

Needs-based Curriculum Development of Regional Training Program on Nuclear Forensics

As a regional Center of Excellence (COE) on nuclear security in Asia, Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) of Japan Atomic Energy Agency (JAEA) has been supporting countries in Asian region by providing training courses on nuclear security since 2011. ISCN applies Systematic Approach to Training (SAT) for its training activities, which consists of four phases: (1) analysis, (2) development, (3) implementation and (4) evaluation. For the phase 1, training needs analysis, ISCN has been using various methods including needs survey missions to Asian countries to interview the relevant ministries/organizations; open source research, information sharing with other COEs, and survey using questionnaire form. The paper will focus on the survey using questionnaire form to the target countries and discuss good practice of collaborating existing regional framework for cooperation to conduct such survey.

The Forum for Nuclear Cooperation in Asia (FNCA) consists of 12 member states in Asia, and there are various cooperative programs under the FNCA including Nuclear Security and Safeguards Project. One of the objectives of the Nuclear Security and Safeguards Project is to identify specific areas/topics which member states request assistance for capacity building, and nuclear forensics is among those identified topics. ISCN has been an active participant of Nuclear Security and Safeguards Project of FNCA, so that it decided to collaborate with the project to analyze detailed training needs for nuclear forensics using a survey format.

In order to develop a training course which fits the needs of trainees, the training needs analysis should be carefully and thoroughly conducted. ISCN developed a series of questions for FNCA member states to fill out regarding their current status of nuclear forensics capability, and tried to find the gap between ideal condition. For developing the questionnaires, ISCN referred to the IAEA Nuclear Security Series No. 2, "Nuclear Forensics Support" (NSS 2). NSS 2 identifies the national core capabilities to perform nuclear forensics activities, and based on those core capabilities, ISCN developed 10 themes for questions: (1) nuclear fuel cycle activities, (2) national framework and response plan, (3) incident response, (4) nuclear forensics laboratory, (5) nuclear forensics analysis, (6) nuclear forensics interpretation, (7) nuclear forensics findings, (8) international cooperation and assistance, (9) nuclear forensics capability buildings, and (10) needs for nuclear forensics cooperation in FNCA. Each theme contains multiple questions. All member states of the Nuclear Security and Safeguards Project answered the questionnaires.

After ISCN received the answers, it conducted detailed analysis of the results both quantitative and qualitative manner. The analysis showed that member states recognized critical role of nuclear forensics in enhancing regional/national nuclear security and had intention to develop capability of nuclear forensics. At the same time, the analysis identified gaps in (1) national framework, (2) nuclear forensics laboratory, and (3) nuclear forensics interpretation and findings.

With these analysis results, ISCN started to develop a curriculum for the regional training course on nuclear forensics, with support from Office of Atoms for Peace (OAP) of Thailand. The gaps ISCN identified contained both generic and more technical areas, ISCN decided to develop a series of courses, not just one course, with awareness-raising course and a technical course to follow-up the awareness course. In 2018, ISCN-OAP team developed a four-day training course for awareness raising consists of lecture, practical group exercise, scenario-based tabletop discussion, and facility tour. Lecture materials covered all the three gaps mentioned above, and group exercises complemented lecture to deepen the understanding by the participants. Most of the efforts were given to develop scenario for tabletop discussion. The scenario should contain all three gaps identified through questionnaire survey, and all the participants should be able to relate their job responsibilities to the scenario to join discussion. ISCN-OAP team came up with a scenario with three scenes and series of questions associated with each scene. ISCN hosted the regional training course on nuclear forensics in January 2019, and it received 16 participants from 12 countries.

The paper will describe the methods ISCN has used to develop the questionnaire, and conduct analysis of the questionnaire results. It will also illustrate how ISCN-OAP team developed course curriculum, lecture materials, exercises and scenario for discussion in detail. Moreover, the paper will provide an example of nuclear forensics training program, and good practice of collaboration with the regional cooperative framework to conduct training needs analysis.

State

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Gender

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Track Classification: MORC: Nuclear forensics