



# CERTIFICATE OF ACCREDITATION

*This is to attest that*

**ANALYTICAL LABORATORY E.I.R.L**  
COOPERATIVA DE VIVIENDA SID SUR MZE LOTE 9  
AREQUIPA, REPUBLIC OF PERÚ

**Testing Laboratory TL-1007**

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date January 4, 2024



A handwritten signature in black ink, reading "Rey Nathan".

**President**

# SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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## ANALYTICAL LABORATORY E.I.R.L

[www.alab.com.pe](http://www.alab.com.pe)

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*Accredited to ISO/IEC 17025:2017*

*Effective Date January 4, 2024*

FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
<b>ENVIRONMENTAL MICROBIOLOGY</b> (Field collection + Lab Testing)	Water for human use and consumption, Natural Water Wastewater, Saline Water	Total Coliform - MPN method	SMEWW-APHA-AWWA-WEF Part 9221 B, 24th Ed. 2023, Multiple-Tube Fermentation Technique for Members of the Coliform Group. Standard Total Coliform Fermentation Technique
		Fecal Coliform (Thermotolerant) – MPN method	SMEWW-APHA-AWWA-WEF Part 9221 F.2, 24th Ed. 2023, Multiple-Tube Fermentation Technique for Members of the Coliform Group. Escherichia coli Procedure Using Fluorogenic Substrate. Simultaneous Determination of Thermotolerant Coliforms and E.coli
		Escherichia Coli -MPN method	SMEWW-APHA-AWWA-WEF Part 9221 F.2, 24th Ed. 2023, Multiple-Tube Fermentation Technique for Members of the Coliform Group. Escherichia coli Procedure Using Fluorogenic Substrate. Simultaneous Determination of Thermotolerant Coliforms and E. coli
		Fecal Enterococci or Intestinal Enterococci – MPN method	SMEWW-APHA-AWWA-WEF Part 9230 B, 24th Ed. 2023, Fecal Enterococcus/Streptococcus Groups. Multiple-Tube Technique
	Heterotrophic Plate Count (HPC). Pour Plate Method	SMEWW-APHA-AWWA-WEF Part 9215 B, 24th Ed. 2023, Method	
	Water for human use and	Total Coliform - UFC/ 100mL	SMEWW-APHA-AWWA-WEF Part 9222 B, 24th Ed. 2023,

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ENVIRONMENTAL MICROBIOLOGY (Field collection + Lab Testing) (continued)	consumption, Natural Water		Membrane Filter Technique for Members of the Coliform Group. Standard Total Coliform Membrane Filter Procedure using Endo Media
		Fecal Coliform (Thermotolerant) - UFC / 100mL	SMEWW-APHA-AWWA-WEF Part 9222 D, 24th Ed. 2023, Membrane Filter Technique for Members of the Coliform Group. Thermotolerant (Fecal) Coliform Membrane Filter Procedure
		Escherichia coli - UFC / 100mL	SMEWW-APHA-AWWA-WEF Part 9222 H, 24th Ed. 2023, Membrane Filter Technique for Members of the Coliform Group. Partitioning E. coli from MF Total Coliform using EC-MUG Broth
		Total Coliform E. coli	Hach Method 10029. Rev. 11 (2018) Validated 2023 <i>Coliform total and E. coli</i>
	Air	Aerobic mesophilic (Count) in air Enumeration of mesophilic aerobic microorganisms. Plate count methods. Method 1 (Standard plate count, plate count per seeding in whole medium or count) plate of aerobic microorganisms	APHA. Ch 3, Part 3.101. 5th Ed. 2015 // ICMSF Method 1, page. 117-124, 2da Ed. Reimpression 2000 Microbiological monitoring of the food processing environment. Air sampling methods. Sedimentation methods
		Molds (Count) in air Mold and yeast counts. Method of counting molds and yeasts by plating throughout the medium	APHA. Ch 3, Part 3.101. 5th Ed. 2015 // ICMSF. Page. 165-167, 2da Ed. Reimpression 2000 Microbiological monitoring of the food processing environment. Air sampling methods. Sedimentation method
		Yeasts (Count) in air Mold and yeast counts. Method of counting molds and yeasts by plating throughout the medium	APHA. Ch 3, Part 3.101. 5th Ed. 2015 // ICMSF. Page. 165-167, 2da Ed. Reimpression 2000 Microbiological monitoring of the food processing environment. Air sampling

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<b>ENVIRONMENTAL MICROBIOLOGY</b> (Field collection + Lab Testing) (continued)			methods. Sedimentation methods
	Living surfaces Inert Surfaces	Mesophilic aerobic count	ICMSF Food Microorganisms. Its meaning and enumeration methods. Method 1. Pages 117-123 2nd Ed. Reprint 2000 / RM N° 461-2007 / MINSA (Includes sampling). Enumeration of mesophilic aerobic microorganisms. Method 1. Standard plate count. 2000
		Coliform count	ISO 4832:2006 // RM No 461-2007-MINSA.. Microbiology of food and animal feeding stuffs - - Horizontal method for the enumeration of coliforms -- Colony-count technique // Technical Guide for the Microbiological Analysis of Surfaces in Contact with Food and Drinks.. 2006
		Mold Count	ICMSF Food Microorganisms. Its meaning and enumeration methods. Pages 165-167 2nd Ed. Reprint 2000 / RM N° 461-2007 / MINSA (Includes sampling). Yeast and mold counting method by plating the entire medium. 2000
		Yeast count	ICMSF Food Microorganisms. Its meaning and enumeration methods. Pages 165-167 2nd Ed. Reprint 2000 / RM N° 461-2007 / MINSA (Includes sampling). Yeast and mold counting method by plating the entire medium. 2000
Soils, Sediment and Sludge	Fecal Coliforms (Thermotolerant)	SMEWW-APHA-AWWA-WEF Part 9221 F.2, 24th Ed. 2023. Multiple-Tube Fermentation Technique for Members of the Coliform Group. Escherichia coli Procedure Using Fluorogenic Substrate. Simultaneous Determination of Thermotolerant Coliforms and E.coli.2023	

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<b>ENVIRONMENTAL MICROBIOLOGY</b> (Field collection + Lab Testing) (continued)	Soils, Sediment and Sludge (continued)	Total coliforms	SMEWW-APHA-AWWA-WEF Part 9221 B, 24th Ed. 2023.. Multiple-Tube Fermentation Technique for Members of the Coliform Group. Standard Total Coliform Fermentation Technique. 2023
		Escherichia coli	SMEWW-APHA-AWWA-WEF Part 9221 F.2, 24th Ed. 2023.. Multiple-Tube Fermentation Technique for Members of the Coliform Group. Escherichia coli Procedure Using Fluorogenic Substrate. Simultaneous Determination of Thermotolerant Coliforms and E.coli. 2023
<b>ENVIRONMENTAL CHEMISTRY</b> (Field Measurement)	Water for Human Use and Consumption, Natural Water, Wastewater, Saline Water	Conductivity	SMEWW-APHA-AWWA-WEF Part 2510 B. 24th Ed. 2023 Conductivity. Laboratory Method
		pH	SMEWW-APHA-AWWA-WEF Part 4500-H+ B. 24th Ed. 2023 pH Value. Electrometric Method
		Temperature	SMEWW-APHA-AWWA-WEF Part 2550 B. 24th Ed. 2023 Temperature. Laboratory and Field Methods
		Dissolved Oxygen	SMEWW-APHA-AWWA-WEF Part 4500-O G. 24th Ed. 2023 Oxygen (Dissolved). Membrane Electrode Method
		Turbidity	SMEWW-APHA-AWWA-WEF Part 2130 B. 24th Ed. 2023 Turbidity. Nephelometric Method
		Dissolved Oxygen	Test Method C- ASTM D888 . Standard Test Methods for Dissolved Oxygen in Water, Instrumental Probe Procedure Luminescence Based Sensor. 2018
	Water for human use and consumption, Natural water Residual water	Flow	UNE-EN ISO 748:2023. Hydrometry. Measurement of liquid flow in open channels. Velocity area methods using

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<b>ENVIRONMENTAL CHEMISTRY</b> (Field Measurement) (continued)	Process water		point velocity measurements. (ISO 748:2021). 2023
	Natural Water, Wastewater, Sea Water	Salinity	SMEWW-APHA-AWWA-WEF Part 2520 B, 24th Ed. 2023 Salinity. Electrical Conductivity Method.
	Water for Human Use and Consumption, Natural Water, Wastewater	Free Residual Chlorine	SMEWW-APHA-AWWA-WEF Part 4500-Cl G, 24th Ed. 2023 Chlorine (Residual). DPD Colorimetric Method - Validated
		Total Chlorine	SMEWW-APHA-AWWA-WEF Part 4500-Cl G, 24th Ed. 2023 Chlorine (Residual). DPD Colorimetric Method - Validated
	Wastewater	Volumetric Flow (Field Measurement)	MVAL-OPE-04 Validated 2023 Translation results- Flow Determination - Volumetric Method
Ambient air	Determination of Carbon monoxide. Non-dispersive infrared spectrometry method	NTP ISO 4224 2019 Ambient air. Determination of carbon monoxide. Non-dispersive infrared spectrometry method. 1st Edition	
<b>ENVIRONMENTAL CHEMISTRY</b> (Field Collection and Lab Testing)	Water for human use and consumption, Natural Water, Residual Water, Saline Water	Biochemical Oxygen Demand (BOD <sub>5</sub> ).	SMEWW-APHA-AWWA-WEF Part 5210 B, 24th Ed. 2023, Biochemical Oxygen Demand (BOD). 5-Day BOD Test
		Settleable Solids	SMEWW-APHA-AWWA-WEF Part 2540 F, 24th Ed. 2023, Solids. Settleable Solids
		Total Suspended Solids	SMEWW-APHA-AWWA-WEF Part 2540 D, 24th Ed. 2023, Solids. Total Suspended Solids Dried at 103-105°C
	Water for human use and consumption, Natural Water, Residual Water, Saline Water (continued)	Total Solids	SMEWW-APHA-AWWA-WEF Part 2540 B, 24th Ed. 2023, Solids. Total Solids Dried at 103-105°C
		Total Dissolved Solids	SMEWW-APHA-AWWA-WEF Part 2540 C, 24th Ed. 2023, Solids. Total Dissolved Solids Dried at 180°C
		Oil and Grease	SMEWW-APHA-AWWA-WEF Part 5520B, 24th Ed. 2023,



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ENVIRONMENTAL CHEMISTRY (Field Collection and Lab Testing) (cont'd.)			Oil and Grease by Liquid-Liquid, Partition-Gravimetric Method
	Water for human use and consumption, Natural Water, Residual Water,	Chemical Oxygen Demand (COD)	SMEWW-APHA-AWWA-WEF Part 5220 D, 24th Ed. 2023, Chemical Oxygen Demand by Closed Reflux, Colorimetric Method
	Saline water	Chemical Oxygen Demand (COD)	SMEWW-APHA-AWWA-WEF Part 5220A,2; D, 24th Ed. 2023, (Validated - Applied out of scope),2023 Chemical Oxygen Demand by Closed Reflux, Colorimetric Method
	Water for Human Use and Consumption, Natural Water, Wastewater, Saline water, Process Water	Conductivity	SMEWW-APHA-AWWA-WEF Part 2510 B. 24th Ed. 2023 Conductivity. Laboratory Method
		Phosphates or Total Reactive Phosphorus	SMEWW-APHA-AWWA-WEF Part 4500-P, E, 24th Ed. 2023, Phosphorus. Ascorbic Acid Method
		Phosphates or Dissolved Reactive Phosphorus	SMEWW-APHA-AWWA-WEF Part 4500-P, E, 24th Ed. 2023 Phosphorus. Ascorbic Acid Method
	Water for human use and consumption Natural Water Waste Water Process Water	Chlorides	SMEWW-APHA-AWWA-WEF Part 4500-Cl-B, 24th Ed. Chloride. Argentometric Method. 2023
	Water for human use and consumption Natural water Residual water Saline water Process water	Calcium Hardness	SMEWW-APHA-AWWA-WEF Part 3500- Ca-B, 24 th Ed.. Calcium. EDTA Titrimetric Method. 2023
		Total hardness	SMEWW-APHA-AWWA-WEF Part 2340-C, 24 th Ed.. Hardness. EDTA Titrimetric Method. 2023
	Air	Sulfur dioxide (SO <sub>2</sub> )	EPA CFR 40. Appendix A-2 or part 50, 2022 Reference method for the determination of sulfur dioxide

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<b>ENVIRONMENTAL CHEMISTRY</b> (Field Collection and Lab Testing) (cont'd.)	Air (cont'd.)		in the atmosphere. (Pararosaniline method)
		Carbon Monoxide (CO)	Peter O. Warner, "Analysis of Air Pollutants" Spanish Ed. 1981, Chap. 3, P. 121-122. (Validated, 2022) Determination of Carbon Monoxide in the atmosphere. Method 4: Carboxybenzene sulfonamide.
		Ozone (O <sub>3</sub> )	Methods of Air Sampling and Analysis, 3rd Edition, 1988 (Validated, 2022) Ozone determination Method in the Atmosphere
		Nitrogen dioxide (NO <sub>2</sub> )	ASTM D1607-91 (2018) <sup>e1</sup> (Validated-modified). Standard test method for nitrogen dioxide content of the atmosphere (Griess-Saltzman reaction). 2023
		Hydrogen Sulfide (H <sub>2</sub> S)	Determination of Hydrogen Sulfide Content of the Atmosphere ("Methods of Air Sampling and Analysis", Third Edition, Intersociety Committee, James P. Lodge (Editor), 1998.), Chapter 701 (Validated, 2022) Determination of Hydrogen Sulfide Content of the Atmosphere
		PM10	NTP 900.030:2018 PM10 (Particulate matter less than or equal to 10 um) high vol. Environmental Quality Monitoring - Reference method for the determination of breathable particulate matter such as PM10 in the atmosphere. 2nd Edition.
		PM2.5	NTP 900.069:2017 PM 2.5, Environmental Quality Monitoring - Reference method for the determination of fine particulate matter such as PM2.5 in the atmosphere. 1st Edition.



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<b>ENVIRONMENTAL CHEMISTRY</b> (Field Collection and Lab Testing) (cont'd.)	Emissions	Particulate material for chimneys with a diameter less than 30 cm	NTP 900.005:2021. Validated (applied out of scope). <b>MONITORING OF ATMOSPHERIC EMISSIONS.</b> Determination of emissions of particulate matter in stationary sources. 2nd Edition.. 2023
<b>ENVIRONMENTAL CHEMISTRY</b> (Lab Testing)	Air – Environmental Filters	Determination of weight in PM10 filters in Air	NTP 900.030:2018 Does Not Include Sampling (Validated, 2022)  Environmental quality monitoring. Reference method for the determination of breathable particulate matter such as PM10 in the atmosphere. 2nd Edition.
		Determination of weight in PM 2.5 filters in Air.	NTP 900.069:2017 Does Not Include Sampling (Validated, 2022) Environmental quality monitoring. Reference method for the determination of fine particulate matter such as PM2.5 in the atmosphere. 1st Edition.
	Air - Capture Solution	Sulfur dioxide in the atmosphere.	EPA CFR 40. Appendix A-2 to part 50, 2021 Does not include Sampling (Validated, 2022) Reference method for the determination of sulfur dioxide in the atmosphere. (Pararosaniline method)
Nitrogen dioxide content of the atmosphere.		ASTM D1607-91 (Reapproved 2018) <sup>ε1</sup> Does not include Sampling (Validated, 2022) Standard test method for nitrogen dioxide content of the atmosphere. (Griess-Saltzman reaction) <sup>1</sup>	
Carbon Monoxide in the atmosphere.		Peter O. Warner, "Analysis of Air Pollutants" Ed. Spanish 1981, Chap. 3, p. 121-122. Does Not Include Sampling (Validated, 2022)	

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<b>ENVIRONMENTAL CHEMISTRY</b> (Lab Testing) (cont'd.)	Air - Capture Solution (cont'd.)		Determination of Carbon Monoxide in the atmosphere. Method 4: Carboxybenzene sulfonamide.
		Hydrogen Sulfide in the Atmosphere	Determination of Hydrogen Sulfide Content of the Atmosphere ("Methods of Air Sampling and Analysis", Third Edition, Intersociety Committee, James P. Lodge (Editor), 1998.), Chapter 701. Does Not Include Sampling (Validated, 2022) Determination of Hydrogen Sulfide Content of the Atmosphere
		Ozone in the Atmosphere	Methods of Air Sampling and Analysis, 3rd Edition, 1988, Does Not Include Sampling (Validated, 2022) Ozone Determination Method in the Atmosphere
<b>OCCUPATIONAL HEALTH &amp; SAFETY – CHEMISTRY</b> (Field Collection and Lab Testing)	Air – indoor	Breathable Particulates	NIOSH 0600. Issue 3, 1998 Particulates not otherwise regulated, Breathable
		Total Particulates	NIOSH 0500. Issue 2, 1994 Particulates not otherwise regulated, Total
<b>OCCUPATIONAL HEALTH &amp; SAFETY – CHEMISTRY</b> (Lab Testing)	Air – Indoor PVC Membrane Filter	Determination of weight in Breathable Particulates	NIOSH Method 0600, Issue 3. 1998. Does Not Include Sampling (Validated, 2022).
		Determination of weight in Total Particulates	NIOSH Method 0500, Issue 2. 1994. Does Not Include Sampling (Validated, 2022)
<b>OCCUPATIONAL HEALTH &amp; SAFETY</b> (Field Measurement)	Physical environment	Lighting	NTP 211: Lighting of work centers-INSST, 1989
		Ergonomics of the thermal environment, Evaluation of Heat Stress	ISO 7243:2017 Ergonomics of the thermal environment: evaluation of heat stress using the WBGT (wet bulb globe temperature) index
		Ergonomics of the thermal environment, Evaluation of Cold Stress	ISO 11079:2007 Ergonomics of the thermal environment. Determination and interpretation of cold stress when using the required

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<b>OCCUPATIONAL HEALTH &amp; SAFETY</b> (Field Measurement) (continued)	Physical environment (continued)		clothing insulation (IREQ) and the effects of local cooling.
		Occupational Vibration	NTP – ISO 2631-1 (2016) / NTP-ISO 2631-2 (2012) Mechanical Shock and Vibration. Evaluation of human exposure to whole body vibration. Part 1: General requirements. 1st Edition. Part 2: Vibration in buildings

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.03 on Ambient Atmospheres and Source Emissions