

APPENDIX V:

Global Effluent Guidelines



GLOBAL EFFLUENT GUIDELINES

Application

The Global Effluent Guidelines apply to all factories that finish/laundry garments for Levi Strauss & Co. (LS&CO.). This includes LS&CO.-owned/leased and operated (“O&O”) factories, licensees, and agents that discharge wastewater directly to a water body (“direct dischargers”). Factories that discharge wastewater to a municipal, government, public, industrial-zone, or private treatment facility (“POTW dischargers”) are subject to a portion of the Global Effluent Guidelines requirements.

Exception



Factories that only wash LS&CO. garments are excluded from LS&CO.’s Global Effluent Guidelines if the washing or rinsing involves only the use of detergents or softeners on non-denim garments at sewing facilities. Wastewater shall be managed according to local legal requirements. See this section’s Appendix, Topic 3, for further discussion of this exception. Note: This exception will be re-evaluated on a periodic basis, coinciding with the bi-annual review of the program.

Purpose


Untreated wastewater discharged from garment operations directly to the environment—such as to rivers, lakes, and creeks—may harm ecosystems, as well as cause health and safety problems for the surrounding communities. The purpose of this section is to describe Levi Strauss & Co.’s Global Effluent Guidelines program, which aims to reduce environmental, health and safety impacts of untreated wastewater from garment operations.

Summary of TOE Global Effluent Guidelines Requirements:

(See this section’s Appendix for detailed information on LS&CO.’s Global Effluent Guidelines requirements.)

1.  Wastewater must:
 - Meet all local requirements, including discharge and permitting criteria defined by the local governing agencies.
 - Meet LS&CO.’s Global Effluent Guidelines requirements, whenever those requirements are stricter than local requirements.
2.  If the factory discharges its wastewater directly to the environment (“direct discharger”), it must:
 - Have valid permits to do so from all applicable governing agencies.
 - Conduct laboratory analysis of wastewater to demonstrate compliance with local requirements and LS&CO.’s Global Effluent Guidelines limits, whichever are stricter. Analysis shall be scheduled according to local requirements and LS&CO.’s Global Effluent Guidelines analysis schedule (twice per year: mid-year and year end). Data to be submitted at mid-year include LS&CO.’s Global Effluent Guidelines “traditional” parameters (pH, temperature, biological oxygen demand, chemical oxygen demand, total suspended solids, and color). Data to be submitted to LS&CO. for the first time and at year end include all Global Effluent Guidelines parameters (traditional and metals).
 - Use qualified laboratories and standard test methods.
 - Follow proper sampling, handling, and storage procedures when collecting and submitting wastewater samples to a qualified laboratory.



 Untreated wastewater has been discharged directly to the environment.

3. 🏭 If the factory discharges its wastewater to a publicly-owned treatment works (“POTW discharger”), the factory must:
- Have valid permits to do so from all applicable governing agencies.
 - Follow all local requirements, including the payment of surcharges, should they be required.
- Make every reasonable effort to determine how efficiently the publicly-owned treatment facility treats the wastewater (i.e., that it includes and effectively conducts primary and secondary treatment on wastewater before discharging to the environment).
4. 🏭 LS&CO.’s Global Effluent Guidelines Parameter Limits are as listed in the following table:

Traditional Parameters	Guideline Limit
pH	6.00 – 9.00
Temperature	≤ 37 °C
Total Suspended Solids (TSS)	≤ 30 mg/l
5-day Biological Oxygen Demand (BOD5)	≤ 30 mg/l
Chemical Oxygen Demand (COD)	Test required; limit currently not established.
Color	Offensive color not acceptable (visual observation); test required; limit currently not established. Test required using one of the following methods: (1) method producing results in ADMI units or (2) using spectrophotometry, measuring transmission at wavelengths 436 nm, 525 nm and 620 nm.

Metal Parameters	Guideline Limit
Mercury (Hg)	≤ 0.01 mg/l
Cadmium (Cd)	≤ 0.01 mg/l
Lead (Pb)	≤ 0.10 mg/l
Arsenic (As)	≤ 0.01 mg/l
Cyanide (Cn)	≤ 0.20 mg/l
Copper (Cu)	≤ 0.25 mg/l
Nickel (Ni)	≤ 0.20 mg/l
Chromium (Cr)	≤ 0.10 mg/l
Zinc (Zn)	≤ 1.00 mg/l
Antimony (Sb)	Denim-only factories: No test required Other factories: Test and monitor; limit currently not established.
Cobalt (Co)	Denim-only factories: No test required Other factories: ≤ 0.02 mg/l
Foam	No visible discharge of floating solids or persistent foam.
Sewage	Biological treatment at a POTW or an on-site wastewater treatment plant, or a septic tank system.

Implementation of Global Effluent Guidelines Requirements

Training, Rules, and Record Keeping

- Managers who are responsible for making sure that the factory complies with wastewater requirements should be competent and trained on the specifics of LS&CO.’s Global Effluent Guidelines program, as well as on the wastewater treatment facility’s operation requirements (if a POTW discharger).
- Supervisors and managers should communicate the specific procedures for complying with the factory’s wastewater requirements (local and Global Effluent Guidelines) to workers, contractors and vendors before they begin any work involving the wastewater.
- Factories should keep written records to show that training has been completed.

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Wastewater Sample Collection and Analysis

- A neutral party (e.g., a qualified independent contractor, not a factory manager or worker) should collect wastewater samples, preferably during an unannounced visit. Factory personnel may collect samples for in-house analysis of pH and temperature only.
- A two-hour composite sample, or equivalent, shall be used to collect the wastewater samples (except for pH and temperature, which can be taken following in-situ procedures detailed in the Appendix).
- Proper sample collection and handling procedures shall be followed.
- Certified laboratories shall be used to analyze wastewater samples for Global Effluent Guidelines parameters. In-house analysis methods may be used for pH and temperature.
- Laboratory test methods, such as those listed in the Appendix or their equivalents, shall be used
- Wastewater test results shall be provided by the certified laboratory. Such reports shall include information that is standard on laboratory reports (test methods, detection limits, etc.), and shall include the laboratory's contact information and certifications.

Wastewater Reporting to LS&CO.


- All wastewater reports shall include the original laboratory report. In-situ test results shall include the information listed in the Appendix (Topic 8).
- Wastewater reports shall be submitted to LS&CO. twice per year, following the schedule in the Appendix (Topic 9).
- Re-testing of wastewater may be conducted as discussed in the Appendix (Topic 9).

Wastewater Sludge Management

- Bio-solids, or sludge, resulting from on-site wastewater treatment, shall be disposed of at a site that holds appropriate permits. Factory personnel shall check the validity of the permits. See the Domestic Sewage and Biosolids Management section.

- The transporter of the sludge shall have appropriate permits; factory personnel shall confirm the validity of the permits.
- Proper health and safety procedures shall be followed when handling the wastewater treatment sludge.



 Biosolids from wastewater treatment

Domestic Sewage Management

- Domestic sewage shall be treated using biological treatment. On-site treatment can include use of a septic tank system. See the Domestic Sewage and Biosolids Management section.
- Alternatively, on-site domestic sewage may be treated with the industrial wastewater if the wastewater treatment system is designed to treat the mixed wastewater. The resulting sludge shall be properly handled and managed. Wastewater from the sludge-drying system shall be returned back to the wastewater treatment system. Proper health and safety procedures shall be followed when handling the sludge.

Reuse of Wastewater

- Treated wastewater that is to be recycled shall meet all national health and safety requirements and any "use" restriction requirements.
- Treated wastewater to be used for irrigation shall be managed within an approved national irrigation program, following all legal requirements. Factories shall not, on their own, use treated wastewater for irrigation or other purposes which involve discharging wastewater into the environment.

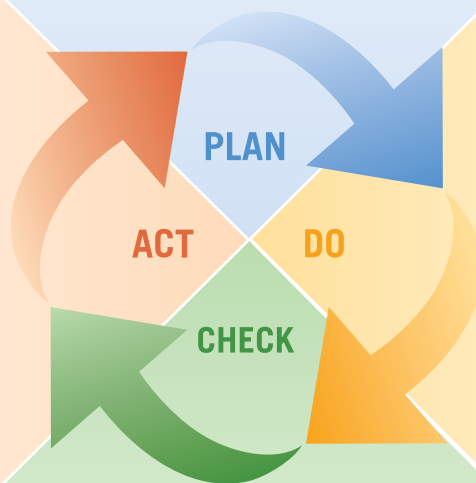
Further Information

- See Appendix (Topics 1 through 18).

Program Strategy for Managing Wastewater Effluent

- Identify local requirements and those Global Effluent Guidelines requirements that apply to the factory's wastewater. (All)
- Prepare a plan to meet those requirements, including (a) maintaining proper permits, (b) treating wastewater and domestic sewage, as required, (c) contracting with suitable vendors and certified laboratories to conduct wastewater sampling and analysis, and (d) contracting with a permitted site and a permitted transporter to dispose of bio-solids or sludge. (Direct dischargers only)
- Prepare a plan to meet local and Global Effluent Guidelines requirements, including (a) maintaining proper permits, and (b) evaluating how efficiently the facility treats the wastewater. (POTW dischargers only)

- Improve wastewater treatment system and/or procedures if sampling and analysis activities or TOE Assessment indicates the factory does not meet requirements. (Direct dischargers only)
- Work with LS&CO. Contact to evaluate alternatives if wastewater treatment facility fails to efficiently treat wastewater. (POTW dischargers only)
- Re-train and/or discipline employees who fail to follow procedures. (All)



- Obtain and keep up-to-date permits for wastewater discharge from all applicable governing agencies. (All)
- Train managers, employees regarding wastewater and bio-solids requirements and safe work procedures. (All)
- Establish and maintain equipment and systems to treat wastewater. (Direct dischargers only)
- Verify that bio-solids or sludge disposal sites and transporters have valid permits. (Direct dischargers only)

- Conduct wastewater sampling and analysis twice each year to verify that wastewater meets requirements. Report results to LS&CO. (Direct dischargers only)
- Make every reasonable effort to determine how efficiently the facility treats wastewater before it discharges to the environment. (POTW dischargers only)

APPENDIX V: Global Effluent Guidelines

1. LS&CO. GEG PARAMETER LIMITS

The factories covered in the scope of this program shall ensure that treated wastewater effluent being **discharged directly to the environment** does not exceed local legal limits, wastewater discharge permits or the LS&CO. guideline limits below, whichever is strictest.

To comply with these requirements, wastewater treatment plants shall function as designed, and the necessary back-up systems perform reliably. In addition, all wastewater treatment plants shall be operated by competent technical staff.

Traditional Parameters	Guideline Limit
pH	6.00 – 9.00
Temperature	≤ 37 °C Exception: See Topic 2.
Total Suspended Solids (TSS)	≤ 30 mg/l
5-day Biological Oxygen Demand (BOD ₅)	≤ 30 mg/l
Chemical Oxygen Demand (COD)	Test required.
Color	Offensive color not acceptable (visual observation). Test required. Exception: See Topic 2.
Foam	No visible discharge of floating solids or persistent foam.

Metal Parameters	Guideline Limit
Mercury (Hg)	≤ 0.01 mg/l
Cadmium (Cd)	≤ 0.01 mg/l
Lead (Pb)	≤ 0.10 mg/l
Arsenic (As)	≤ 0.01 mg/l
Cyanide (Cn)	≤ 0.20 mg/l
Copper (Cu)	≤ 0.25 mg/l
Nickel (Ni)	≤ 0.20 mg/l
Chromium (Cr)	≤ 0.10 mg/l
Zinc (Zn)	≤ 1.00 mg/l
Antimony (Sb)	Denim-only factories: No test required Other factories: Test and monitor.
Cobalt (Co)	Denim-only factories: No test required Other factories: ≤ 0.02 mg/l
Sewage	Biological treatment at a POTW or an on-site wastewater treatment plant, or a septic tank system

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2. TOLERANCE LIMITS

Note: Once a lab result determines whether effluent meets the LS&CO. GEG parameter limit:

- the factory's rating for that parameter is CI if the result is less than or equal to the tolerance limits defined below;
- the factory's rating for that parameter is IA if the lab result is above the tolerance limit.

Parameter	Parameter Limit	Tolerance Limit
pH	6.00 – 9.00	N/A
Temperature	37 °C Exception: For factories located in areas of the world that can experience extremely high ambient air temperatures (e.g., >40°C), the wastewater temperature must not be greater than the temperature of the receiving water body.	See Exception for Temperature.
Total Suspended Solids (TSS)	30 mg/l	45 mg/l
5-day Biological Oxygen Demand (BOD ₅)	30 mg/l	45 mg/l
Chemical Oxygen Demand (COD)	Test required	N/A
Color	Offensive color not acceptable (visual observation). Test required. Exception: Currently, GEG color results are based on observation. Color is generally considered an aesthetic pollutant by technicians and scientists. As long as local regulatory requirements are met, incidents of offensive color should be rated as CI and further review should be carried out. If the color incidents are periodic (not regular occurrences), the causes should be addressed to bring the factory into full alignment with GEG as a CI action. If the color incidents are persistent, a well-studied corrective action plan (CAP) must be agreed upon with the supplier as an IA action.	See Exception for Color.
Foam	No visible discharge of floating solids or persistent foam.	N/A
Sewage	Biological treatment at a POTW or an on-site wastewater treatment plant, or a septic tank system.	N/A
Mercury (Hg)	0.01 mg/l	0.015 mg/l
Cadmium (Cd)	0.01 mg/l	0.015 mg/l
Lead (Pb)	0.10 mg/l	0.15 mg/l
Arsenic (As)	0.01 mg/l	0.015 mg/l
Cyanide (Cn)	0.20 mg/l	0.30 mg/l
Copper (Cu)	0.25 mg/l	0.375 mg/l
Nickel (Ni)	0.20 mg/l	0.30 mg/l
Chromium (Cr)	0.10 mg/l	0.15 mg/l
Zinc (Zn)	1.00 mg/l	1.5 mg/l
Antimony (Sb)	Denim-only factories: No testing required. Other factories: Test and monitor.	N/A
Cobalt (Co)	Denim-only factories: No testing required. Other factories: 0.02 mg/l	Other factories: 0.03 mg/l

3. SCOPE

Products

- Branded LS&CO. garments

Production Mode

- LS&CO. owned/leased-and-operated factories
- Direct finishing factories (includes vertically integrated with finishing)
- Agents sourcing finishing factories (includes vertically integrated with finishing)
- Licensee finishing factories (includes vertically integrated with finishing)
- Fabric mills within LS&CO.'s European Region (LSE) that have signed a Master Supply Agreement

Wet-laundry processes including the following techniques:

- Finishing of garments (bleaching, stonewashing, detergent, enzymes, softeners, etc.)
- Dyeing and/or over-dyeing of garments

Dischargers to a municipal wastewater treatment facility (POTW)/ municipal wastewater treatment facility

- Only wet-finishing process factories, such as those listed above that discharge directly to the environment are within the scope of the LS&CO. GEG.
- Where wet-processing factories discharge to a POTW, they must demonstrate that they comply with their local discharge permit. They must also attempt, via a continuous improvement effort, to determine that the POTW is adequately equipped to treat their wastewater. Factories that can satisfy these conditions are not within the scope of the GEG. Factories that cannot satisfy these conditions **are** within the GEG scope and therefore must meet the GEG requirements.

Not included in Scope **

- Light washing of non-denim garments in sewing factories*
- Printing shops
- Leather finishing
- Fabric Mills in LS&CO.'s Americas and Asia/Pacific Region (a.k.a., LSA and ASO/APD, respectively)
- Sundry Factories

* "Light washing" for the purposes of this program, is defined as:

- the incidental rinsing and/or washing with detergent or softeners of, and
- the sampling and testing including test dyeing/finishing of insignificant volumes* of non-denim, non-bottom clothing in machines located in cut-sew facilities only. No obligatory, bulk or industrial wet processes shall take place in such machines. The effluent from these machines shall be managed according to local legal guidelines and permits. If there are no legal requirements, light-washing effluent shall be treated together with domestic sewage generated by the factory personnel in a biological treatment process on- or off-site (POTW) including septic tank systems. Situations outside of this definition shall be escalated on a case-by-case basis to the Environmental Affairs Manager (for LSA, APD) and the Regional Officers in LSE for a risk assessment and action planning.

Guidelines

*Insignificant volumes mean the regulatory limit under which this wastewater would be considered industrial waste water. Where there is no clear regulatory limit, an indicative limitation of 5m³/day or 500m³/year is given. This determination is based on an on-site calculation with the appropriate personnel. If volumes are over this limit, contact your Environmental Affairs Manager for further advice.

4. SAMPLING POINTS AND SAMPLING

Sampling Point

The sampling point chosen should be easily accessible and safe.

- If the sampling point is designated by the local authority, then this point shall be acceptable to sample final, treated effluent for LS&CO.
- Typically the sampling point should be as close as possible to the wastewater effluent discharge point in a pit or channel, at a level about two-thirds the depth of the pit or channel.
- The frequency and type of sample to be collected must be determined by a competent, suitably qualified individual, based on an examination of flow conditions which encourage homogeneous mixing of the effluent, so that representative fractions of all pollutants of concern are obtained in the sample, including the solids fraction.

2-Hour Composite Sampling

A 2-hour composite sample, or equivalent, shall be used to determine alignment with LS&CO GEG. The 2-hour composite sample shall be composed of grab samples taken at regular intervals of 15 minutes or of samples taken using an automatic composite sampler.

Alternatively, the 2-hour composite sample can be taken as follows:

- a minimum of 5 samples shall be taken within a maximum of 2 hours and
- the time elapsed between each sample must be at least 2 minutes.

Over the period of sample collection, samples must be maintained at 4°C in the dark, pending mixing and preparation of the final sample.

Automatic composite samplers may also be used for the 2-hour composite sample.

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Sampling Equipment

Adequately prepared sampling equipment is indispensable for the sampling exercise. The laboratory undertaking the analyses should make sample bottles available for sampling staff. Sample bottles shall be prepared appropriately for the different analyses to be carried out. At a minimum, the following guidelines shall be followed:

There are three considerations for sample equipment: (1) material of which it is made, (2) size, and (3) cleanliness/preparation to avoid interference with the parameter to be measured. Sample bottles should be washed thoroughly with a recommended detergent for use in laboratories and rinsed with distilled water. Consult the table below for further details depending on the parameter to be analyzed.

Although maximum holding times are listed, best practice is to analyze the sample as soon as possible after taking it.

Parameter	Volume Required (ml)	Type of Container	Preserving method	Maximum Holding Time
Temperature	1000	Plastic or Glass	Determine immediately on site	None
pH	25	Plastic or Glass	Determine on site	2 hours
Color	500	Plastic or Glass	Cool to 4°C	24 hours
TSS	50	Plastic or Glass	Cool to 4°C	7 days
BOD	1000	Glass	Chill to near freezing	48 hours
COD	50	Glass	Sulfuric acid to pH<2 maintain at 4°C	28 days
Metals	100 per metal	Plastic	Nitric acid to pH<2	6 months
Mercury	500	Plastic or Glass	Nitric acid to pH<2	28 days (glass) 13 days (plastic)

Sampling Personnel

LS&CO. prefers that an independent, third party take the sample; this helps avoid data bias. The identity of the independent sample taker shall be included in the chain of custody of the sample to the laboratory and also written in the final laboratory report.

Where factory personnel actually take the sample, this information must also be included on the final laboratory report.

Important Note on Sampling:

It is important that unbiased data be collected for LS&CO.'s GEG, following the rigorous sampling procedures we have established.

5. IN-SITU MEASUREMENTS

Temperature

The temperature measurement shall be taken in situ, using the standard methods listed under Analytical Methods. (See Topic 6.)

No composite sample is required for this determination; a grab sample shall be taken and measured immediately. A thermometer capable of reading to an accuracy of 0.1°C is required.

pH

The pH shall be taken in situ, using the standard methods listed under Analytical Methods. (See Topic 6.)

pH meters used for this purpose shall be maintained and calibrated according to manufacturer's recommendations.

Visual Color

To establish visual color to meet the LS&CO GEG, the following method (summarizing EN ISO 7887) shall be used (EN – European Norm; ISO – International Standards Organization):

Fill a 1-liter beaker with wastewater collected at the established sampling point. Allow to stand until suspended matter has settled. Hold the beaker up with a white sheet of paper behind. Make observations as to hue (color), and intensity of color (light, dark, colorless, etc.).

The visual color observation must conclude whether the color is “offensive” or “not offensive” by the person sampling.

Additionally, a color analysis in ADMI or one using transmission at the three defined wavelengths is required.

Foam

A visual inspection of the final effluent should be carried out to determine whether any foam generated quickly dissipates and thus does not build up in channels or the receiving waters. There should be no floating solids on treated wastewater effluent.

6. ANALYTICAL METHODS

The analytical methods recommended for use in determining the parameters listed in the LS&CO. Global Effluent Guidelines are referenced in the table below. Equivalents of these methods are also acceptable—for example, equivalent methods originating from country Bureau of Standards.

Analytical Methods for Sampling and Parameters

Parameter	Parameter Value	Testing Standards		
		US EPA and Standard Methods	ISO	European and National Standards
Sampling:			ISO 5667-1 ff	DIN 38402-A 11 ff
Temperature	≤37°C Exception: See Topic 2	USEPA 170.1 or SM 2550		DIN 38404-C 4
pH, Standard Units	6.0-9.0	USEPA 150.1 or SM 4500H	ISO 10523	
Total Suspended Solids (TSS)	≤30.0mg/l	USEPA 160.2 or SM 2540D	ISO 11923	DIN EN 872
Biological Oxygen Demand (BOD)	≤30.0mg/l	USEPA 405.1 or SM 5210	ISO 5815-1, -2	DIN EN 1899-1
Chemical Oxygen Demand (COD) (Indicative values for compulsory monitoring only)	Test and Monitor	USEPA 410.4 or SM 5220B or HACH Method	ISO 6060:1989	DIN 38409-H 41
Antimony	≤0.01 mg/l	USEPA 204.2 or SM 3500		
Arsenic	≤0.01 mg/l	USEPA 206.2 or SM 3500	ISO 11885*	DIN EN ISO 11885*
Cadmium	≤0.01 mg/l	USEPA 213.2 or SM 3500	ISO 5961**, ISO 11885*	DIN EN ISO 11885*

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Parameter	Value	US EPA and Standard Methods	ISO	European and National Standards
Chromium	≤0.10 mg/l	USEPA 218.2 or SM 3500	ISO 9174**, ISO 11885*	DIN EN 1233**, DIN EN ISO 11885*
Cobalt	≤0.02 mg/l	USEPA 219.2 or SM 3500	ISO 8288**, ISO 11885*	DIN EN ISO 11885*
Copper	≤0.25 mg/l	USEPA 220.1 or SM 3500	ISO 8288**, ISO 11885*	DIN 38406**, DIN EN ISO 11885*
Cyanide	≤0.20 mg/l	USEPA 335.2 or SM 4500CNE	ISO 6703-1, -2, -3	DIN 38405-D 13-1
Lead	≤0.10 mg/l	USEPA 239.2 or SM 3500	ISO 8288**, ISO 11885*	DIN 38406**, DIN EN ISO 11885*
Mercury	≤0.01 mg/l	USEPA 245.1 or SM 3112	ISO 5666	DIN EN 1483
Nickel	≤0.20 mg/l	USEPA 249.1 or SM 3500	ISO 8288**, ISO 11885*	DIN 38406**, DIN EN ISO 11885*
Zinc	≤1.00 mg/l	USEPA 289.1 or SM 3500	ISO 8288**, ISO 11885*	DIN EN ISO 11885*
Color	Offensive color not acceptable	ISO 7887 (for visible appreciation)		
Color (guidance values for monitoring only)	≤150 ADMI units or 436 nm: ≤7m ⁻¹ 525 nm: ≤5m ⁻¹ 620 nm: ≤3m ⁻¹	USEPA 110.1 or SM 2120E For ADMI	ISO 7887 Target: 436 nm: ≤7m ⁻¹ 525 nm: ≤5m ⁻¹ 620 nm: ≤3m ⁻¹	DIN EN ISO 7887
Other Wastewater Requirements				
Foam: No visible discharge of floating solids or persistent foam on wastewater effluent.				
Domestic Sewage: Sewage must not be discharged directly into open bodies of water. If there is no biological treatment facility available, a septic tank system should be installed.				

Key	
*	Inductively coupled plasma atomic emission spectroscopy (ICP-OES)
**	Atomic adsorption spectrometry (AAS)
ADMI	American Dye Manufacturers Institute
DIN	Deutsches Institute für Normung (German Institute of Standards)
EN	European Norm
ISO	International Standard Organization, complete list of water test methods, technical committee
TC147	http://www.iso.org/iso/en/stdsdevelopment/tc/tclist/TechnicalCommitteeStandardsListPage.TechnicalCommitteeStandardsList?COMMID=3666&INCLUDEESC=YES
SM	Standard Methods
USEPA	United States Environmental Protection Agency

Additional Information on Analytical Methods

SM: Standard Methods for the Examination of Water and Wastewater, American Public Health Association, American Water Works Association and the Water Environment Federation. 19th Edition, 1995. (To order: +202 789 5600).

USEPA: Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020), US Environmental Protection Agency, EPA-600/4-79-020, 1983. (To order: +703 487 4600 or check <http://www.synectics.net/resources/>)

ISO: Analytical Methods issued by the International Organization for Standardization (ISO) are recommended. (Tel: +41 22 749 0111; Fax: +41 22 733 3430)

7. ANALYTICAL LABORATORIES: LIST

The following international companies and their collaborative networks of certified laboratories have been identified by Levi Strauss & Co. as resources for suitable laboratories that use standard test methods as listed in this Topic 6, or their equivalents, for the examination of wastewater as required by the Guidelines. Factories can find their locations globally by consulting the list below.

Organization	URL
Bureau Veritas	http://www.bureauveritas.com
Intertek— Caleb Brett	http://www.intertek-cb.com/newsitetest/whoweare/labservicesolutions.shtml
SGS	http://www.sgs.com/environmental_laboratories?serviceId=8608&lobId=5548

The pages that follow contain a list of laboratories that have been validated (as of 2006) to conduct GEG sampling and analysis. LS&CO. expects to expand this list in the future.

GEG VI (2006) LABORATORIES

Country	Laboratory/Address	Telephone	Fax	Website	Contact Name	Position	E-mail Contact
Argentina	SGS Chile Ltda. Ignacio Valdivieso 2409 San Joaquín, Santiago, Chile	+56 02 5558478 1606	+56 02 556 2412	www.sgs.com	Orquidea Rueda	Laboratory Chief	orquidea.rueda@ sgs.com
Bangladesh	BUET Environmental Engineering Laboratory, Department of Civil Engineering Bangladesh University of Engineering & Technology	+880 9665650 Ext 7226, 7753	+880 2 966 3695		Dr. M. Ashraf Ali		ashraf@ce.buet. ac.bd
Brazil	SGS do Brazil Rua São Januário, 187São Cristóvão-RJ CEP 20921 000	021 2580 8686		www.sgs.com	Vânia Cristina A. Cardoso	Environmental Coordinator	vania.cardoso@sgs. com
Bulgaria	Vodocanalproject- Metalproject Engineering AD. 24, Kamen Andreev Str. 1606 Sofia, Bulgaria	+3592 9520092	+3592 9516879		Mr. Alexander Vassilev		marketing@
Cambodia	SGS Vietnam Laboratory 141 LY Chinh Thang, District 3, Ho Chi Minh City, Vietnam	+848 935 1920 Ext 125	+848 935 1923	www.sgs.com	Linh Hoang	Laboratory Technician	linh.hoang@sgs. com
Chile	SGS Chile Ltda. Ignacio Valdivieso 2409 San Joaquín, Santiago, Chile	+56 02 5558478 1606	+56 02 556 2412	www.sgs.com	Orquidea Rueda	Laboratory Chief	orquidea.rueda@ sgs.com
China	SGS-CSTC Standards Technical Services Co. Ltd. Shanghai Branch 10/F, 3rd Building No. 889, Yishan Road, Xuhui District, Shanghai, China 200233	+(8621) 61402666	+(8621)61152164	www.cn.sgs.com	Portia Xiao	Sales Supervisor	portia.xiao@sgs. com
Colombia	SGS Chile Ltda. Ignacio Valdivieso 2409 San Joaquín, Santiago, Chile	+56 02 5558478 1606	+56 02 556 2412	www.sgs.com	Orquidea Rueda	Laboratory Chief	orquidea.rueda@ sgs.com
Costa Rica	SGS Chile Ltda. Ignacio Valdivieso 2409 San Joaquín, Santiago, Chile	+56 02 5558478 1606	+56 02 556 2412	www.sgs.com	Orquidea Rueda	Laboratory Chief	orquidea.rueda@ sgs.com

GEG VI (2006) LABORATORIES

Country	Laboratory/Address	Telephone	Fax	Website	Contact Name	Position	E-mail Contact
Dominican Republic	SGS Chile Ltda. Ignacio Valdivieso 2409 San Joaquín, Santiago, Chile	+56 02 5558478 1606	+56 02 556 2412	www.sgs.com	Orquidea Rueda	Laboratory Chief	orquidea.rueda@sgs.com
Egypt	SGS Egypt Laboratory Service Unit 1 Osman Road, El Mariouteya, El Harraneya, Haram, Giza, Egypt	+202 384 2811	+202 382 3537	www.eg.sgs.com	Mahmoud Hanafy	Laboratory/ Technical Manager	mahmoud.hanafy@sgs.com
Greece	SGS Greece SA 10, P. Tsaldari & Thisvis St., PO Box 42020 Athens 12132 Greece	+30 210572077	+30 2105750065	www.sgs.com	Mr. Apostolis Korkolis	Environmental Assessor	Apostolis.Korkolis@sgs.com
India	SGS India Pvt. Ltd., 1/509 A, Old Mahabalipuram Road, Opp. To Government School, Thoraipakkam, Chennai 600 096, India	+91 (44) 24962933, 24963095	+99 (44) 24963075	www.sgs.com	A. Dhananjaya Rao	Executive	dhananjaya rao@sgs.com mariappan meena@sgs.com
Indonesia	PT. ALS Indonesia Jl. Raya Puncak Km. 72.6 Cibogo, Bogor 16750	+62 251 253 813	+62 251 253 814	www.alsenviro.com	Suzanna O. R. Lumme Reg de Wit	Business Manager Technical Manager	suzanna.lumme@alsindonesia.com; reg.dewit@alsindonesia.com
Japan	Sumika Chemical Analysis Service Ryumeikan Honten Building 8F 4-3 Surugadai Chiyoda-ku, Tokyo, Japan	+81 3 3257 7201	+81 3 3257 7220	www.scas.co.jp	Ms Yakushiji	Laboratory Technician	yakushiji@scas.co.jp
Jordan	SGS Jordan PSC PO Box 930388 Amman 1193 Jordan	+962 6 568 5881	+962 6 568 5898	www.sgs.com	Mr. Ayman Majdoubeh	Inspection Manager	Ayman. Majdoubeh@sgs.com
Lesotho	SGS South Africa (Pty) Ltd., Halfway House 1685 PO Box 572 South Africa	+27 11 652 1400	+27 11 652 1525	www.sgs.com	Mr. Johan Vermeulen	Industrial and Environmental Manager	johan.vermeulen@sgs.com
Madagascar	SGS South Africa (Pty) Ltd., Halfway House 1685 PO Box 572 South Africa	+27 11 652 1400	+27 11 652 1525	www.sgs.com	Mr. Johan Vermeulen	Industrial and Environmental Manager	johan.vermeulen@sgs.com

GEG VI (2006) LABORATORIES

Country	Laboratory/Address	Telephone	Fax	Website	Contact Name	Position	E-mail Contact
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Mexico	SGS de México, SA de C.C Ingenieros Militares #85 5° Piso Col. Argentina Pte, CP 11230 México, D.F	+52 (55) 53 87 21 00 Ext. 153, 318, 319, 323, 346	+52 (55) 53 87 21 00 Ext. 153, 318, 319, 323, 346	www.mx.sgs.com	Jose Manuel Sura	Director OGC	jose.manuel.sura@ sgs.com
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Note: Please help us keep this contact list updated by communicating any changes in contacts from the field the following email address: ehshandbook@levi.com							

8. ANALYTICAL LABORATORIES: CHOOSING A LABORATORY

Purpose

Compliance with LS&CO.'s Global Effluent Guidelines relies, among other things, on wastewater testing results produced by laboratories. Therefore, it is critical that labs produce reliable data, of high quality. Laboratory management systems, documentation control, training, and personnel all need to meet standards in order to allow confidence in the results.

Laboratory Certification/Accreditation

International and national bodies publish norms and guidelines for the quality control of test laboratories. The International Standards Organization (ISO) published a quality assurance norm for test laboratories that parallels the industry quality norms ISO 9001 and ISO 9002. The norm, General Requirements for the Competence of Testing and Calibration Laboratories (EN ISO/IEC 17025), establishes the management procedures to ensure quality laboratory results. Certification according to EN ISO/IEC 17025 includes implementation of management procedures, defined responsibilities and document management practices. The ISO/IEC norm 17025 originates in the German norm DIN EN 45001. Laboratories that are EN ISO/IEC 17025-certified and conduct standard test methods, including those listed in this Appendix (Topic 6), can be considered strong candidates for GEG wastewater testing. Additionally, accreditations from government agencies, universities, or international consultancies may also be appropriate.

Locating a Certified Laboratory

National accreditation bodies are the points of contact to find certified laboratories. A list of national accreditation bodies and their contact information can be found under "Directory" at the website of the International Laboratory Accreditation Cooperative (ILAC) (<http://www.ilac.org/>). Some of the listed national accreditation bodies have Internet-based lists of certified laboratories; otherwise the accreditation bodies must be contacted directly.

Additional national certification schemes may also exist. For example, India officially entrusts certain laboratories to conduct analysis under the Indian Environmental Protection Act of 1986. Laboratories that want to conduct tests for compliance with the Act need to be certified and listed in the Gazette of India. A current list can be accessed at <http://enfor.nic.ne/legis/env/so728e.htm>

Criteria for An Approved Laboratory

In addition to being accredited/certified, laboratories should have the following: suitably qualified staff; the ability to perform all the tests required; and documented standard operating procedures (SOPs) that are implemented for all laboratory processes. Other criteria that may assist in lab selection include affiliations to international labs and references.

If the laboratory is not accredited but has the following systems in place, it can be considered an approved laboratory:

General

- Governing agency permits or other formal permissions to operate.
- Health and safety guidelines for staff working in the laboratory, including available protective equipment in good working order (e.g., personal protective equipment of good quality, fume hoods, safety showers, and eye fountains).
- Written procedures and records for calibrating and maintaining instruments, accepting and logging samples, preparing and testing samples, reviewing and reporting data, and storing reports/documentation.
- Good housekeeping in the laboratory.
- Well-ventilated laboratory.
- Routine inspection of all emergency equipment.
- A waste disposal plan which takes into account existing regulations and best practice.

continued on next page

Personnel

- Trained and experienced personnel, with records of staff qualifications.
- Records documenting staff are trained when a new machine is obtained.
- Records documenting staff have taken refresher training.

Specific

- Calibration records and regular calibration of all instruments.
- All machines in a well-maintained state, preventative maintenance programs.
- Able to perform the range of tests required, using the test methods specified.
- Laboratory reports should be well constructed and signed off by authorized personnel.
- Laboratory should be willing to tailor the reporting form to customer needs.

9. SUBMITTING THE LABORATORY REPORT: LABORATORY GUIDELINES

This guidance must be forwarded to all laboratories used in sampling and analysis for the purposes of monitoring the LS&CO. GEG. These LS&CO.-specific laboratory guidelines help assure us of the quality of the reporting being received, and help us consolidate reports from almost 150 laboratories globally.

Acceptable laboratory reports shall:

- 1) Be printed on letterhead paper from the laboratory, complete with all contact information and laboratory accreditations or affiliations.
- 2) Be signed by an authorized person affiliated with the laboratory and stamped with the laboratory stamp.
- 3) Include the following information:
 - a. Date and time of analysis
 - b. Name and title of analyst
 - c. Sample origin; how and by whom sample was taken; name of organization with which the sample taker is associated (factory or laboratory); holding time and preservation method
 - d. Analytical method and equivalence to the methods in the LS&CO. Analytical Methods list (Topic 6)
 - e. Detection limits, where applicable (laboratories should know in the LS&CO. GEG levels in advance in order to be able to use the appropriate methods)
 - f. Units of measurement (our preference is mg/l where applicable)
- 4) Include a section that covers the in-situ measurements and any observations made during the sampling. This section shall provide the following information:
 - a. Date and time of analyses
 - b. Name and title of sampler/analyst
 - c. Sample origin; how and by whom sample/analysis was taken; name of organization with which the sample taker is associated (factory or laboratory)
 - d. Analytical method and equivalence to the methods in the LS&CO. Analytical Methods list (Topic 6)
 - e. Units of measurement
 - f. Any observations relating to the conditions under which the sampling and in-situ analyses were carried out

If in-situ measurements are taken by factory's technical staff, the LS&CO. form shall be used for this report, and signed off by the wastewater engineer or supervisor in charge of the operation of the wastewater treatment plant installation.

The laboratory should prepare at least two original reports as outlined above; one destined for the factory and one destined for LS&CO.'s TOE Assessor.

LS&CO. prefers that the sampling and analysis be carried out by a third-party laboratory.

10. SUBMITTING THE LABORATORY REPORT: FACTORY GUIDELINES

Reporting Deadlines

LS&CO. analysis results shall be submitted to the TOE Assessor according to the following schedule:

If the prior year's GEG performance is compliant:

- By April 30th and October 1st of each year: original laboratory reports of the traditional wastewater parameters (temperature, pH, BOD, COD, color, foam, and TSS) are to be submitted.
- With consistent GEG compliance and upon discretion of LS&CO., submission of laboratory reports to TOE may be reduced to once per year (October 1st of each year); however reports will always be required at least once per year.

If the prior year's GEG performance requires improvement:

- By April 30th of each year: original laboratory reports of the traditional wastewater parameters (temperature, pH, BOD, COD, color, foam, and TSS) are to be submitted.
- By October 1st of each year: original laboratory reports of tests carried out on all parameters included in the LS&CO. GEG are to be submitted. With consistent GEG compliance for metal parameters and upon discretion of LS&CO., submission of metal parameters may be dropped, however traditional parameters must continue to be submitted by October 1st (and April 30th) for factories whose GEG performance requires improvement.

All factories required to sample and analyze wastewater under the LS&CO. GEG program shall meet these reporting deadlines.

Other Reporting Issues

- Only the original laboratory report is acceptable to LS&CO. Factories are not to submit their own created document for reporting.
- Factories shall keep an original laboratory report on file for review during the annual TOE Assessment or follow-up visit.
- It is important to note that metal analyses require some lead time before results can be available, so factories should take this into account when scheduling sample and analysis in order to submit their reports on time.
- Factories shall arrange for the original report to be provided to the TOE Assessor. They may instruct the laboratory to mail the original report directly to the TOE Assessor.

AT ALL TIMES, WASTEWATER EFFLUENTS SHALL COMPLY WITH THE LOCAL REQUIREMENTS, REGULATIONS AND/OR PERMIT.

11. TOE ASSESSMENT AND THE POTW FACILITIES

Using the standard form in Topic 17 (Publicly Owned Treatment Works / Municipal Wastewater Treatment Facilities), the factory shall gather information on the POTW, complete the survey form, and send a copy to LS&CO.

The TOE Assessor will attempt to verify that on-site, wastewater pre-treatment facilities are maintained in the best possible condition. He/she will also evaluate the administrative aspects (e.g., procedures, required records, etc.) of the factory's compliance with local (POTW) requirements.

12. FACTORIES THAT RECYCLE PROCESS WATER

It is becoming a frequent practice for factories to recycle process water, especially in countries with severe water restrictions. There are many different ways to recycle water in textiles. Examples include counter-current systems within the finishing process, and treating specific wastewater streams to meet certain technical requirements for reuse.

Health and Safety

1) Recycled water shall meet all national health and safety requirements, and “use” restrictions (i.e. restrictions on how the recycled water can be used).

2) Factory information about the water recycling system shall be communicated to employees to avoid accidental, inappropriate use. All piping shall be adequately marked.

Environment

1) Resulting concentrated wastewater effluents shall be appropriately treated and disposed of to prevent environmental pollution.

2) All wastewater effluents shall meet the local POTW's effluent discharge requirements or the LS&CO. GEG requirements if it is discharged directly to the environment (river, lake or stream etc.).

3) All process sludge shall be appropriately treated and disposed of to prevent environmental pollution.

4) All process sludge shall meet local requirements, and disposed off according to the law.

13. FACTORIES THAT USE TREATED EFFLUENTS FOR IRRIGATION

It is becoming common practice for treated effluent to be used for irrigation, especially in countries with severe water restrictions.

- 1) Factories may use the water for irrigation within a national irrigation program (for example, through a publicly owned treatment works or State program), provided that all legal requirements are met.
- 2) Factories shall not use treated wastewater effluent for irrigation or other purposes on-site, without government or municipal approval/partnership.

14. DOMESTIC SEWAGE

Domestic sewage from laundries shall be treated using biological treatment before discharging it to the environment.

Biological treatment may be provided in different ways, depending on factory wastewater treatment strategy. The following are all acceptable for LS&CO. GEG:

- Off-site biological treatment in a municipal wastewater treatment facility or POTW (factory must use the POTW Survey Form found in Topic 17 to gather the required information to determine whether the POTW is “adequately equipped”).
- On-site biological treatment in the form of a complete wastewater treatment plant (including primary and secondary treatment) used to treat all factory wastewater streams – domestic sewage and industrial wastewater.
- On-site biological treatment in the form of a septic-tank system (for example, with a drain field or other similar biological treatment). Please note septic-tank effluent must be treated to reduce its polluting potential, hence the need for a drain field or other form of biological treatment. Septic-tank effluent is not suitable for direct discharge to the environment.
- On-site biological treatment in the form of compact domestic-wastewater treatment units.

All treated domestic wastewater effluent must meet local discharge criteria as a minimum, and must meet the LS&CO. GEG, where the domestic sewage is treated with industrial wastewater.

If sludge-drying beds are used to manage wastewater treatment sludge, as is common practice in some parts of the world, excess wastewater run-off from the sludge should be routed back to the wastewater treatment influent for treatment. Factories should have measures in place to prevent public health issues and nuisances.

15. STANDARD LETTERS AND FORMS: IN-SITU MEASUREMENTS

Note: These are to be used only if the factory's technical staff conducts the in-situ measurements.

LS&CO. prefers for measurements to be taken on site by a third-party laboratory, according to the relevant standard analytical method. However, in some situations, this is not achievable. In this case, the factory's technical staff may take the sample, using well-maintained and calibrated instruments. The final results shall be recorded on the standard LS&CO. form on the following page.

continued on next page

Monitoring Program In-Situ Sampling and Analysis Form

Factory				
Name				
Address				
Factory Wastewater Technician				
Name				
Title				
Sampling Event				
Sampling Date				
Sampling Time				
Sample Location				
In-Situ Sampling and Analysis				
Parameter	Result	Units	Analytical Method	Remarks
Temperature		°C		
Temperature of receiving water body (If temperature of the effluent is >37°C)		°C		
pH				
Visible Color	Hue (color—e.g., yellowish, reddish, brown, blue)			
	Intensity (e.g., light, dark, very dark, opaque)			
	Determination	<input type="checkbox"/> Offensive <input type="checkbox"/> Not Offensive		
Foam Observation	Floating solids	<input type="checkbox"/> Some <input type="checkbox"/> None		
	Foam	<input type="checkbox"/> Some foam generated but immediately dissipates <input type="checkbox"/> Persistent foam build-up at effluent discharge point		
	Determination	<input type="checkbox"/> Foam <input type="checkbox"/> No Foam		

Comments:

Technician's Signature: _____

Date: _____

16. STANDARD LETTERS AND FORMS: DOMESTIC SEWAGE

Factories shall submit the attached form concerning their treatment of domestic sewage at the start of their business relationship with LS&CO. and whenever there are changes in their treatment of domestic sewage.

The completed form shall be submitted to the LS&CO. TOE Assessor.

Monitoring Program Domestic Sewage Form

Factory		
Name		
Address		
Factory Wastewater Technician		
Name		
Title		
Domestic Sewage Treatment	Is domestic sewage treated?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Where is domestic sewage treated?	<input type="checkbox"/> On-site <input type="checkbox"/> Off-site
	Treatment Method	<input type="checkbox"/> Septic Tank System <input type="checkbox"/> On-site biological treatment <input type="checkbox"/> On-site biological wastewater treatment plant combined with industrial/process wastewater treatment <input type="checkbox"/> Off-site municipal wastewater treatment with NO biological treatment <input type="checkbox"/> Off-site municipal wastewater treatment WITH biological treatment <input type="checkbox"/> Domestic sewage trucked off site to municipal wastewater treatment (select type of off-site treatment above)
Additional Comments (e.g. future changes with timeframes)		

Technician's Signature: _____

Date: _____

17. STANDARD LETTERS AND FORMS: PUBLICLY OWNED TREATMENT WORKS (POTW)/MUNICIPAL TREATMENT WORKS

The purpose of the standard letter and form is to obtain high-level information on whether the POTW is adequately equipped for our purposes. “Adequately equipped” means that the treatment facility is designed to carry out secondary or biological treatment, and that the equipment is working.

Ideally, the attached standard letter and accompanying form are communicated to the POTW by the Factory Contact for TOE. The completed form, on return from the POTW, shall be copied and forwarded to the TOE Assessor. The factory shall keep this information in its environmental files.

The letter and the form may be translated by the factory, next to the English version, which remains in order to facilitate processing within LS&CO.

The standard letter may or may not be used, depending upon how the factory decides to approach the POTW. The survey form may instead be completed through a site visit and interview with POTW personnel.

The actual approach used depends upon the collaborative relationship that the factory maintains with the POTW.

continued on next page

Name and Title of Factory Contact

Factory Name and Address

Date

POTW Name and Address

Dear Sir/ Madam

Please find attached a short survey form, requesting information on the municipal treatment works that our Company {Factory Name} uses for the final treatment of our wastewater.

This information is being requested by our customer, Levi Strauss & Co., as part of their LS&CO. Global Effluent Guidelines Program, and will be treated as confidential company information for internal use only.

Please complete the form and return it to the address above. I am expecting to communicate this to LS&CO. by {date}.

If you have any questions, or if any clarifications are required, please do not hesitate to call at {Telephone Number of Factory Contact}.

We look forward to receiving the completed form

Thank you.

Sincerely,

{Name of Factory Contact}

Encl.

continued on next page

CONFIDENTIAL POTW INFORMATION
For LS&CO's internal use only
Publicly-Owned Treatment Works / Municipal Wastewater Treatment Facility Survey

Please complete information in empty fields, otherwise check where appropriate.

Factory Name	(To be completed by Factory)		
Factory Address	(To be completed by Factory)		
Name of Municipal Treatment Works	(From this point forward, to be completed by Factory or POTW)		
Address of Municipal Treatment Works			
Country			
Daily Treatment Capacity (m³)			
Treatment Categories	Primary	Secondary	Tertiary
List Treatment Processes			
Final Effluent Quality	<input type="checkbox"/> Good	<input type="checkbox"/> Average	<input type="checkbox"/> Bad
Final Effluent Appearance	<input type="checkbox"/> Yellow	<input type="checkbox"/> Pale	<input type="checkbox"/> Floating matter
	<input type="checkbox"/> Red	<input type="checkbox"/> Dark	<input type="checkbox"/> Foam
	<input type="checkbox"/> Green	<input type="checkbox"/> Clear	
	<input type="checkbox"/> Brown	<input type="checkbox"/> Cloudy	
	<input type="checkbox"/> Colorless	<input type="checkbox"/> Opaque	
Treatment process performs as designed	<input type="checkbox"/> At all times	<input type="checkbox"/> Most of the times (>75%)	<input type="checkbox"/> Seasonally
Major operating challenges	<input type="checkbox"/> Industrial user effluent out of specifications <input type="checkbox"/> Technical know-how <input type="checkbox"/> Process overload <input type="checkbox"/> Funding <input type="checkbox"/> Environmentally sensitive receiving waters <input type="checkbox"/> Community relations		
Receiving Waters	<input type="checkbox"/> Stream <input type="checkbox"/> Lake <input type="checkbox"/> Underground water <input type="checkbox"/> River <input type="checkbox"/> Sea		
Additional Comments			

continued on next page

The following template can be used for translation.

CONFIDENTIAL POTW INFORMATION For LS&CO's internal use only Publicly-Owned Treatment Works / Municipal Wastewater Treatment Facility Survey Please complete information in empty fields, otherwise check where appropriate.			
Factory Name	(To be completed by Factory)		
Factory Address	(To be completed by Factory)		
Name of Municipal Treatment Works	(From this point forward, to be completed by Factory or POTW)		
Address of Municipal Treatment Works			
Country			
Daily Treatment Capacity (m³)			
Treatment Categories	Primary	Secondary	Tertiary
List Treatment Processes			
Final Effluent Quality	<input type="checkbox"/> Good	<input type="checkbox"/> Average	<input type="checkbox"/> Bad
Final Effluent Appearance	<input type="checkbox"/> Yellow	<input type="checkbox"/> Pale	<input type="checkbox"/> Floating matter
	<input type="checkbox"/> Red	<input type="checkbox"/> Dark	<input type="checkbox"/> Foam
	<input type="checkbox"/> Green	<input type="checkbox"/> Clear	
	<input type="checkbox"/> Brown	<input type="checkbox"/> Cloudy	
	<input type="checkbox"/> Colorless	<input type="checkbox"/> Opaque	
Treatment process performs as designed	<input type="checkbox"/> At all times	<input type="checkbox"/> Most of the times (>75%)	<input type="checkbox"/> Seasonally
Major operating challenges	<input type="checkbox"/> Industrial user effluent out of specifications <input type="checkbox"/> Technical know-how <input type="checkbox"/> Process overload <input type="checkbox"/> Funding <input type="checkbox"/> Environmentally sensitive receiving waters <input type="checkbox"/> Community relations		
Receiving Waters	<input type="checkbox"/> Stream <input type="checkbox"/> Lake <input type="checkbox"/> Underground water <input type="checkbox"/> River <input type="checkbox"/> Sea		
Additional Comments			

continued on next page

18. GLOSSARY

Adequately Equipped: A term used in the LS&CO. GEG program to describe POTWs that have the infrastructure and equipment to properly carry out secondary or biological treatment.

Analytical Method or Test Method: A documented technical procedure for measuring the parameters defined in the LS&CO. GEG from wastewater samples collected at factories.

Analytical Report: A laboratory-generated document containing results of analyses carried out on wastewater samples, along with other pertinent information relating to the sampling/analysis exercise.

Biological Oxygen Demand or BOD5: An indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria.

Bypass: An intentional diversion of wastewater from the collection system or wastewater treatment plant.

Composite Sample: A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be “time-composite” (collected at constant time intervals) or “flow-proportional” (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each grab sample as the flow increases, while maintaining a constant time interval between the grab samples).

Detection Limit: The minimum concentration of a substance that can be measured and reported with 99% confidence that the parameter concentration is above zero and is determined from analysis of a sample in a given matrix containing the parameter.

Engineering Report: A report produced and signed by a professional licensed engineer, which thoroughly examines the technical, engineering and administrative aspects of a wastewater treatment plant.

Grab Sample: A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater: Water or liquid-carried waste from wet processing of apparel.

Local Limits: Specific limits on pollutant parameters developed by local country legislation, regional or municipal authorities.

Standard: A technical document stating the accepted rules for conducting a specific analytical test.

pH: A measure of a liquid’s acidity or alkalinity. A pH of 7 is defined as neutral; large variations above or below this value are considered harmful to most aquatic life.

Pre-Treatment: Any wastewater treatment process which takes place on site prior to the discharge of the wastewater to the municipal sewers leading to the POTW, usually consisting of screening and sludge conditioning and dewatering.

Quality Assurance: A series of planned, routine activities which a laboratory carries out to ensure that a product or service complies with the specified quality requirements.

Quality Control: A series of operating methods and activities which are used to satisfy compliance with the established quality requirements.

Total Suspended Solids (TSS): Particulate matter contained in a water or wastewater samples.

