



**ANALYTICAL TECHNOLOGIES**

Item #	Information Requested	Response
1.	SOPs of chemicals that will be used	See Table 1 & 2
2.	Type and Quantity of chemicals	See Table 3 See attached Appendix A - MSDS
3.	Type and quantity of hazardous waste generated per month	See Table 4a
4.	How will hazardous waste be stored and the type of container it will be stored in	<p>Hazardous waste will be stored in hazardous waste drums, which will be placed on a spill pallet. Drums will be made of either steel (for organic waste alone) or High-Density Polyethylene (HDPE) plastic. Drums will be placed on a spill pallet or banded area for temporary storage before disposal.</p> <p><b>Note:</b> Remaining Hydrocarbons samples will NOT be stored but will be returned to client.</p>
5.	Are there any future plans for modification of the process/ facility?	At this time, there are no further plans for modification of the process . facility.

**Table I: List of Petroleum Test Methods (SOPs)**

<b>Methodology</b>	<b>Reference Method (SOP)</b>
Ash from Petroleum Products	ASTM 0482
Petroleum products - Determination of ash	IP4
Petroleum products - Determination of ash	ISO 6245
ASTM Color of Petroleum Products (ASTM Color Scale)	ASTM D1500
Petroleum products - Determination of colour (ASTM scale)	IP 196
Petroleum products - Determination of colour (ASTM scale)	ISO 2049
Density, Relative Density, and API Gravity of Liquids (Digital Density Meter)	<b>ASTM 04052</b>
Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	IP 365
Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	ISO12185
Determination of Water <b>in</b> Petroleum Products, Lubricating Oils, And Additives (Coulometric Karl Fischer Titration)	<b>ASTM 06304</b>
Petroleum products - Determination of water - Coulometric Karl Fischer titration method	ISO 12937
Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	<b>ASTM 086</b>
Petroleum products - Determination of distillation characteristics at atmospheric pressure	IP 123
Petroleum and related products from natural or synthetic sources - Determination of distillation characteristics at atmospheric pressure	ISO 3405
Electrical Conductivity for Aviation and Distillate Fuels	ASTM 02624
Determination of electrical conductivity of aviation and distillate fuels	IP 274
Petroleum products - Aviation and distillate fuels - Determination of electrical conductivity	ISO 6297
Flash Point (Pensky-Martens Closed Cup Tester)	ASTM 093
Determination of flash point - Pensky-Martens closed cup method	IP 34
Determination of flash point- Pensky-Martens closed cup method - Amendment 1: Thermometers correction	ISO 2719
Kinematic Viscosity of Transparent and Opaque Liquids (And Calculation of Dynamic Viscosity)	ASTM 0445
Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	IP 71 Section I
Petroleum products -Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	ISO 3107
Pour Point from Petroleum Products	ASTM 097
Petroleum products - Determination of pour point	IP 15
Petroleum and related products from natural or synthetic sources - Determination of pour point	ISO 3016
Sediment in Crude Oils and Fuel Oils (Extraction Method)	ASTM 0473
Crude petroleum and fuel oils - Determination of sediment - Extraction method	IP 53
Crude petroleum and fuel oils - Determination of sediment - Extraction method	ISO 3735

<b>Methodology</b>	<b>Reference Method (SOP)</b>
Sulfur in Petroleum and Petroleum Products (Energy Dispersive X-Ray Fluorescence Spectrometry)	ASTM D4294
Petroleum products - Determination of sulfur content - Energy-dispersive-X-ray fluorescence method	IP 336
Petroleum products - Determination of sulfur content- Energy-dispersive X-ray fluorescence spectrometry	ISO 8754
Water in Petroleum Products and Bituminous Materials (Distillation)	ASTM D95
Petroleum products and bituminous materials - Determination of water - Distillation method	IP 74
Petroleum products and bituminous materials - Determination of water - Distillation method	ISO 3733
Color of Petroleum Products by the Automatic Tristimulus Method	ASTM D6045
Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, And Engine Oil (Ultraviolet Fluorescence)	ASTM D5453
Determination of Vapor Pressure (VPX) of Petroleum Products, Hydrocarbons, And Hydrocarbon-Oxygenate Mixtures (Triple Expansion Method)	ASTM D6378
Water and Sediment in Middle Distillate Fuels (Centrifuge)	ASTM 02709
Conradson Carbon Residue of Petroleum Products	ASTM D189
Petroleum products - Determination of carbon residue - Conradson method	IP 13
Petroleum products - Determination of carbon residue - Conradson method	ISO 6615
Determination of Carbon Residue (Micro Method)	ASTM D4530
Petroleum products - Determination of carbon residue - Micro method	IP 398
Petroleum products - Determination of carbon residue - Micro method	ISO 10370
Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method	ASTM D1298
Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method	IP 160
Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method	ISO 3675
Water and Sediment in Fuel Oils by the Centrifuge Method (Laboratory Procedure)	ASTM D1796
Petroleum products - Determination of water and sediment in residual fuel oils - Centrifuge method	ISO 3734
Calculated Cetane Index by Four Variable Equation	ASTM D4737
Petroleum products - Calculation of cetane index of middle-distillate fuels by the four-variable equation	ISO 4264
Cloud Point of Petroleum Products and Liquid Fuels	ASTM D2500
Petroleum products - Determination of cloud point	IP 219
Petroleum and related products from natural or synthetic sources - Determination of cloud point	ISO 3015
Corrosiveness to Copper from Petroleum Products by Copper Strip Test	ASTM D130
Petroleum products - Corrosiveness to copper - Copper strip test	IP 154
Petroleum products - Corrosiveness to copper - Copper strip test	ISO 2160
Particulate Contamination in Middle Distillate Fuels by Laboratory Filtration	ASTM D6217

<b>Methodology</b>	<b>Reference Method (SOP)</b>
Determination of particulate content of middle distillate fuels - Laboratory filtration method	IP415
Petroleum products - Determination of particulate content of middle distillate fuels - Laboratory filtration method	ISO 15167
Water in Crude Oil by Distillation	ASTM D4006
Crude petroleum - Determination of water - Distillation method	IP 358
Crude petroleum - Determination of water - Distillation method	ISO 9029
Water and Sediment in Crude Oil by the Centrifuge Method (Laboratory Procedure)	ASTM 04007
Crude petroleum - Determination of water and sediment- Centrifuge method	ISO 9030
Acidity in Aviation Turbine Fuel	ASTM 03242
Determination of the acid number of aviation turbine fuels - Colour-indicator titration method	IP 354
Determination of flash point- Abel closed-cup method	IP 170
Determination of flash point -Abel closed-cup method	ISO 13736
Flash Point by Tag Closed Cup Tester	ASTM D56
Determining Water Separation Characteristics of Aviation Turbine Fuels by Portable Separometer (MSEP)	ASTM 03948
Standard Test Method for Calculated Cetane Index of Distillate Fuels	ASTM 0976

**Table 2: List of Water Test Methods (SOPs)**

<b>Methodology</b>	<b>Reference Method (SOP)</b>
Ammoniacal Nitrogen	SMEWW 4500 NH3
Biochemical Oxygen Demand	SMEWW 5210 B
Chlorides	SMEWW 4500 cL-s
Iron	SMEWW3120 B
Manganese	
Chromium	
Nickel	
Copper	
Zinc	
Aluminum	
Cadmium	
Lead	
Oil & Grease (HEM)	
pH	SMEWW 4500 W/B
Total Dissolved Solids	SMEWW2450C
Total Petroleum Hydrocarbons	EPA 1664 Revision B

Methodology	Reference Method (SOP)
Total Suspended Solids	SMEWW2450 D
Total Residual Chlorine	SMEWW 4500 Cl G
Fecal coliform	SMEWW9222 D
Heterotrophic Plate Count (HPC)	SMEWW 9215 B
Total Coliform	SMEWW9222 B
Fluoride	HACH 8029
Nitrate	HACH 8039
Nitrite	HACH 8507
Free Chlorine	HACH 8021
Total Chlorine	HACH 8167
Hexavalent Chromium	HACH 8023
Silica	HACH 8186
Sulfate	HACH 8051
Phosphorus Total Digestion	HACH 8190
Phosphorus, Reactive (Orthophosphate)	HACH 8048
Sulfide	HACH 8131
Iron, Ferrous	HACH 8146

**Table 3: Chemical Type and Quantity used Annually**

Chemical Reagent	Chemical Type	Average Quantity used Annually	
		Gram (g)	Litres (L)
Nitrate Reagents	Inorganic	30	-
mFc Agar	Organic	100	-
mEndo Agar	Organic	100	-
m-HPC-Agar	Organic	50	-
Sodium Hydroxide	Alkali	200	-
Boric Acid	Acid	<50	-
Methyl Red	Acid	<10	-
Methyl Blue	Acid	<10	-
Sodium Tetraborate	Inorganic	20	-
Glucose Glutamic acid	Organic	-	0.30
Potassium Phosphate Monobasic	Inorganic	<20	-
Di-potassium Phosphate Dibasic	Inorganic	<50	-
Di-sodium 7 hydrate	Inorganic	<50	-
Calcium Chloride	Inorganic	<50	-
Magnesium sulphate	Inorganic	<50	-
Sodium Sulphate	Inorganic	<200	-
Silica gel	Solvent	<300	-
Standard Potassium Dichromate	Inorganic	<50	-
Iron (II) sulfate-7-hydrate	Inorganic	<0.05	-
Ammonium Iron (II) sulfate hexahydrate	Inorganic	<50	-
Potassium Hydrogen Phthalate	Organic	100	-
pH buffers: 4, 7, 10	Acid/Alkali	-	<0.50 each
SPANOS Reagent Fluoride	Inorganic	-	-
Citric Acid F Reagent	Acid	<10	-
Iron (III) Chloride anhydrous	Inorganic	-	-
Amino Acid F Dilution Solvent	Solvent	-	0.10
Nitra ver 5 Nitrate Reagent	Inorganic	<10	-
ChromaVer 3 Chromium Reagent	Inorganic	<10	-
DPD Free Chlorine Reagent	Inorganic	<10	-
Amino Acid F Reagent Powder	Organic	<10	-
DPD Total Chlorine Reagent	Inorganic	<10	-
Calcium Chloride, pellets	Inorganic	<50	-

Chemical Reagent	Chemical Type	Average Quantity used Annually	
		Gram (g)	Litres (L)
Sodium Chloride	Inorganic	900	-
Ferric Chloride hexahydrate	Inorganic	<10	-
Potassium chromate crystals	Inorganic	50	-
Potassium Dichromate	Inorganic	<50	-
Silver Nitrate	Inorganic	<50	-
Sulfide 1	Inorganic	-	0.20
Sulfide 2	Inorganic	-	0.20
Potassium Persulfate	Inorganic	<10	-
PhosVer 3 Phos Reagent	Inorganic	<10	-
SulfaVer 4 Sulfate Reagent	Inorganic	<10	-
NitriVer 3 Nitrite Reagent	Inorganic	<10	-
Molybdate 3 Reagent for Silica	Inorganic	-	0.05
Rosolic Acid	Organic	10	-
Magnesium Chloride, anhydrous	Inorganic	20	-
Ferrous Ammonia Sulfate 6-Hydrate	Inorganic	100	-
Ammonium Chloride Crystals	Inorganic	10	-
Ethanol	Alcohol	-	1.00
Toluene	Solvent	-	70
Sulphuric Acid	Acid	-	6.00
Xylene	Solvent	-	6.00
IPA	Alcohol	-	70
Hexane	Solvent	-	40
Hydrochloric Acid	Acid	-	6.00
Nitric Acid	Acid	-	3.00
Acetone	Alcohol	-	70
Methanol	Alcohol	-	1.00
Propanol	Alcohol	-	6.00
Heptane	Solvent	-	1.00

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Table 4a: Type and Quantity of Hazardous Waste Generated Monthly

<b>Type of Hazardous Waste</b>	<b>Quantity Generated Monthly</b>
Hydrocarbons / Solvent	3 Liters (max.)

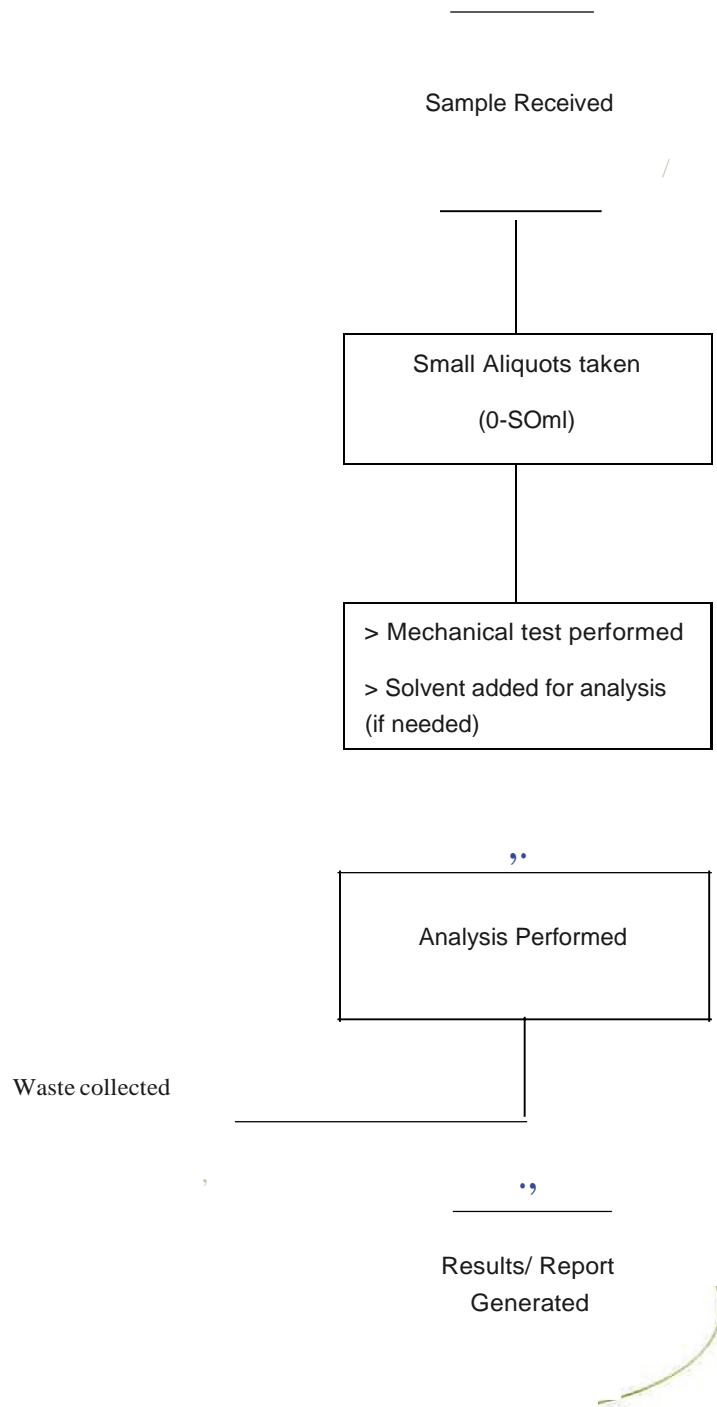
**Note:** Remaining Hydrocarbons samples will NOT be stored but will be returned to client.

Table 4b: Type and Quantity of Non-Hazardous Waste Generated Monthly

<b>Type of Non-Hazardous Waste</b>	<b>Quantity Generated Monthly</b>
Inorganic Waste	3 Liters (max.)

## Overview of Analysis for Oil/ Petroleum/ Petrochemical Sample

For analysis details, please refer to methodology quoted in Table 1 (Reference: page 3-5).



## REFERENCE

**Table 1: List of Petroleum Test Methods (SOPs)**

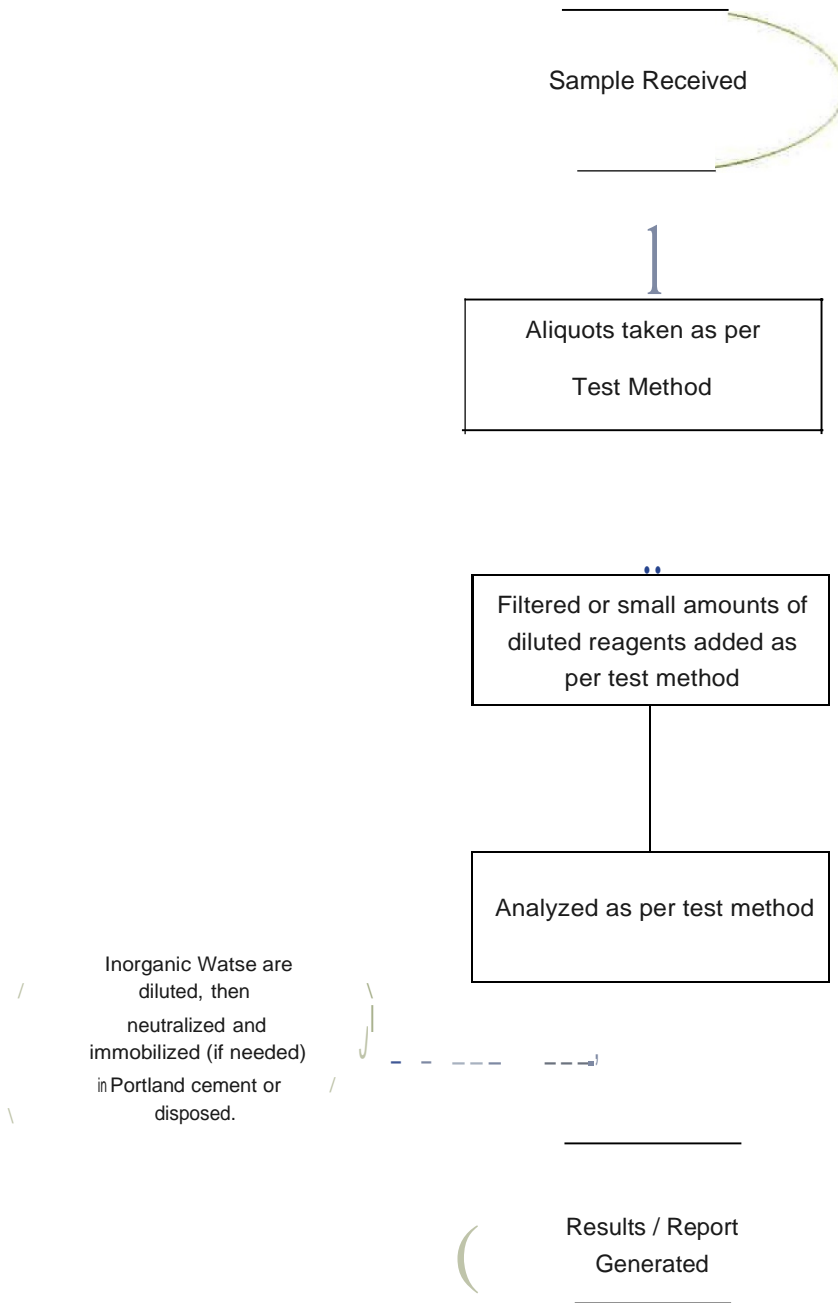
Methodology	Reference Method (SOP)
Ash from Petroleum Products	ASTM D482
Petroleum products - Determination of ash	IP4
Petroleum products - Determination of ash	ISO 6245
ASTM Color of Petroleum Products (ASTM Color Scale)	ASTM D1500
Petroleum products - Determination of colour (ASTM scale)	IP 196
Petroleum products - Determination of colour (ASTM scale)	ISO 2049
Density, Relative Density, and API Gravity of Liquids (Digital Density Meter)	ASTM D4052
Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	IP 365
Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	ISO 12185
Determination of Water in Petroleum Products, Lubricating Oils, And Additives (Coulometric Karl Fischer Titration)	ASTM D6304
Petroleum products - Determination of water - Coulometric Karl Fischer titration method	ISO 12937
Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure	ASTM D86
Petroleum products - Determination of distillation characteristics at atmospheric pressure	IP 123
Petroleum and related products from natural or synthetic sources - Determination of distillation characteristics at atmospheric pressure	ISO 3405
Electrical Conductivity for Aviation and Distillate Fuels	ASTM D2624
Determination of electrical conductivity of aviation and distillate fuels	IP 274
Petroleum products - Aviation and distillate fuels - Determination of electrical conductivity	ISO 6297
Flash Point (Pensky-Martens Closed Cup Tester)	ASTM D93
Determination of flash point - Pensky-Martens closed cup method	IP 34
Determination of flash point - Pensky-Martens closed cup method - Amendment 1: Thermometers correction	ISO 2719
Kinematic Viscosity of Transparent and Opaque Liquids (And Calculation of Dynamic Viscosity)	ASTMD445
Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	IP 71 Section 1
Petroleum products -Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	ISO 3107
Pour Point from Petroleum Products	ASTM D97
Petroleum products - Determination of pour point	IP 15
Petroleum and related products from natural or synthetic sources - Determination of pour point	ISO 3016
Sediment in Crude Oils and Fuel Oils (Extraction Method)	ASTM D473
Crude petroleum and fuel oils - Determination of sediment - Extraction method	IP 53
Crude petroleum and fuel oils - Determination of sediment - Extraction method	ISO 3735

<b>Methodology</b>	<b>Reference Method (SOP)</b>
Sulfur in Petroleum and Petroleum Products (Energy Dispersive X-Ray Fluorescence Spectrometry)	ASTM D4294
Petroleum products - Determination of sulfur content - Energy-dispersive-X-ray fluorescence method	IP 336
Petroleum products - Determination of sulfur content - Energy-dispersive X-ray fluorescence spectrometry	ISO 8754
Water in Petroleum Products and Bituminous Materials (Distillation )	<b>ASTM D95</b>
Petroleum products and bituminous materials - Determination of water - Distillation method	IP 74
Petroleum products and bituminous materials - Determination of water - Distillation method	ISO 3733
Color of Petroleum Products by the Automatic Tristimulus Method	ASTM D6045
Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, And Engine Oil (Ultraviolet Fluorescence)	ASTM D5453
Determination of Vapor Pressure (VPX) of Petroleum Products, Hydrocarbons, And Hydrocarbon-Oxygenate Mixtures (Triple Expansion Method)	ASTM D6378
Water and Sediment in Middle Distillate Fuels (Centrifuge)	ASTM D2709
Conradson Carbon Residue of Petroleum Products	<b>ASTM D189</b>
Petroleum products - Determination of carbon residue - Conradson method	IP 13
Petroleum products - Determination of carbon residue - Conradson method	ISO 6615
Determination of Carbon Residue (Micro Method)	ASTM D4530
Petroleum products - Determination of carbon residue - Micro method	IP 398
Petroleum products - Determination of carbon residue - Micro method	ISO 10370
Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method	<b>ASTM D1298</b>
Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method	IP 160
Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method	<b>ISO 3675</b>
Water and Sediment in Fuel Oils by the Centrifuge Method (Laboratory Procedure)	ASTM D1796
Petroleum products - Determination of water and sediment in residual fuel oils - Centrifuge method	ISO 3734
Calculated Cetane Index by Four Variable Equation	ASTM D4737
Petroleum products - Calculation of cetane index of middle-distillate fuels by the four-variable equation	ISO 4264
Cloud Point of Petroleum Products and Liquid Fuels	ASTM D2500
Petroleum products - Determination of cloud point	IP 219
Petroleum and related products from natural or synthetic sources - Determination of cloud point	ISO 3015
Corrosiveness to Copper from Petroleum Products by Copper Strip Test	ASTM D130
Petroleum products - Corrosiveness to copper - Copper strip test	IP 154
Petroleum products - Corrosiveness to copper - Copper strip test	ISO 2160
Particulate Contamination in Middle Distillate Fuels by Laboratory Filtration	ASTM D6217
Determination of particulate content of middle distillate fuels - Laboratory filtration method	<b>IP 415</b>

<b>Methodology</b>	<b>Reference Method (SOP)</b>
Petroleum products - Determination of particulate content of middle distillate fuels - Laboratory filtration method	ISO 15167
Water in Crude Oil by Distillation	ASTM D4006
Crude petroleum - Determination of water - Distillation method	IP 358
Crude petroleum - Determination of water - Distillation method	ISO 9029
Water and Sediment in Crude Oil by the Centrifuge Method (Laboratory Procedure)	ASTM D4007
Crude petroleum - Determination of water and sediment- Centrifuge method	<b>ISO 9030</b>
Acidity in Aviation Turbine Fuel	<b>ASTM D3242</b>
Determination of the acid number of aviation turbine fuels - Colour-indicator titration method	IP 354
Determination of flash point - Abel closed-cup method	IP 170
Determination of flash point-Abel closed-cup method	ISO 13736
Flash Point by Tag Closed Cup Tester	ASTM D56
Determining Water Separation Characteristics of Aviation Turbine Fuels by Portable Searometer (MSEP)	ASTM D3948
Standard Test Method for Calculated Cetane Index of Distillate Fuels	ASTM D976

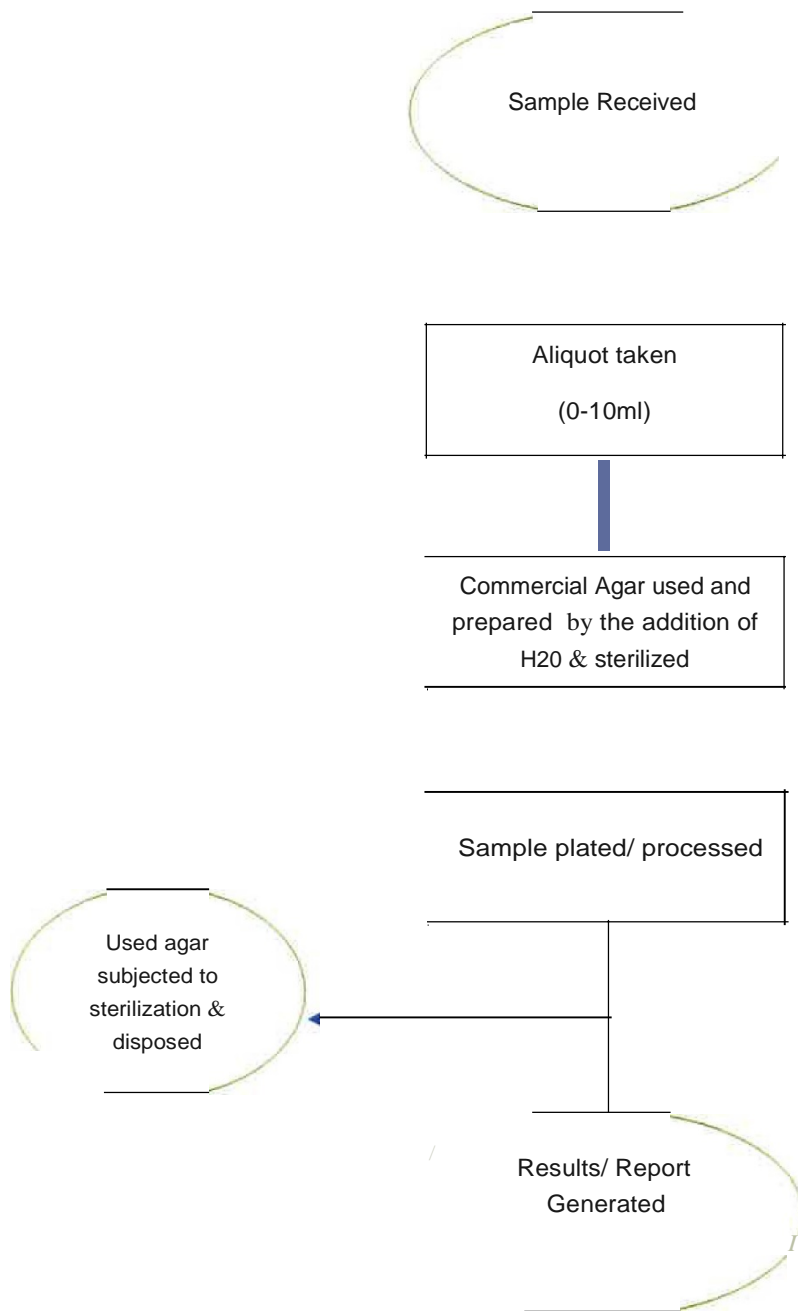
## Overview of Analysis for Water Sample

For analysis details, please refer to methodology quoted in Table 2 (Reference: page 8).



## Overview of Analysis for Microbiology Sample

For analysis details, please refer to methodology quoted in Table 2 (Reference: page 8).



## REFERENCE

**Table 2: List of Water Test Methods (SOPs)**

Methodology	Reference Method (SOP)
Ammoniacal Nitrogen	SMEWW 4500 NH3
Biochemical Oxygen Demand	SMEWW 5210 B
Chlorides	SMEWW 4500 CL-B
Iron	SMEWW 3120 B
Manganese	
Chromium	
Nickel	
Copper	
Zinc	
Aluminum	
Cadmium	
Lead	
Oil & Grease (HEM)	
pH	SMEWW 4500 W B
Total Dissolved Solids	SMEWW 2450 C
Total Petroleum Hydrocarbons	EPA 1664 Revision B
Total Suspended Solids	SMEWW 2450 D
Total Residual Chlorine	SMEWW 4500 Cl G
Fecal coliform	SMEWW 9222 D
Heterotrophic Plate Count (HPC)	SMEWW 9215 B
Total Coliform	SMEWW 9222 B
Fluoride	HACH 8029
Nitrate	HACH 8039
Nitrite	HACH 8507
Free Chlorine	HACH 8021
Total Chlorine	HACH 8167
Hexavalent Chromium	HACH 8023
Silica	HACH 8186
Sulfate	HACH 8051
Phosphorus Total Digestion	HACH 8190
Phosphorus, Reactive (Orthophosphate)	HACH 8048
Sulfide	HACH8131
Iron. Ferrous	HACH 8146

## Laboratory Equipment

Table 3: List and Quantity of Laboratory Equipment

Equipment	Quantity
MSEP Equipment	1
Gas Regulators	3
Sulphur Analyzer	1
Fan	1
Liquid in Glass Thermometer	16
Lollipop Thermometer	2
Thermocouple	1
Water Pump	1
Bunsen Burner	1
Aquarium Air Pump	1
DI Unit	1
Water by Distillation	1
Sediment by Extraction	1
Hot Plate	2
Heating Mantel	2
Magnetic Stirrer	3
Analytical Balance	2
Electronic Balance	1
Digital Turbidity Meter	1
Auto Flash	1
Copper Strip	1
Water Bath	2
Manual Flash	1
Yaccum Pump	1
Drager Tubes and Pimp	1
ICP-6800	1
Karl Fischer	1
Auto Titrator	1
Oven	2
Autoclave	1
lee Maker	1
Refrigerator	1
XRF	1
DR2800	1
Density Meter	1
Auto Distillation Unit	1
FTIR	1

Question	Resoonse
<p><b><i>1. In the case where a chemical is spilled, how will you deal with that? Will the facility maintain emergency spill clean-up materials i.e., spill kits?</i></b></p>	<p>ATL has a documented procedure: Handling and Storage of Chemicals (ATL-HSE-08-006). This procedure outlines the general process for Handling and Storage of Chemicals, other reagents and waste control. Section 7 of the procedure titled: <i>Spill Response and Clean up Procedure</i> outlines the general process to be followed when dealing with a chemical spill.</p> <p>ATL has a suitable and sufficient Emergency Response Resources in place inclusive of Spill Kits which will be used in the event of any spills at the facility.</p> <p><i>See attached document: ATL-HSE-08-006 Handling and Storage of Chemicals</i></p>
<p><b><i>2. How are employees protected when using chemicals? Will employees be equipped with appropriate laboratory equipment? For example, goggles, safety boots etc.</i></b></p>	<p>Section 6 of the aforementioned procedure outlines the requirements in place to protect employees from chemicals, these include: proper labelling, storage, and use of suitable and sufficient personal protective equipment, depending on the type of chemical.</p> <p>This includes but is not limited to safety glasses, chemical resistant gloves, coveralls/lab coats and safety shoes as required.</p> <p><i>See attached document: ATL-HSE-08-006 Handling and Storage of Chemicals</i></p>

**ANALYTICAL TECHNOLOGIES****DOCUMENT NUMBER**

AT-HSE-08-006

**DOCUMENT TITLE**

**HANDLING AND STORAGE OF CHEMICALS,  
OTHER REAGENTS AND WASTE CONTROL**

HANDLING AND STORAGE OF CHEMICALS, OTHER REAGENTS AND WASTE CONTROL		
INITIAL ISSUE DATE 03/04/2023	---	CURRENT ISSUE DATE 03/04/2023
Revision Number: 0		Proposed Review Date: 02/04/2026
	NAME	SIGNATURE
ISSUED BY	S. RAMCHARAN	
REVIEWED BY:	MALENEE SEEOBIN	
APPROVED BY	A. BALLIE	

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COPY



**1.0 PURPOSE:**

This procedure describes the method whereby chemicals and other reagents are handled and stored from receipt by and during usage at AT.

The purpose of this document is to outline the procedure AT requires for the remediation of spills and waste control.

**2.0 SCOPE:**

This procedure applies to all reagents and laboratory consumables relevant for tests or calibrations used within AT.

This policy applies to all AT employees and contractors performing work for AT at the AT jobsite. On offsite locations, the procedure followed would be the one that governs the main contractor or the owner of the site.

**3.0 REFERENCE:**

Corrective Action Tracker (AT-HSE-11-001-R01)

**4.0 DEFINITIONS:**

**MSDS- Material Safety Data Sheet**

**Chemicals-** reagents, standards, reference material (QC samples)

**5.0 RESPONSIBILITY:**

All personnel handling chemicals.

It is the responsibility of the Chemist to ensure that this schedule is followed and maintained. However, the Chemist can also designate the Supervising Technician or any other technician who is capable of carrying out such actions.

The HSE Coordinator is responsible for reporting ALL spills to the Primary or Deputy Incident Commander.

The HSE Coordinator is responsible for ensuring that there is an inventory of all chemicals used within the workplace and Material Safety Data Sheets (MSDS) for all chemicals are in place.

All employees using chemicals shall be trained and authorized to do so. They shall be outfitted with suitable and sufficient Personal Protective equipment and use chemical in alignment with the product datasheet.

### **6.0 ACTIVITY:**

Chemicals received are placed into the appropriate storage conditions, in such a way that the most recently received is placed behind the existing stocks in order to facilitate "first in - first out" rotation of stock.

In addition to using the manufacturer's recommended expiration date for reagents stored in the sealed original packaging the laboratory has addressed the issues of opened bottles to ensure the integrity of the reagents which is in stock by defining its own expiration dates given the conditions of storage and local conditions. This expiration date for opened reagents have been set at two (2) years from the date of opening.

MSDS are maintained in the **MSDS** folder.

Chemicals, which are found to be expired or deteriorated, are clearly identified and segregated (where practical).

### **USE OF CHEMICALS**

#### *Identification of Chemicals*

The HSE Coordinator together with the Senior Lab Technician/ Chemist will develop a list of chemicals being used based on the operations of the company.

*Requesting a SDS*

SDSs will be available for review to all employees during each work shift.

## LABELLING AND PLACARDING

All chemicals are to be correctly labelled including any chemicals that are mixed or transferred into containing vessels within the workplace

## Personal Protective Equipment:

All employees who are required to use chemical should have appropriate Personal protective equipment, this generally includes: Lab Coats, Safety Goggles, Chemical Resistant Gloves, Closed toe shoes. Employees must refer to SDS to determine if there are any specific PPE that should be used for the chemical in question.

In the case of a chemical spill the appropriate clean up measures will also be determined from the MSDS sheets. In addition, the following spill response procedure can also be utilized on the site.

**7.0 SPILL RESPONSE AND CLEAN UP PROCEDURES:**

- I. Immediately notify workers and supervisor of the spill and evacuate the area if necessary.
2. If there is a fire or there are persons in need of medical assistance, alert the incident commander and render assistance to affected persons. Contaminated clothing must be immediately removed and affected skin areas flushed for at least fifteen (15) minutes. Contaminated clothing must not be put on until they have been laundered.
3. If the source of the spill is volatile or flammable occupants of the area must be warned and any sources of ignition controlled. Ventilate the area.
4. Wear the appropriate PPE.
5. Retrieve the necessary spill kits and establish a decontamination area.
6. Take your time; this is not an emergency response.



7. Use absorbent pads socks or booms to prevent any release of contaminant into the environment.
  8. Spill control materials should be distributed over the entire area, working from the outside in; this will prevent any spread of the spill.
  9. When spilt materials have been absorbed use a scoop and brush to place the contaminated materials into an appropriate container (polyethylene garbage) bags may be used for small quantities; for larger quantities bags should be placed into drums).
  10. Thoroughly decontaminate all reusable PPE used in the spill response
  11. Report spill and assist the HSE Coordinator in compiling a report on the incident.
- Any hazardous waste is disposed in accordance with manufacturer's recommendation, as outlined within the MSDS or as per operating instructions and must have a waste manifest.

#### **8.0 RECORDS:**

- Chemical Inventory
- Waste Manifest form

