RATES FOR LABORATORY ANALYSIS

July 27, 2021

China Sri Lanka Joint Research & Demonstration Center
for Water Technology (JRDC)
Ministry of Water Supply
Sri Lanka

Welcome to the
China Sri Lanka Joint Research & Demonstration Center for Water Technology (JRDC)

New Era in Water Technology

List of Abbreviations/Acronyms

CAS	Chinese Academy of Sciences
CBO	Community-Based Organization
CKDu	Chronic Kidney Disease of Unknown Etiology
COD	Chemical Oxygen Demand
DO	Dissolved Oxygen
ECD	Electron Capture Detector
FID	Flame Ionization Detector
GC	Gas Chromatography
GC-MS	Gas Chromatography Mass Spectrometry
HPLC	High Performance Liquid Chromatography
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
JRDC	China Sri Lanka Joint Research and Demonstration Centre for Water Technology
NED	N-(1-Naphthyl) ethylenediamine dihydrochloride
NWSD	National Water Supply & Drainage Board
TOC	Total Organic Carbon
UoP	University of Peradeniya
UPLC-MS	Ultra-High Performance Liquid Chromatography-Mass Spectrometry

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EXECUTIVE SUMMARY

China Sri Lanka Joint Research & Demonstration Center for Water Technology (JRDC) is established under the purview of the Ministry of Water Supply with the primary objective of expanding the institutional capacity of Sri Lanka to combat the Chronic Kidney Disease of Unknown Etiology (CKDu) problem and find solutions for other water-related environmental and health concerns. Providing analytical services to the nation is one of the main services of the JRDC.

JRDC received its equipment and the building as a donation from the Chinese government, while both the Chinese and local governments will facilitate its operational costs for a period of five years. Essentially during this period, the JRDC needs to ensure its self-sustainability after the five years is over. The labor, consumable, and maintenance costs, as well as costs for purchasing new equipment and the cost for replacing expired instruments, need to be earned through the services it provides to the nation. At the same time, as per its primary objective, the JRDC is envisioned to provide its services at the rates based on the actual cost to the public for general water quality parameters while building research and technological capacity of local scientists who have restricted access to the equipment and thereby expand the research landscape of the country. Striking the right balance is, therefore, necessary to deliver the primary objectives of the JRDC while being on par with other similar organizations to cater services in a competitive environment. Therefore, the cost calculation was done on the cost recovery basis considering the market-available prices as well. The cost breakup per sample includes six components: instrument depreciation, annual maintenance expenses, instrument consumables expenses, direct material expenses, direct labor expenses, & overhead of JRDC.

Based on the cost breakdown, the pricing structure for JRDC analytical services is proposed under four phases. At the beginning of JRDC operations, it receives financial support from the governments of Sri Lanka and China. Therefore, at phase 1 (2022 to 2023), rates do not constitute instrument depreciation & annual maintenance expenses. As Instrumental consumables will be minimal during the first two years it has been included in the direct labor expenses. As JRDC expects to become an accredited institution during the first two years, instrument consumable expenses will be added to the pricing structure at phase 2 (2024-2025). JRDC is expected to reach its full operation at phase 3 (in 2026) in which instrument depreciation and annual maintenance expenses will also become a part of the pricing structure. Since JRDC will not receive any financial assistance from the government in phase 4 (2027 onwards) and hence it needs to ensure self-sustainability, the rates will constitute a profit as well in addition to the above six cost breakdowns.

The aforementioned pricing structure, however, is recommended to be reviewed regularly in response to the fluctuations of the currency, costs and benefits associated with accreditation, and prices of imported chemicals which have great implications to the cost calculations.

This report further includes the rates for accommodation services for research & academic activities, another important service provided by the JRDC. Accommodation facilities constitute 6 single and 6 double rooms for which the proposed rates are Rs. 2,000 and Rs. 4000 per night per person (without meals), respectively. Discount rates will be offered for the guests who are accommodating continuously for two weeks and more.

ABOUT US

JRDC, Joint Research & Demonstration Center for Water Technology, a major scientific and technological enterprise located centrally in Sri Lanka was established with the assistance of the Peoples Republic of China with the objectives of making a big difference in the national effort to overcome the CKDu epidemic and to help the NWSDB and other responsible institutions to achieve for Sri Lanka Sustainable Development Goal 6 of the United Nations, "Ensure availability and sustainable management of water and sanitation for all".

OUR VISSION

"To be a global partner in water research offering a platform to promote North-South and South-South dialogues".

OUR MISSION

"To facilitate researchers and professionals in the fields of water, health, environment and other related areas of the national interest to work together in performing advance research and disseminating new knowledge nationally and internationally".

OUR PARTNERS

Chinese Academy of Sciences	
Ministry of Health, Nutrition and Indigenous Medicine	Ministry of Health, Nutrition & Indigenous Medicine
Ministry of Water Supply	ජල සම්පාදන අමාත්‍යාංශය நீர் வழங்கல் அமைச்சு MINISTRY OF WATER SUPPLY
National Water supply and Drainage Board	
University of Peradeniya	

OUR ANALYTICAL SERVICES

JRDC is fully equipped with sophisticated analytical instruments that can potentially cater to a wide spectrum of environmental and health related analyses. In general, JRDC consists of the following laboratories:

General Laboratory

General laboratory facilitates water and wastewater quality parameter testing. Laboratory tests include pH, EC, Turbidity, Color, DO, COD, Nitrite Nitrogen, Nitrate Nitrogen, Formaldehyde, Volatile phenol, Cyanide, Fluoride, Chloride, etc.

Inorganic Laboratory

The inorganic laboratory is equipped with an inductively Coupled Plasma – Mass Spectrometer, Ion Chromatograph, and Atomic Fluorescence spectrophotometer. The laboratory caters following analytical services: heavy metals, anions, and mercury.

Interface Laboratory

Interface laboratory consists of particle analyzer, BET Specific Surface Area Analyzer, and Ultraviolet Spectrophotometer. The key parameters include surface area, zeta potential, particle size, total phosphorous, etc.

Volatile Organic Laboratory

Volatile Organic Laboratory is endowed with Gas chromatograph-mass spectrometer+sniffer monitor, Gas chromatography/tandem quadrupole mass spectrometry, and Gas Chromatograph (ECD detector + FID detector+autosampler). The laboratory caters following analytical needs: volatile phenol, volatile organic compounds (odor), trihalomethanes, etc.

Non Volatile Organic Laboratory

None Volatile Organic Laboratory is equipped with High-Performance Liquid Chromatography, Ultra High-Performance Liquid Chromatography-Tandem quadrupole mass spectrometry, Total Organic Carbon Analyzer, and Carbon, Hydrogen, Nitrogen (CHN) elemental analyzer. Following are among key analytical services that the laboratory can cater to: pesticides, pharmaceutical, C, H, N percentage, TOC.

OUR RATES

Background

JRDC is a non-profit governmental institution established with the primary objective of expanding the institutional capacity of the nation to combat the CKDu problem and find solutions for other water-related environmental and health concerns. While JRDC falls within the purview of the Ministry of Water supply and provides analytical services to the nation, it differs from other similar state institutions with respect to many aspects which need due attention when calculating the cost associated with the analytical services catered by the JRDC.

State Universities carry out water-related research using the government-funded equipment available at laboratories as well as those purchased under specific research grants. Although the grant-funded equipment often outlasts the project period, equipment may or may not be used on a regular basis during the post-project period, and the maintenance of the equipment is not guaranteed, nor does it become the responsibility of the university, grantee, or the funder. The consumable costs are covered by the grants and the labor is provided by the state-employed staff and/or project-funded students. State bodies such as NWSDB also carry out water-related analyses during their services to the nation in their laboratories with the equipment, labor, and consumables provided under state funds. The equipment is maintained and new equipment is purchased by the government. On the other hand, some other institutes similarly constitute high-tech equipment and well-qualified staff and provide analytical services to the public and private organizations at specific rates. In addition to the overhead cost, the instrument, maintenance, labor, and consumable costs are recovered through the services they provide and thereby maintain self-sustainability.

JRDC, on the other hand, received its equipment and the building as a donation of the Chinese government, while both the Chinese and local governments will facilitate its operational costs for a period of five years. Essentially during this period, the JRDC needs to ensure its self-sustainability after the five-year period is over. The labor, consumable and maintenance costs, as well as costs for purchasing new equipment and the cost for replacing expired instruments need to be earned through the services it provides to the nation. At the same time, as per its primary objective, the JRDC is envisioned to provide its services at the minimum rates to ensure building research and technological capacity of local scientists who have restricted access to the equipment and thereby expand the research landscape of the country. Striking the right balance is, therefore, necessary to deliver the primary objectives of the JRDC while being on par with other similar organizations to cater services in a competitive environment.

Cost calculation for JRDC analytical services

After studying this background, six major sections essential for consideration in the cost calculation of JRDC analytical services have been identified. The cost breaks upper sample should include;

1. Instrument depreciation
2. Annual maintenance expenses
3. Instrument consumables expenses
4. Direct materials expenses
5. Direct labor expenses
6. Overhead of JRDC

Instrument depreciation

The useful lifetime of instruments at JRDC varies from one to ten years. Since the JRDC received all the instruments as a donation, there is virtually no initial capital cost. However, when considering the sustainability of the JRDC, it is prudent to have a target to replace an expired instrument with a new one in due time. It is particularly important to maintain good quality data. The price of the instrument is based on the global economy and hence it would be necessary to use the updated price of the instruments when considering cost calculation every year. As far as the instrument cost is concerned, cost calculation is based on the instrument depreciation, considering the following steps for each parameter.

a) Instrument Stabilization Time
b) Testing Time

Annual maintenance expenses

For each instrument, there is a cost for maintenance. This includes the cost for insurance of the instrument and maintenance from the manufacture of the instrument. In general, annual maintenance will be carried out by the local agent according to the initial agreement. However, for the instruments which do not have a local agent, it is necessary to hire competent personnel from overseas at the expense of additional cost.

Instrument consumables expenses

For some instruments, it is compulsory to replace parts such as detectors, pumps, UV lamps, columns etc. How often it should be done depends on the usage and may vary from few months to few years. In such cases, the cost for instrument consumables should also be considered in the cost estimation for analytical services.

Direct materials expenses

Direct materials required for sample analysis in the laboratories include gas, chemicals, filter papers, syringes, pipettes tips, tissues etc. and the amount and type vary with the parameter being analyzed. Therefore, when doing cost estimation, it is compulsory to consider the cost for direct materials for each parameter.

Direct labor expenses

Analysis of samples typically undergo a series of steps sequentially from the sample acceptance to the issuing of the report. Therefore, cost calculation must include the following steps.

a) Sample Preparation
b) Sample Preparation Assistant
c) Testing Time
d) Supervision Time
e) Analysis Time
f) Report Writing

However, the process varies from parameter to parameter being tested. For instance, some parameters require assistance while some may need supervision time also. Therefore, it should be considered on an individual basis.

Overhead of JRDC

From the first contact with customers until the analyzed reports are delivered, there are many steps involved in the process, which are generally not visible to the public. To provide quick and convenient access to the customers from the Northern tip to the Southern tip of the island to get their samples analyzed, JRDC has planned to provide online sample submission and request facilities. From the point of accepting the request to issuing the report, many parties are involved to cater the best service to the nation. In the cost estimation, therefore, the overall running expenses of JRDC should be taken into consideration.

Since JRDC does not fully functional yet, the financial forecast for running the project management unit (January-December 2021) of China-Sri Lanka research grant unit is considered as the overhead of the institution for the cost estimation process, which amounts to Rs. 80,940,000.00. This includes provision for manpower cost, provision for facilities, services, and other maintenance activities, provision for purchase of stationery-related expenses and petty cash, the cost for conducting workshops, meetings, and coordination with other organizations, the cost for the janitorial services, and cost for the hiring of vehicles to the JRDC.

In addition to the analytical services, it envisages to cater, if JRDC can establish other income generation models such as training programs, workshops and post-graduate programs etc. overheads cost can be constituted in all pricing structures. Therefore, only a portion of the overhead cost may be considered for cost estimation for analytical services and thereby provide a lower rate for sample analysis.

The overhead cost for each parameter is calculated based on the number of samples analyzed per year. Based on the educated assumption that 4000 samples for basic water quality parameter analyses and 500 samples for advanced water quality parameter analyses will be annually completed, a fixed price for overhead will be considered.

The pricing structure for analytical services at JRDC

The above discussion attempted to bring the overall picture of the costs associated with the analytical services. However, the JRDC's prime objective to serve the nation with its full capacity will always be given the topmost priority. Consequently, analytical services have been fronted to the outside customers with the cost recovery basis and the pricing structure for JRDC analytical services is proposed under four phases. At the beginning of JRDC operations, it receives financial support from the governments of Sri Lanka and China. Therefore, at phase 1 (2022 to 2023), rates do not constitute instrument depreciation, & annual maintenance expenses. As Instrumental consumables will be minimal during the first two years it has been included in the direct labor expenses. As JRDC expects to become an accredited institution during the first two years, instrument consumable expenses will be added to the pricing structure at phase 2 (2024-2025). JRDC is expected to reach its full operation at phase 3 (in 2026) in which instrument depreciation and annual maintenance expenses will also become a part of the pricing structure. Since JRDC will not receive any financial assistance from the government in phase 4 (2027 onwards) and hence it needs to ensure the self-sustainability, the rates will constitute a profit as well in addition to the above six cost breakdowns. The pricing structure for analytical services at JRDC is summarized in table 1 below.

Table 1: Pricing structure for analytical services at JRDC

Price breakdown	Phase 1 2022-2023	Phase 2 2024-2025	Phase 3 2026	Phase 4 2027 onwards
Instrument depreciation	×	×	✓	✓
Annual maintenance expenses	×	×	✓	✓
Instrument consumable expenses	✓ *	✓	✓	✓
Direct material expenses	✓	✓	✓	✓
Direct labour expenses	✓	✓	✓	✓
Overhead	✓	✓	✓	✓
Profit	×	×	×	✓

* As Instrument consumables will be minimal during the first two years it has been included in the direct labor expenses

The rates for analytical services offered by JRDC for the years 2022 to 2023 (Phase 1) are given in table 2. It should be noted that table 2 includes the rates only for direct analysis of the samples, assuming JRDC has no role to play in sampling and/or pretreatment. Notably, the pre-treatment costs depend on the nature of samples and hence were not considered in the below rates. Therefore additional charges may consider for the samples that require pretreatment. Further, for samples that require sampling to be done by the JRDC (e.g., wastewater), additional charges for sampling including staff cost & transport cost (vehicle & driver cost per km) will also be added to the following rates.

Table 2: The rates for analytical services offered by JRDC for year 2022 – 2023 (Phase 1)

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
1.	pH	Electrode method	60	APHA 4500-H^+ B
2.	EC	Electrode method	60	APHA 2510 A
3.	Turbidity	Nephelometric method	60	APHA 2130 B
4.	Colour	Colorimeter	70	APHA 2120 B
5.	Total residual chlorine	DPD Colorimetric method	60	APHA 4500-Cl G
6.	Free ammonia	Nessler method	280	
7.	Albuminoid ammonia	Nessler method	280	
8.	Total residue	Gravimetric method	280	
9.	Total phosphate	Colorimetric method	240	APHA 4500-P C
10.	Calcium hardness	Titrimetric method	240	APHA 2340 C
11.	Magnesium hardness	Titrimetric method	240	
12.	Total iron	Colorimetric method	430	
13.	Sulphate	Colorimetric method	220	
14.	DO	DO meter/ Fluorescence spectrometric method	200	
15.	Total hardness	Titrimetric method	240	APHA 2340C
16.	Total alkalinity	Titrimetric method	210	APHA 2320 B
17.	COD	Lihero multi parameter analyzer/Permanganate Index method	300	
18.	Nitrite Nitrogen	Lihero multi parameter analyzer/ NED/ Spectrophotometry method	240	
19.	Nitrate Nitrogen	Lihero multi parameter analyzer/ Hydrazine Sulfate Reduction, NED/ Spectrophotometry method	240	
20.	Formaldehyde	Lihero multi parameter analyzer/ Acetylacetone/ Spectrophotometry method	300	
21.	Volatile phenol	Lihero multi parameter analyzer/ 4-Aminobirin/ Spectrophotometry method	300	

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
22.	Cyanide	Lihero multi parameter analyzer/ Isonicotinic acid-barbituric acid/ spectrophotometry method	300	
23.	Fluoride	Lihero multi parameter analyzer/ Ion Selective Electrode method	240	
24.	Chloride	Lihero multi parameter analyzer/ Ion Selective Electrode method	280	
25.	Multi anions F^-, Cl^-, NO_2^- Br^-, NO_3^-, SO_4^{2-}, PO_4^{3-}	Ion chromatography	4700	USEPA 300.1
26.	F^-	Ion chromatography	4400	USEPA 300.1
27.	Cl^-	Ion chromatography	4400	USEPA 300.1
28.	NO_3^-	Ion chromatography	4400	USEPA 300.1
29.	NO_2^-	Ion chromatography	4400	USEPA 300.1
30.	SO_4^{2-}	Ion chromatography	4400	USEPA 300.1
31.	PO_4^{3-}	Ion chromatography	4400	USEPA 300.1
32.	Br^-	Ion chromatography	4400	USEPA 300.1
33.	Hg	AFS/ AFS-610E Specified Cold Vapor method	3800	
34.	Multi elements (Fe, B, Mo, Al, Cr, Cu, Zn, Ni, Pb, Se, Mn, As, Cd, Sb, U)	ICP-MS	4400	USEPA 200.8
35.	Multi elements (Ag, Ba, Be, Co, Ti, V)	ICP-MS	4400	USEPA 200.8
36.	Ag	ICP-MS	4400	USEPA 200.8
37.	Al	ICP-MS	4400	USEPA 200.8
38.	As	ICP-MS	4400	USEPA 200.8
39.	Cd	ICP-MS	4400	USEPA 200.8
40.	Co	ICP-MS	4400	USEPA 200.8
41.	Cr	ICP-MS	4400	USEPA 200.8
42.	Cu	ICP-MS	4400	USEPA 200.8
43.	Fe	ICP-MS	4400	USEPA 200.8
44.	Mn	ICP-MS	4400	USEPA 200.8
45.	Ni	ICP-MS	4400	USEPA 200.8
46.	Pb	ICP-MS	4400	USEPA 200.8

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
47.	Sb	ICP-MS	4400	USEPA 200.8
48.	Zn	ICP-MS	4400	USEPA 200.8
49.	Zeta potential	Particle analyzer/ Electrophoretic light scattering method	3800	
50.	Particle size	Particle analyzer/Dynamic light scattering method	3800	
51.	C,H,N	CHN elemental analyzer/ Combustion, TCD method	3600	USEPA 440.0
52.	TOC	TOC analyzer/UV oxidation, CO_2 detector method	4100	USEPA 415.3
53.	Specific surface area	BET analyzer/ Volumetric method	5700	
54.	Pore size distribution	BET analyzer/ Volumetric method	5700	
55.	UV-Visible	UV-Visible/ Spectrophotometry method	300	
56.	1,3-Dichlorobenzene	HPLC	4700	USEPA 775E
57.	1,4-Dichlorobenzene	HPLC	4700	USEPA 775E
58.	2,4-D	HPLC	4700	USEPA 8321B
59.	2,4-DB	HPLC	4700	USEPA 8321B
60.	Alachlor	HPLC	4700	USEPA 632
61.	Aldicarb	HPLC	4700	USEPA 531.2
62.	Bispyribac sodium	HPLC	4700	USEPA 632
63.	Captan	HPLC	4700	USEPA 632
64.	Carbendazim	HPLC	4700	USEPA 631
65.	Carbofuran	HPLC	4700	USEPA 632
66.	Carbosulfan	HPLC	4700	USEPA 632
67.	Chlorpyrifos	HPLC	4700	USEPA
68.	Chlortoluron	HPLC	4700	USEPA 632
69.	Cypermethrin	HPLC	4700	USEPA 1660
70.	Dichlorobenzenes (1,2-dichlorobenzene)	HPLC	4700	USEPA 775E
71.	Diquat	HPLC	4700	USEPA 549.2
72.	Diuron	HPLC	4700	USEPA 632
73.	Ethoxysulfuron	HPLC	4700	8321B
74.	Fenoprop	HPLC	4700	USEPA 632
75.	Imidacloprid	HPLC	4700	USEPA 632

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
76.	Isoproturon	HPLC	4700	USEPA 532
77.	Lindane	HPLC	4700	USEPA 775E
78.	Mecoprop	HPLC	4700	USEPA 632
79.	Methomyl	HPLC	4700	USEPA 632 USEPA 531.2
80.	Methoprene	HPLC	4700	USEPA 632
81.	Oxamyl	HPLC	4700	USEPA 632 USEPA 531.2
82.	Oxyfluorfen	HPLC	4700	USEPA 632
83.	Pentachlorophenol	HPLC	4700	USEPA 632
84.	Phenthoate	HPLC	4700	USEPA 632
85.	Phorate	HPLC	4700	USEPA
86.	Polychlorinated biphenyls (PCB)	HPLC	4700	USEPA 632
87.	Pretilachlor	HPLC	4700	USEPA 632
88.	Propanil	HPLC	4700	USEPA 632
89.	Propanol	HPLC	4700	8315A
90.	Propineb	HPLC	4700	USEPA 632
91.	Propoxur	HPLC	4700	USEPA 632 USEPA 531.2
92.	Pyridate	HPLC	4700	USEPA 8315A
93.	Pyriproxyfen	HPLC	4700	USEPA 632
94.	Quinalphos	HPLC	4700	USEPA 632
95.	Simazine	HPLC	4700	USEPA 632
96.	Temephos	HPLC	4700	USEPA 632
97.	Thiram	HPLC	4700	USEPA 632
98.	Triazophos	HPLC	4700	USEPA 632
99.	Trichlorfon	HPLC	4700	USEPA 632
100.	Amoxycillin	UPLC-MS	8100	USEPA 1694
101.	Atenolol	UPLC-MS	8100	USEPA 1694
102.	Bezafibrate	UPLC-MS	8100	USEPA 1694
103.	Bleomycin	UPLC-MS	8100	USEPA 1694
104.	Cetirizine	UPLC-MS	8100	USEPA 1694
105.	Chlordecone	UPLC-MS	8100	USEPA 543

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
106.	Clotrimazole	UPLC-MS	8100	USEPA 1694
107.	Diazepam	UPLC-MS	8100	USEPA 1694
108.	Diclofenac	UPLC-MS	8100	USEPA 1694
109.	Dicofol	UPLC-MS	8100	USEPA 543
110.	Diquat	UPLC-MS	8100	USEPA 535
111.	Erythromycin	UPLC-MS	8100	USEPA 1694
112.	Estradiol	UPLC-MS	8100	USEPA 539
113.	Estrone	UPLC-MS	8100	USEPA 539
114.	Ethylene thiourea	UPLC-MS	8100	USEPA 509.1
115.	Ethynylestradiol	UPLC-MS	8100	USEPA 539
116.	Fenitrothion	UPLC-MS	8100	USEPA 543
117.	Fluoxetine	UPLC-MS	8100	USEPA 1694
118.	Gemfibrozil	UPLC-MS	8100	USEPA 1694
119.	Ibuprofen	UPLC-MS	8100	USEPA 1694
120.	Mefenamic acid	UPLC-MS	8100	USEPA 1694
121.	Naproxen	UPLC-MS	8100	USEPA 1694
122.	Norfluoxetine	UPLC-MS	8100	USEPA 1694
123.	o-Hydroxy atorvastatin	UPLC-MS	8100	USEPA 1694
124.	Paracetamol	UPLC-MS	8100	USEPA 1694
125.	Pendimethalin	UPLC-MS	8100	USEPA 535
126.	Perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride	UPLC-MS	8100	USEPA 537
127.	Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds	UPLC-MS	8100	USEPA 537
128.	Phenytoin	UPLC-MS	8100	USEPA 1694
129.	p-Hydroxy atorvastatin	UPLC-MS	8100	USEPA 1694
130.	Pirimiphos-methyl	UPLC-MS	8100	USEPA 543
131.	Profenofos	UPLC-MS	8100	USEPA 543
132.	Progesterone	UPLC-MS	8100	USEPA 539
133.	Quinclorac	UPLC-MS	8100	USEPA 535
134.	Risperidone	UPLC-MS	8100	USEPA 1694
135.	Sulfamethoxazole	UPLC-MS	8100	USEPA 1694

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
136.	Testosterone	UPLC-MS	8100	USEPA 539
137.	Tetracycline	UPLC-MS	8100	USEPA 1694
138.	Theophylline	UPLC-MS	8100	USEPA 1694
139.	Trimethoprim	UPLC-MS	8100	USEPA 1694
140.	1,1,1,-Trichloroethane	GC-ECD	4400	USEPA 551.1
141.	1,2-Dibromo-3-chloropropane	GC-ECD	4400	APHA 6231B
142.	1,2-Dibromoethane	GC-ECD	4400	APHA 6231B
143.	1,2-Dichloroethene	GC-ECD	4400	APHA 6200B
144.	1,2-Dichloropropane	GC-ECD	4400	APHA 6200B
145.	1,3-Dichloropropene	GC-ECD	4400	APHA 6040B
146.	Bentazone	GC-ECD	4400	APHA 6640B
147.	Bromoacetic acid	GC-ECD	4400	APHA 6251B
148.	Bromochloroacetic acid	GC-ECD	4400	APHA 6251B
149.	Bromodichloroacetic acid	GC-ECD	4400	APHA 6251B
150.	Bromodichloromethane	GC-ECD	4400	APHA 6232B
151.	Bromoform	GC-ECD	4400	APHA 6232B
152.	Captan	GC-ECD	4400	APHA 6630B
153.	Carbon tetrachloride	GC-ECD	4400	USEPA 551.1
154.	Chlordane	GC-ECD	4400	APHA 6630B
155.	Chloroacetic acid	GC-ECD	4400	APHA 6251B
156.	Chloroform	GC-ECD	4400	APHA 6232B
157.	Dibromoacetic acid	GC-ECD	4400	APHA 6251B
158.	Dibromochloroacetic acid	GC-ECD	4400	APHA 6251B
159.	Dibromochloromethane	GC-ECD	4400	APHA 6040B
160.	Dichloroacetic acid	GC-ECD	4400	APHA 6251B
161.	Endosulfan	GC-ECD	4400	APHA 6630B
162.	Endrin	GC-ECD	4400	APHA 6630B
163.	Heptachlor and heptachlor epoxide	GC-ECD	4400	APHA 6630B
164.	Lindane	GC-ECD	4400	APHA 6630B
165.	Malathion	GC-ECD	4400	APHA 6630B

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
166.	Methoxychlor	GC-ECD	4400	APHA 6630B
167.	Methyl parathion	GC-ECD	4400	APHA 6630B
168.	Mirex	GC-ECD	4400	APHA 6630B
169.	Parathion ethyl	GC-ECD	4400	APHA 6630B
170.	Parathion methyl	GC-ECD	4400	APHA 6630B
171.	Polychlorinated biphenyls (PCB)	GC-ECD	4400	APHA 6630B
172.	Tetrachloroethylene	GC-ECD	4400	USEPA 551.1
173.	Toxaphene	GC-ECD	4400	APHA 6630B
174.	Tribromoacetic acid	GC-ECD	4400	APHA 6251B
175.	Trichloroethylene	GC-ECD	4400	USEPA 551.1
176.	Trifluralin	GC-ECD	4400	APHA 6630B
177.	1,1,1-Trichloroethane	GC-MS	5000	APHA 6040B
178.	1,2-Dibromo-3-chloropropane	GC-MS	5000	APHA 6231B
179.	1,2-Dibromoethane	GC-MS	5000	APHA 6231B
180.	1,2-Dichloroethene	GC-MS	5000	APHA 6200B
181.	1,2-Dichloropropane	GC-MS	5000	APHA 6200B
182.	1,3-Dichloropropene	GC-MS	5000	APHA 6040B
183.	Beta hexachlorocyclohexane	GC-MS	5000	APHA 6410B
184.	Bromoacetic acid	GC-MS	5000	APHA 6251B
185.	Bromochloroacetic acid	GC-MS	5000	APHA 6251B
186.	Bromochloroacetonitrile	GC-MS	5000	USEPA 551.1
187.	Bromodichloroacetic acid	GC-MS	5000	APHA 6251B
188.	Bromodichloromethane	GC-MS	5000	APHA 6232B
189.	Bromoform	GC-MS	5000	APHA 6232B
190.	Captan	GC-MS	5000	USEPA 8270D
191.	Carbon tetrachloride	GC-MS	5000	APHA 6200B
192.	Chlordane	GC-MS	5000	APHA 6410B
193.	Chlordecone	GC-MS	5000	USEPA 8270 D
194.	Chloroacetic acid	GC-MS	5000	APHA 6251B
195.	Chloroform	GC-MS	5000	APHA 6232B

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
196.	Cypermethrin	GC-MS	5000	USEPA 1699
197.	Decabromodiphenyl ether	GC-MS	5000	USEPA 1614 A
198.	Diazinon	GC-MS	5000	USEPA 1699
199.	Dibromoacetic acid	GC-MS	5000	APHA 6251B
200.	Dibromoacetonitrile	GC-MS	5000	USEPA 551.1
201.	Dibromochloromethane	GC-MS	5000	APHA 6232B
202.	Dichloroacetic acid	GC-MS	5000	APHA 6251B
203.	Dichloroacetonitrile	GC-MS	5000	USEPA 551.1
204.	Dimethoate	GC-MS	5000	USEPA 480/0
205.	Dinoseb	GC-MS	5000	APHA 6640B
206.	Endosulfan	GC-MS	5000	APHA 6410B
207.	Endrin	GC-MS	5000	APHA 6410B
208.	Fenamiphos	GC-MS	5000	USEPA NE 222401
209.	Halogenated acetonitriles	GC-MS	5000	USEPA 551.1
210.	Heptachlor and heptachlor epoxide	GC-MS	5000	APHA 6140B
211.	Hexabromobiphenyl	GC-MS	5000	USEPA 1614 A
212.	Hexachlorobutadiene	GC-MS	5000	APHA 6200B
213.	Malathion	GC-MS	5000	USEPA 1699
214.	MCPA	GC-MS	5000	USEPA 441927-01
215.	Methoxychlor	GC-MS	5000	USEPA 525.3
216.	Methyl parathion	GC-MS	5000	USEPA 525.3
217.	Metolachlor	GC-MS	5000	USEPA 525.3
218.	Mirex	GC-MS	5000	USEPA 8270D
219.	Molinate	GC-MS	5000	USEPA 525.3
220.	Parathion ethyl	GC-MS	5000	USEPA 8270D
221.	Parathion methyl	GC-MS	5000	USEPA 8270D
222.	Pentachlorophenol and its salts and esters	GC-MS	5000	APHA 6640B
223.	Pirimiphos-methyl	GC-MS	5000	USEPA 1699

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
224.	Polychlorinated biphenyls (PCB)	GC-MS	5000	APHA 6410B
225.	Profenofos	GC-MS	5000	USEPA 525.3
226.	Simazine	GC-MS	5000	USEPA 525.3
227.	Tebuconazole	GC-MS	5000	USEPA 525.3
228.	Technical endosulfan and its related isomers	GC-MS	5000	APHA 6410B
229.	Tetrabromodiphenyl ether	GC-MS	5000	USEPA 1614 A
230.	Tetrachloroethylene	GC-MS	5000	APHA 6200B
231.	Toxaphene	GC-MS	5000	APHA 6410B
232.	Tribromoacetic acid	GC-MS	5000	APHA 6251B
233.	Trichloroacetonitrile	GC-MS	5000	USEPA 551.1
234.	Trichloroethylene	GC-MS	5000	APHA 6200B
235.	Trifluralin	GC-MS	5000	USEPA 525.3
236.	1,1,1-Trichloroethane	GC-MSMS	5000	APHA 6040B
237.	1,2-Dibromo-3-chloropropane	GC-MSMS	5000	APHA 6231B
238.	1,2-Dibromoethane	GC-MSMS	5000	APHA 6231B
239.	1,2-Dichloroethene	GC-MSMS	5000	APHA 6200B
240.	1,2-Dichloropropane	GC-MSMS	5000	APHA 6200B
241.	1,3-Dichloropropene	GC-MSMS	5000	APHA 6200B
242.	Beta hexachlorocyclohexane	GC-MSMS	5000	APHA 6410B
243.	Bromoacetic acid	GC-MSMS	5000	APHA 6251B
244.	Bromochloroacetic acid	GC-MSMS	5000	APHA 6251B
245.	Bromochloroacetonitrile	GC-MSMS	5000	USEPA 551.1
246.	Bromodichloroacetic acid	GC-MSMS	5000	APHA 6251B
247.	Bromodichloromethane	GC-MSMS	5000	APHA 6200B
248.	Bromoform	GC-MSMS	5000	APHA 6232B
249.	Captan	GC-MSMS	5000	USEPA 8270D
250.	Carbon tetrachloride	GC-MSMS	5000	APHA 6200B
251.	Chlordane	GC-MSMS	5000	APHA 6410B

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
252.	Chlordecone	GC-MSMS	5000	USEPA 8270 D
253.	Chloroacetic acid	GC-MSMS	5000	APHA 6251B
254.	Chloroform	GC-MSMS	5000	APHA 6200C
255.	Cypermethrin	GC-MSMS	5000	USEPA 1699
256.	Decabromodiphenyl ether	GC-MSMS	5000	USEPA 1614 A
257.	Diazinon	GC-MSMS	5000	USEPA 1699
258.	Dibromoacetic acid	GC-MSMS	5000	APHA 6251B
259.	Dibromoacetonitrile	GC-MSMS	5000	USEPA 551.1
260.	Dibromochloromethane	GC-MSMS	5000	APHA 6232B
261.	Dichloroacetic acid	GC-MSMS	5000	APHA 6251B
262.	Dichloroacetonitrile	GC-MSMS	5000	USEPA 551.1
263.	Dimethoate	GC-MSMS	5000	USEPA 480/0
264.	Dinoseb	GC-MSMS	5000	APHA 6640B
265.	Endosulfan	GC-MSMS	5000	APHA 6410B
266.	Endrin	GC-MSMS	5000	APHA 6410B
267.	Fenamiphos	GC-MSMS	5000	USEPA NE 222401
268.	Heptachlor and heptachlor epoxide	GC-MSMS	5000	APHA 6410B
269.	Hexabromobiphenyl	GC-MSMS	5000	USEPA 1614 A
270.	Hexachlorobutadiene	GC-MSMS	5000	APHA 6040B, APHA 6200C
271.	Lindane	GC-MSMS	5000	USEPA 8081B
272.	Malathion	GC-MSMS	5000	USEPA 1699
273.	MCPA	GC-MSMS	5000	USEPA 441927-01
274.	Methoxychlor	GC-MSMS	5000	USEPA 525.3
275.	Methyl parathion	GC-MSMS	5000	USEPA 525.3
276.	Metolachlor	GC-MSMS	5000	USEPA 525.3
277.	Mirex	GC-MSMS	5000	USEPA 8270D
278.	Molinate	GC-MSMS	5000	USEPA 525.3
279.	Parathion ethyl	GC-MSMS	5000	USEPA 8270D
280.	Parathion methyl	GC-MSMS	5000	USEPA 8270D

No	Parameter	Instrument/Method	Price per Sample (Rs.)	Reference
281.	Pentachlorophenol and its salts and esters	GC-MSMS	5000	APHA 6410B
282.	Pirimiphos-methyl	GC-MSMS	5000	USEPA 1699
283.	Polychlorinated biphenyls (PCB)	GC-MSMS	5000	APHA 6410B
358.	Polychlorinated naphthalenes	GC-MSMS	5000	APHA 6410B
284.	Profenofos	GC-MSMS	5000	USEPA 525.3
285.	Simazine	GC-MSMS	5000	USEPA 525.3
286.	Tebuconazole	GC-MSMS	5000	USEPA 525.3
287.	Technical endosulfan and its related isomers	GC-MSMS	5000	APHA 6410B
288.	Tetrabromodiphenyl ether	GC-MSMS	5000	USEPA 1614 A
289.	Tetrachloroethylene	GC-MSMS	5000	APHA 6200B
290.	Toxaphene	GC-MSMS	5000	APHA 6410B
291.	Tribromoacetic acid	GC-MSMS	5000	APHA 6251B
292.	Trichloroacetonitrile	GC-MSMS	5000	USEPA 551.1
293.	Trichloroethylene	GC-MSMS	5000	APHA 6200B
294.	Trifluralin	GC-MSMS	5000	USEPA 525.3
295.	Total coliform & E. coli	Membrane filtration method	1000	APHA 9222
296.	Number of Bacterial Colonies	Total Plate Count method	1300	APHA 9215

PERSPECTIVES

The aforementioned pricing structure is recommended to be reviewed on a regular basis in response to the fluctuations of the currency, costs and benefits associated with accreditation, and prices of imported chemicals which have great implications to the cost calculations.

REFERENCES

1. Department of External Resources, Ministry of Finance letter ref: ER/CN/WD/G/01/GEN dated February 23, 2021.

PROPOSED RATES FOR ACCOMMODATION SERVICES

ACCOMMODATION FACILITIES AVAILABLE AT JRDC

There are 6 single, 6 double, and 2 suite rooms available on the second and third floors of the JRDC. The full accommodation capacity of those rooms is 20. Attached bathrooms, hot water, Wi-Fi facilities are available for each and every room.

Rates for accommodation facilities

JRDC proposes room charges per night (without meals) as Rs. 2,000- for a single room and Rs. 4,000- for a double room from a guest. Further, discounts will be offered for the guests who are accommodating two or more consecutive weeks. Details are given in table 3 below.

Table 3: Proposed rates for accommodation facilities at JRDC

Type of room	Regular rates per night (Rs.)	Discount		
		2 weeks	1 month	3 months
Single	2,000	40%	50%	65%
Double	4,000	40%	50%	65%

The maximum allowable period of accommodation is three months which needs to be used only for research and academic activities. The provisions are made In line with the NWSDB policy which prevails under special circumstances.

1. Fix the rates given in table 2 within phase 1 considering the market available prices and financial sustainability of the institute.
2. Provision to add the cost for pretreatments (material & direct labor cost) to the rates based on the nature of the samples that require pretreatment.
3. Provision to add the cost for sampling including staff cost & transport cost (i.e., vehicle & driver cost per km) to the rates when sampling is to be done by the JRDC.
4. Provision to implement a revised rate every two (02) years, and also to have revised rate if the need arises in the events of price escalation, currency fluctuation, and tax variation, etc.
5. Provision to set rates for the parameters of which the rates are not identified in this report but may deem important during the future operation of JRDC based on the same calculation.
6. Provision to offer 25% discount on above rates for undergraduates and Community-Based Organizations (CBOs) as referring to the ongoing facility at NWSDB to promote water safety.
7. Fix the rates for the accommodation as per table 3.