Eco. Env. & Cons. 27 (August Suppl. Issue) : 2021; pp. (S198-S202)
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ISSN 0971–765X

Status of Accredited and Non-Accredited Environmental testing laboratories in India

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(Received 7 March, 2021; Accepted 28 April, 2021)

ABSTRACT

Environment pollution is great concern for whole world because of its severe impact over the living and non-living creatures on the planet. There are many organizations which are working in the field of environment pollution. Lot of data is generated by the various laboratories under various organization like CPCB, SPCB, associations, government laboratories, semi-government, autonomous, private organization, Universities and Colleges. The data generated by these laboratories forms the basis of decision making for the scholars, bureaucrats, scientists, etc. Also, there are some ministries which are having responsibility of saving the environment through testing various samples collected from various sources. The authenticity or correctness of result is a big challenge, because some system is required which can ensure that the results which are products by the laboratory are comparable and reproduceable or at par with the rest of the world. Therefore, to avoid ambiguity certain system is required which can at least guarantee the correctness of the result. Accreditation may be a very strong tool for maintaining the quality of test results because there are requirements of ISO/IEC 17025:2017 which needs to be compliance by the laboratory to get the accreditation for specific testing related to the environment. Assessment conducted by the assessment body is concerned with the technical competence of the laboratory including personnel, environmental conditions, reference standards, method used for testing and quality control activities etc. Accreditation in itself a guarantee of well-maintained system for the laboratory for producingthe test results. The current paper focuses on the status of accredited environmental laboratories in India.

Key words : *Assessment and Accreditation, Laboratories, Environment pollution and Quality of test results*

Introduction

It is well observed that due to Industrialization due to past few decades environment around us is deteriorating day by day and it is essential to measure the limits of pollution to control it. The environment pollution can be differentiated broadly in three groups, air pollution, water pollution and soil pollution. All type of pollution is having the great impact over the human health and because of the pollution there are many diseases which are affecting the well being of human all around the world (Manisalidis *et al.,* 2020). Environmental pollution is a serious issue because of its impact not only on human beings but also on animals, birds, trees, creatures which are living in water etc.

Lot of R &D and analysis is required to find out the possibilities to reduce the impact of environ-

mental pollution on all the affected parties. Analysis can be done only when there is a quantitative value for specified tests.

There is various institution in India which are working in the field of environmental testing and they are producing results for various kind of testing. This Institution can be differentiated in the following categories:

- Governmental Institutes/Organizations, these can be further categorised, under central government/State government
- Semi governmental (Where centre government/ State government have stake)
- Private organizations (private laboratories working for their customers/ laboratories of some industry or some organization working for their parent organization as well as other customers)
- Universities/ Colleges. (Universities and colleges can be government or private owned)

The results which are produced by the various kinds of laboratories desperately require assurance so that they can be used for analysis and decision making. It is believed that the results produced by the accredited laboratory are more reliable than the non-accredited. This can be understood simply by looking at the definition of accreditation" Procedure by which an authoritative body (NABL) gives formal recognition that a body (laboratory) is competent to carry out specific tasks (tests / calibrations" it states that third party is giving recognition that laboratory is competent to perform a specific task. Here specific task means specific type of testing can be performed by the laboratory is formally recognised. The accreditation is given to the laboratory on the basis of its technical competence and their compliance with managerial system as per the ISO/IEC 17025.

Need of Accreditation

As there are many laboratories in India which are producing testing data for various parameters like water, air and soil on the basis of the data decisions are taken by the research scholar, bureaucrats, scientists and administration. All the decisions are taken based on the quality of the results produced by the laboratory. Now question is what are the authenticity/ reliability of the test results produced by the testing labs in the field of environmental science? Who will ensure the quality of the test results? The most probable answer of the above questions can be the conformity assessment or third-party assessment of the laboratory, means accreditation. The accredited laboratory can be relied because the laboratory has to go through the assessment and prove their competence in the specific scope of testing. During the assessment broadly the documentation required by the ISO/IEC 17025 and technical competence of the personnel for the particular type of testing needs to be verified then only laboratory will be given accreditation. Also, to maintain the accreditation for the specific testing lab needs to face the audits time to time and there are various activities which are required to maintain the quality of test results. Therefore, if some laboratory is accredited for specific type of testing then test results produced by them can be trusted.

Now there are many laboratories not only under government but also in the private sector which are

Table 1. Status of Environmental Testing Laboratories in India

State	Central Lab	Regional Lab	Accredited lab
Assam	1	4	0
Arunachal Pradesh	0	0	0
Andhra Pradesh	1	10	0
Bihar	1	2	0
Chhattisgarh	1	7	0
Gujrat	1	6	5
Goa	1	2	1
Jharkhand	1	0	0
J & K	0	0	0
Haryana	1	3	1
HP	1	1	0
Karnataka	1	8	1
Kerala	1	2	1
Maharashtra	1	7	0
MP	1	4	5
Manipur	1	0	0
Mizoram	0	0	0
Meghalaya	1	0	0
Nagaland	1	0	0
Odisha	1	8	0
Punjab	1	2	1
Puducherry	1	0	0
Rajasthan	1	12	0
Tamilnadu	0	5	5
Telangana	1	0	0
Tripura	0	0	0
UP	1	16	0
UK	1	0	0
WB	1	5	1
CPCB	1	6	5

producing test results and decision are taken on the basis of these test result.

As discussed above the test results of accredited laboratory can be trusted but what is the authenticity of the test results which are produced by the non-accredited laboratories. However, there are many non-accredited laboratories which are producing the test results at par with the accredited laboratories but the number of these types of laboratories may be very limited.

Scenario in India

The laboratories which are operating in the field of environmental testing in India can be divided in to two categories:

- Accredited
- Non-accredited

The Central Pollution Control Board (CPCB), statutory organization, was constituted in September, 1974 under the Water (Prevention and Control of Pollution) Act, 1974. Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

It serves as a field formation and also provides technical services to the Ministry of Environment and Forests of the provisions of the Environment (Protection) Act, 1986. Principal Functions of the CPCB, as spelt out in the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, (i) to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution, and (ii) to improve the quality of air and to prevent, control or abate air pollution in the country.

State Pollution Control Board implements various environmental legislations in its state including Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Water (Cess) Act, 1977 and some of the provisions under Environmental (Protection) Act, 1986 and the rules framed there under. It is functioning

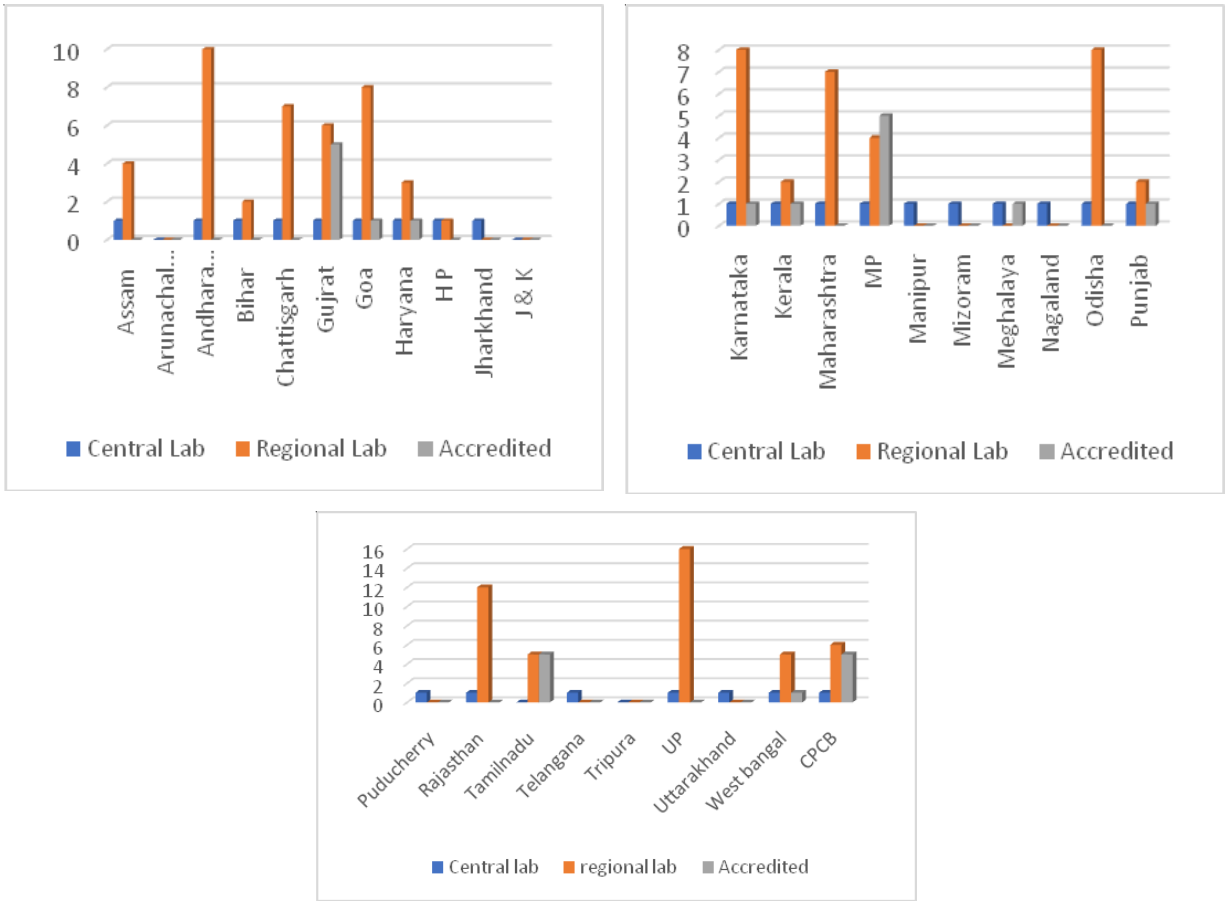

Fig. 1. Status of Environmental Testing Laboraotoes in India

under the administrative control of Environment Department of state Government.

Some of the important functions include:

To plan comprehensive program for the prevention, control or abatement of pollution and secure executions thereof,

1. To collect and disseminate information relating to pollution and the prevention, control or abatement thereof,
2. To inspect sewage or trade effluent treatment and disposal facilities, and air pollution control systems and to review plans, specification or any other data relating to the treatment plants, disposal systems and air pollution control systems in connection with the consent granted,
3. Supporting and encouraging the developments in the fields of pollution control, waste recycle reuse, eco-friendly practices etc.
4. To educate and guide the entrepreneurs in improving environment by suggesting appropriate pollution control technologies and techniques
5. Creation of public awareness about the clean and healthy environment and attending the public complaints regarding pollution.

Also, there are various universities in the country which are having environmental science division and the students in these universities those who are engaged in the research work are totally depend upon the result of testing. But the authenticity of these test result cannot be assured. Because most of the time instruments used in R & D are not calibrated and without calibration the deviation of the instrument cannot be traced, also the competence of the person who is working on the particular instrument is play an important role.

There are many ministries and government departments which are engaged in testing and R&D for the benefit of general public. A detailed study is required about the accreditation of the laboratories which are available with various departments and ministries.

The no. of labs under various ministries, institution, universities and colleges are as below:

Sr. No.	Organization	No. of accredited labs
1	Ministry of defence	3(100 approx)
2	Govt/non-govt institutes	12
3	Refineries	7/24
4	Ministry of drinking water	31/2700
5	Ministry of agriculture	0/2500
6	Universities	2/143

Conclusion

1. CPCB and SPCB are having aprox. 25 central labs and 110 regional labs across the country and total no. of accredited labs are 26. The percentage of accreditation lab is just 19% which shows that still huge no. of labs is not accredited and test data produced by the non-accredited laboratories can be questioned by the ministry or by the interested parties, therefore the non-accredited labs may come forward for accreditation. However, there can be many constraints with the government laboratories related to the personnel, instruments, funds for operations and other required facilities. Also, the distribution of accredited lab is limited to the few states like Gujarat, MP and Tamil Nadu only, whereas northeast part of the country is not having a single accredited laboratory.
2. There are more than 800 government and private universities in the country and approx. 143 universities are offering graduate and post graduate courses in the field of environmental sciences and not a single laboratory is accredited. The data produced by the universities and colleges are used for many conclusions and decision making and mechanism for the assurance of test data produced by them for R & D purpose is required. The accreditation may be one of the tool for assuring the data, based on the requirement of the specific university/college. The calibration status of the instruments used by the laboratory needs to be taken care.
3. Ministry of drinking water having approx. 2700 laboratories which are taking care of quality of drinking water and no. of accredited labs are very few. It is essential that for quality results all labs must be accredited to produce the reliable results.

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