

ISCTN: Cuban Strategy for reproducing, preserving and developing the nuclear knowledge

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Actually, one of the problems in the changing world is the preservation of the knowledge for the next human generation, because the information grows and grows up very rapidly. In the case of nuclear activities, the accumulated scientific and technological experiences, not only thinking on nuclear power plant, are to be preserved taking into account the challenges of the present century, in which, one is witness of new applications in different areas of society.

The aim of this contribution is to present the Cuban approach for reproducing, preserving, developing and capturing the nuclear knowledge through a higher education center. This is the case of Higher Institute of Nuclear Sciences and Technologies, one of the Cuban universities. The second goal is to show the role-play by the national network in the preparation of the Manpower and in the continuity of the studies demonstrating how is possible to increase the qualification of personnel when different kinds of centers participate and collaborate with the releasing of the nuclear culture to other fields.

The necessity of nuclear professionals to assume the Cuban Nuclear Program was the principal reason for the government to begin the preparation of personnel on nuclear topics. Since the decade of 1960, a small group of physic and engineering students was prepared in Cuba and in the Soviet Union. Later, in 1981, the Faculty of Nuclear Sciences and Technologies (FCTN), in Havana University, was created with the mission of reproducing the Cuban nuclear system. At the beginning the Faculty was devoted to prepare the manpower for the future nuclear power plant; later, the Institute moved to other tasks related, mainly, with the preparation of personnel for nuclear applications.

The nuclear application in Cuban economy was growing. In 1987, the FCTN was separated from Havana University and it became Higher Institute of Nuclear Sciences and Technologies (ISCTN). Its mission is the preparation of nuclear professionals with high qualification, able to respond to Cuban Nuclear Program.

In 1992, the situation in the world changes and it was necessary to stop the construction of nuclear power plant, in Cienfuegos. The Cuban government decided to continue the preparation of nuclear professionals. At that moment, it was analyzed the key areas of nuclear sciences and technologies: basic sciences, safety culture, management, quality assurance and environmental protection. And it was decided to extend these key areas to other industries and sciences. For that, different Cathedras were created. They began to promote the qualification of working personnel in different industries and centers, including health institutions.

In 1994, the Ministry of Science, Technology and Environment (CITMA) was created by government decision and ISCTN became in the University of CITMA. This institute

forms part of the Cuban Nuclear Agency, a network of centers (one production center, two research centers, one center of information and one center of management of radiological wastes). Professionals of all these centers contribute to the reproduction, preservation and development of the nuclear knowledge participating as associate professors or guiding the students in their research works, graduate activities, as well as in Mastership and Ph.D. programs. Other form of reproduction, preservation and development of nuclear knowledge is the collaboration of all these institutions, working together in different kinds of projects in relation to diverse topics. In order to fulfill the mission, the Institute of Mathematical and Physical Research was incorporated to the Cuban Nuclear Agency.

The access of students to the ISCTN is through a rigorous process based on special requirements. With this base, the students are forming as Nuclear Engineer (Energetic and Nuclear Engineering), Nuclear Physics and Radiochemistry. Recently, Meteorology was incorporated to the set of bachelor program [1].

Different kinds of academic program are in the ISCTN: bachelors (5 years), mastery (2 years) and doctorate (3-4 years).

In July 2003, the ISCTN changes the name by Higher Institute of Technologies and Applied Sciences (InSTEC) as a result of the development of the center [2].

Conclusion

- National networking including Higher Education, Research and Production Centers is a powerful way for capturing, preservation, reproduction and development of nuclear knowledge.
- Vertical formation (at graduate level) of Manpower is still valid if one look for a broad profile of output.
- The Cuban strategy is a way to increase student enrolment in nuclear activities. Because if the student has a wide profile, he is able to insert himself in the job market, more rapidly and easy to adapt and reorients in the changing world conditions. In this way it is also possible to increase the motivation of the students for nuclear activities.
- The nuclear culture is good basis for preparation on Manpower in a comprehensive way.

[1]. GUZMÁN MARTÍNEZ F., ELÍAS HARDY L.L. Y RODRÍGUEZ HOYOS O.E., ISCTN: Nueva etapa de formación de profesionales nucleares de perfil ancho, NUCLEUS No. 30, La Habana (2001) 53-54.

[2]. Bases para la ampliación del Instituto Superior de Ciencias y Tecnologías Nucleares como Universidad del CITMA, Inf. Int. Dirección del Ministerio de Ciencia, Tecnología y Medio Ambiente, La Habana (1999), 40.