type	Dyeing/Printing/Washing/Finishing/Other (please specify)
	*Note: It would be selected more than one

Field Data for wastewater

Field Parameters	pH :	Temp :	Color :
Control No. of field equipment	7.05	28.9 °C	Transparent light purple

Analysis Required and Preservation Method

Factory with effluent treatment plant	Yes				No			
Sample matrix		Incoming water						
		Wastewater before treatment						
	X	Wastewater after treatment – water at discharge point						
Sampler container number								
Recording time								
Volume collected, mL								
Total volume collected		Remark: Total volumn collected must be greater than total of sample size required						

Tests	Test required	Total of sample size	Type of container	Preservation method
1. Phthalate		500 mL	Amber Glass,wash with nitric acid, rinse thoroughly with distillated water and dry before use	Without adding acid Store sample at 4°C
2. Brominated and chlorinated Flame retardant		500 mL		
3. Banned Azodyes		500 mL		
4. Organotin Compounds		500 mL		
5. SCCPs		500 mL		

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6. Navy Blue		10 mL		
7. Free primary aromatic amines		500 mL		
8. Chlorobenzenes		500 mL	Amber Glass, wash with nitric acid; Pre-add 6.5 mL of 2M HCl	Acidify to ~pH 2 with HCl and store sample at 4°C
9. Chlorophenols		500 mL		
10. APEOs/APs		500 mL		
11. Chlorinated Solvents		500 mL		Fill to full bottle without air; acidify to ~pH 2 with HCl and store sample at 4°C
12. Heavy Metals except CrVI		500 mL	Amber Glass, wash with nitric acid, pre-add 6.5mL of 2M HNO3	Acidify to pH 2 with HNO_3 and store at 4°C
13. CrVI		500 mL	Amber Glass, wash with pesticide grade acetone	Fill to full bottle without air nor adding acid and store sample at 4°C
14. PFCs		500 mL	PE, wash with pesticide grade Acetone;	Without adding acid Store sample at 4°C
15. Cyanide		500 mL	Amber Glass, wash with pesticide grade acetone	Adjust pH 12 with 50% NaOH and store at 4°C

C/N /AY/JK

I004) Sludge in Clarifier

General Data

Laboratory Sample Number	
Client Name	HY 20161011-SC
Field Contact Person	Phone No:
Project (Facility Name and Address)	
Sampling Location / Description	
Sample Identification	Zero discharge with sampling plan
Sample Type	Grab sample
Name of Sampler	David Lu
Discharge mode	Direct discharge to environment (Specify destination: River, Sea, Stream…) OR Indirect discharge to sewage treatment plant
Date and time collected	2016/10/11 10:00AM
Factory Type	Dyeing/Printing/Washing/Finishing/Other (please specify)
	*Note: It would be selected more than one

Field Data for wastewater

Field Parameters	pH :	Temp :	Color :
Control No. of field equipment			

Analysis Required and Preservation Method

Factory with effluent treatment plant	Yes	No
Sample matrix		Incoming water
		Wastewater before treatment
		Wastewater after treatment – water at discharge point
Sampler container number		
Recording time		
Volume collected, mL		
Total volume collected		Remark: Total volumn collected must be greater than total of sample size required

Tests	Test required	Total of sample size	Type of container	Preservation method
1. Phthalate		500 mL	Amber Glass,wash with nitric acid, rinse thoroughly with distillated water and dry before use	Without adding acid Store sample at 4°C
2. Brominated and chlorinated Flame retardant		500 mL		
3. Banned Azodyes		500 mL		
4. Organotin Compounds		500 mL		
5. SCCPs		500 mL		
6. Navy Blue		10 mL		

C/N /AY/JK

7. Free primary aromatic amines		500 mL		
8. Dyes		500 mL		
9. Flame retardant		500 mL		
10. Chlorobenzenes		500 mL	Amber Glass, wash with nitric acid; Pre-add 6.5 mL of 2M HCl	Acidify to ~pH 2 with HCl and store sample at 4°C
11. Chlorophenols		500 mL		
12. APEOs/APs		500 mL		
13. Chlorinated Solvents		500 mL		Fill to full bottle without air; acidify to ~pH 2 with HCl and store sample at 4°C
14. Heavy Metals except CrVI		500 mL	PE, wash with nitric acid, pre-add 6.5mL of 2M HNO3	Acidify to pH 2 with HNO_3 and store at 4°C
15. CrVI		500 mL	Amber Glass, wash with pesticide grade acetone	Fill to full bottle without air nor adding acid and store sample at 4°C
16. PFCs		500 mL	PE, wash with pesticide grade Acetone;	Without adding acid Store sample at 4°C
17. Cyanide		500 mL	Amber Glass, wash with pesticide grade acetone	Adjust pH 12 with 50% NaOH and store at 4°C

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