

QUALITY MANAGEMENT SYSTEM FOR RADIATION MEASUREMENT IN CHINA

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Introduction

Radiation measurement in China has been carried out since the beginning of China's nuclear science research, and it has a history of more than 60 years. With the great development of nuclear power in recent years, the need for radiation measurement is increasing day by day. With the continuous development of science and technology, the constant standardization of management and the need to be in line with international standards, the quality management for radiation measurement becomes more important.

Ever since the 1960s, the quality problem for radiation measurement has been paid more attention to and the concept of quality assurance and control has been gradually introduced. In the mid-1970s, some developed countries began to implement comprehensive quality assurance plans. Later, the quality assurance and control technology for radiation measurement developed rapidly. In the early 1980s, China's nuclear science research institutes started the systematic research, application and promotion of quality assurance and control technologies.

The main quality management mode for radiation measurement in China

- Certification of ISO9001 quality management system
- Quality assurance system of nuclear power plants
- Identification of laboratory qualification
- CNAS laboratory accreditation
- Laboratory Accreditation of DILAC

Progress and main problems in recent years

Over the years, China has accelerated the establishment of the system of accreditation and certification with international standards, and promoted the wide application of certification and accreditation in all walks of life. The system of accreditation and certification plays an important role in improving the management level of our enterprises and the quality of services, and in expanding foreign trade and safeguarding the rights and interests of consumers. In recent years, laboratory accreditation has developed rapidly, the accreditation system is constantly improved, and the fields of accredited services are increasing, and the participation of both domestic and international is becoming more and more deep.

For the radiation measurement laboratory, there are several certification and accreditation institutions in China, and the institutions have different requirements for the operation of the quality management system, some are mandatory and some are voluntarily applied. Comparing the standards of each system, ISO/IEC17025 is more suitable for the management and operation of the current laboratory. The laboratory accreditation and qualification of CNAS, in addition to the use of ISO/IEC17025 as a common standard, have added the supplementary requirements in some areas, but the laboratory accreditation currently does not take into account the particularity of the field of radiation measurement different from other areas, and does not formulate special supplementary requirements.

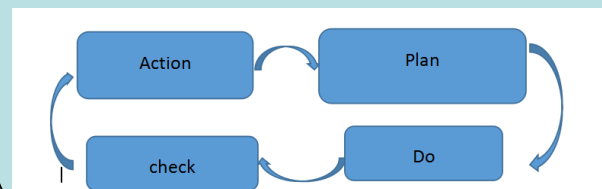
Development of quality management system for radiation measurement

In recent years, in China, the laboratory accreditation organized by China National Accreditation Service for Conformity Assessment (CNAS) has become more and more popular. The radiation measurement laboratory has partly been accredited by CNAS, and maintains the effective operation of the quality management system through the accreditation evaluation of CNAS. The following is a brief introduction to the general methods for the establishment and operation of the quality management system which can meet the requirements of CNAS in Chinese radiation measurement laboratory, and the special attention needed by the quality management of the laboratory radiation measurement.

The main function of the laboratory quality management system is to continuously and effectively control all activities affecting laboratory quality. Its basic characteristics are systematicness, comprehensiveness, effectiveness and adaptability. The management system is established in accordance with the requirements of the CNAS accreditation criteria and the actual situation of the laboratory, and is documented to ensure the quality of the service for radiation measurement.

Operation of quality management system for radiation measurement laboratory

The following diagram shows the operation of the quality management system, that is, the PDCA cycle:



prospects

Radiation measurement is a basic work in the field of nuclear energy development and radiation protection, and its related quality management measures will continue to be valued and developed.

With the development of laboratory accreditation and the recognition of laboratory accreditation in the field of radiation measurement, the laboratory accreditation of CNAS will be a developing trend in the field of radiation measurement. In recent years, the accreditation field of CNAS has developed rapidly, and it is expected that in the near future, the application instructions in the field of ionizing radiation can be formulated outside the general guidelines of the CNAS laboratory, and the management of the laboratory in the field of radiation measurement is further normalized.

The quality management system is only a platform for laboratory management, and all the working procedures and work quality of the laboratory personnel can be reflected through this platform. There are great differences in the quality of work between people. In order to solve the problems of poor quality awareness and low technical ability, it is necessary to establish a quality management system assessment mechanism in addition to the necessary training and education. The assessment mechanism can integrate the results of internal audit and management review into the assessment of the quality and economic responsibility system, and link various inspection structures with the rewards and punishment mechanism of departments and individuals, and can give full play to the role of the quality management system. Laboratory information management system (LIMS) has been applied in many fields, and nuclear laboratories are not widely used because of confidentiality and other reasons. LIMS has some functions such as automatic data acquisition, system self-checking and error reporting and so on. LIMS can reduce human intervention, ensure the accuracy and primordial nature of the data, save a lot of quality management costs, and will also put forward new requirements for the existing quality management methods. [3] It is believed that with the development of information security technology, more laboratories will adopt the system in the field of radiation measurement.