Proceedings of the 2nd World Congress on Civil, Structural, and Environmental Engineering (CSEE'17)
Barcelona, Spain – April 2 – 4, 2017
Paper No. AWSPT 119
ISSN: 2371-5294
DOI: 10.11159/awspt17.119

Investigation of Accreditation Status of Environmental Parameters in Turkey

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Extended Abstract

Laboratory accreditation evaluates the competencies of all types of laboratories with regard to performing specific tests and calibrations. ISO and the International Electro-Technical Commission (IEC) introduced ISO/IEC 17025 standard because of the increasing significance of accreditation and international recognition [1].

Laboratory accreditation can be described as a formal recognition by an authoritative body of the technical competence of a laboratory to perform tests or calibrations. This recognition is given by an accreditation body, which plays role as a third party between the laboratory and its clients, and intends to provide confidence between them. One of the fundamental goals in the presence of accreditation systems is the need to remove technical barriers to international trade, i.e., that a product once tested in an accredited laboratory should not need to be retested by the client, since another accredited laboratory in another country would find a similar result [2; 3]. ISO 17025, as all ISO standards, is excessively related to documenting the process of any analysis performed by a laboratory. It consists of the quality management system and technical requirements of the accreditation process [1; 4].

In this study, the accreditation of environmental parameters and types of laboratories accredited by ISO 17025 Standard was compared. In Turkey, laboratories were classified as public, private and university laboratories for analysis. Moreover, in current study, 43 water quality parameters in universities and 47 water quality parameters in public and private institution were examined with regard to accredited laboratories in Turkey. Accredited water quality parameters in public and private institution as different from universities are Total Solid, Ammonia/Ammonia Nitrogen, Total Nitrogen, and Total Kjeldahl Nitrogen. Furthermore, the number of air quality parameters accredited in public and private institutions is approximately twice as air parameters accredited in universities (42 and 26 respectively). Data of this study were obtained from the web pages of Turkish Accreditation Agency (TAA) [5]. The main water parameters evaluated in the study were pH, conductivity, biochemical oxygen demand (BOD), chemical oxygen demand (COD), dissolved oxygen (DO), suspended solid (SS) color, turbidity, calcium, chloride, sulfate etc., while NO_X, SO_x, PM_{10} were the fundamental air parameters. Data were analyzed by using frequencies and the most significant accredited water and air parameters within institutions in Turkey are taken into consideration. Turkey has totally 190 universities in 2016. Unfortunately, only 10 universities have accredited laboratories and laboratories of two of these universities (Dokuz Eylül University and Muğla Sıtkı Koçman University) are very successful in the accreditation of environmental parameters. Moreover, only one of these 10 universities (Dokuz Eylül University) is accredited in terms of air quality parameters. In addition to universities, Turkey has 11 public institution laboratories and 68 private corporation laboratories accredited in environmental parameters. According to data obtained from TAA, 24 of the private corporation laboratories are not accredited in terms of water parameters and 12 of them are not accredited in terms of air parameters, too. Similar to universities, only one public institution has accredited laboratory with regard to air quality parameters. The most accredited water parameter is pH, with total of 65, where 44 of them are private, 11 are public and 10 are university laboratories. COD and SS are placed in the second order with total of 56. Here, 39 private, 10 public and 7 university laboratories are accredited in terms of COD and

40 private, 10 public and 6 university laboratories are accredited in terms of SS. Conductivity is the next remarkable parameter with total of 53 institutions (37 private, 8 public and 8 university laboratories). In air parameters, the most accredited one is the SO_2, with total of 52 (49 private, 2 public and 1 university laboratory).

In conclusion, it can be easily said that up to now there is no study in the literature that examines the accreditation status of environmental parameters. In an environmental laboratory, to monitor the concentration of pollutants resulting in air and water pollution, the measurements of water and air quality parameters used in the control of pollution must be fulfilled in the accredited laboratories because of advantages of these laboratories, namely proving the reliability of the measurements, improving service quality, reducing costs and updating of laboratory standards and status as well as the acceptance of the test results by international authorities.

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