

ANNEX

Report on the implementation of recommendations made under the EURATOM Treaty Article 35 verification visit to Cyprus

The verification visit under the EURATOM Treaty Article 35 held on 9-11 March 2015 dealt with the environmental radioactivity monitoring/measuring programme and activities in Cyprus, including arrangements within the radiation protection and nuclear safety regulatory authority (administered by the Radiation Inspection and Control Service (RICS) of the Department of Labour Inspection (DLI), Ministry of Labour, Welfare and Social Insurance (MLWSI)) and the supporting radioactivity analysis laboratory of the State General Laboratory (SGL).

In general, the verification visit concluded that Cyprus has established and maintains a national environmental radioactivity monitoring programme in compliance with the requirements of Article 35 of the EURATOM Treaty and that the existing infrastructure and functional arrangements are adequate to carry out continuous monitoring of the levels of radioactivity in the air, water, soil, foodstuff, feeding stuffs, etc.

The verification visit report contains also some recommendations referring mainly to the laboratory equipment currently in use, the public availability of data and monitoring during emergency situations. The situation of implementation of the recommendations in the technical report addressed to the Cyprus Government in 2015 (CY 15-01) is described in this report. The response described below is based on the recommendations referred to in page 3 of the 'Main Conclusions' report.

1. Implementation of the Recommendation 2(a) (Section 7.2 of the technical report)

The drinking water sampling frequencies have been reviewed in the framework of the Directive 2013/51/Euratom. The Directive has been transposed to the national legal framework through the Protection from Ionising Radiation and Nuclear Safety (Protection of the Health of the Population from Radioactive Substances Contained in the Water Intended for Human Consumption) Regulations of 2016 (P.I. 54/2016), published in the Official Gazette of the Republic on 4 March 2016, and sampling of drinking water or water intended for human consumption, e.g. surface water collected in dams, for 2016 has been conducted according to the provisions of the national regulations and the Directive.

In relation to maintaining public knowledge and creating confidence with the public on the environmental and emergency radioactivity monitoring arrangements, RICS/DLI has updated and improved its webpage (www.mlsi.gov.cy/dli, Policy Area: Radiation Protection) in June 2015 and all information and documents are available online (in Greek, and most of them in English as well). RICS/DLI has also established, in cooperation with a private company, a dedicated webpage, where all data collected by the automatic telemetric ambient gamma dose rate and radioactivity in aerosol

monitoring network are published. This webpage is in the final stage of preparation and will be available to the public within the first half of 2017. Nevertheless, all data provided by the telemetric network are available to the public, without delay, through the EURDEP webpage, where a link is redirecting to from the webpage of RICS/DLI. Moreover, all available environmental radioactivity data is published by RICS/DLI in dedicated reports; the most recent report containing environmental radioactivity data for the years 2010-2015 has been published in December 2016 and is available both in hard copy and in electronic form at the RICS/DLI webpage.

2. Implementation of the Recommendation 2(b) (Section 7.3 of the technical report)

Recommendations concerning the State General Laboratory (SGL) refer to improving the radioactivity analysis capabilities of the laboratory by purchasing a liquid scintillation counter and to making arrangements for more efficient respond to emergency situations, by training back-up staff from other SGL laboratories, by allocating more space for the radioactivity analysis laboratory and by considering the establishment of back-up arrangements for the most important radioactivity analysis equipment.

Concerning the procurement of a liquid scintillation counter by the SGL, efforts have been made through the annual budget of the SGL and the Ministry of Health for the years 2016 and 2017; however, this budget proposal was not approved by the Ministry of Finance. The efforts for the procurement of this type of equipment will continue in the upcoming years. There is back-up equipment available for gamma spectrometry, however currently there is only one total alpha/beta proportional counter and one alpha spectrometer. Such equipment is available in other laboratories in Cyprus and can be used if necessary. The food and environmental radioactivity analysis laboratory of SGL, as well as other laboratories in the country, are committed counterparts of the regulatory authority under the national radiation emergency action plan 'Electra'.

The management of the SGL has allocated in 2013 two more rooms for the radioactivity analysis laboratory and this arrangement is considered by the management as adequate for the operation of the laboratory, taking into account the current capacity of the laboratory related to staff and equipment. A separate room is used for storing the calibration standards and other radioactive sources. Also, the sample preparation is performed in a special room allocated by the management of SGL exclusively for the food and environmental radioactivity analysis laboratory. The total space allocated to the radioactivity analysis laboratory is one of the parameters reviewed and assessed during the licensing procedure by RICS/DLI for activities and practices conducted by the SGL with sources of ionizing radiation and are considered as adequate for the current activities and under the current circumstances. Moreover, architectural plans have been completed to move the SGL to a new building that would gather together all the laboratories of SGL which are now spread in three different sites. However, due to the strict financial policy applied in the country during the last years, it is not possible to predict when this project will be implemented.

Recruitment of additional personnel and sustainability is one of the major challenges faced not only by the radioactivity analysis laboratory but by the whole SGL. Due to the policy of the government applied during the last few years for no new recruitments or promotions in the civil service, the only way for recruiting additional staff is by hiring appropriate staff under short-term contracts. Through this procedure, one technician with radiochemistry background and expertise in high resolution alpha spectrometry was recruited during the last two years. Also, during an emergency situation, all the laboratories of SGL will be involved in sample preparation, measurement and analysis, and therefore, the proposal of training back-up staff especially for the highly technical issue of radioactivity spectroscopic analysis might be achievable but not effective and efficient; therefore, the training of back-up staff in case of a radiation emergency situation, taking into account a comprehensive risk assessment (no nuclear installations exist in the country) and the probability for occurrence of such an event/accident with sources of ionizing radiation or extensive radioactive release/contamination in the environment, is not considered necessary by the management of SGL.

Concerning the operation of the two laboratories maintained by RICS/DLI, written instructions and procedures for the use and maintenance and a system of quality assurance/control for the equipment kept in the laboratories have been effectively put in place in 2016.

3. Implementation of the Recommendation 2(c) (Section 7.4 of the technical report)

The verification team recommended, in relation to the on-line and off-line measurement network of RICS/DLI, to provide power back-up for the stations in Limassol and Lefkosia (ambient gamma dose monitoring stations and aerosol sampling station), as well as extending the autonomy of operation of the network control center at the RICS/DLI headquarters.

As described above, the annual budget of the Republic during the last years is very tight and a very small amount of money is allocated for development purposes (e.g. new projects, procurement of new equipment etc.). Nevertheless, RICS/DLI has explored the probability of establishing solar panels for all the ambient gamma dose rate stations in the country, similar to the panel used for the operation of the autonomous portable spectroscopic ENVINET/SARA station that the verification team had the opportunity to observe at the RICS/DLI headquarters. RICS/DLI will continue the efforts for upgrading the monitoring network with the establishment of solar panels for all on-line monitoring stations through the annual budget of DLI in the forthcoming years.

Moreover, RICS/DLI has declared its premises as a critical infrastructure in the country, so as to have priority in re-establishing electric power when there is a power cut during an event/incident/accident in the country. Also, the Republic has signed bilateral agreements with Greece and Israel for inter-connecting their electric networks, so in the near future the electric network in Cyprus will not be isolated and

completely dependent on the national electricity generation capacity. This project is though at the design phase.

Concerning the autonomy of the operations center at RICS/DLI headquarters, a brand new UPS system equipped with additional batteries for more autonomy has been purchased in 2015. Moreover, the new SCADA software update by BITT Technology (web-based version) performed in 2012 allows access to the network control page through any single computer or other device (tablet etc.) that has access to internet connection, even from abroad. Therefore, in case of operations in an emergency situation the network control page is available remotely, not only from the RICS/DLI headquarters.

The two low volume samplers in Lefkosia and in Limassol undergo regular maintenance (once every six months), including flow calibration, while a replacement and calibration of the flow meter of the ASS-500 high-volume sampler operating in Strovolos has been performed in 2016 (note: the verification team recommended to have the high-volume sampler flow meter calibrated by 2018).

4. Implementation of the Recommendation 2(d) (Section 7.5 of the technical report)

The verification team recommended to consider the involvement of DLI and Civil Defense district offices staff in radiation measurement tasks, in order to achieve a more comprehensive picture of the radiological situation in Cyprus in a shorter than now time during a radiation emergency situation.

Since September 2015 (half a year after the verification visit), the Minister of Labour, Welfare and Social Insurance has approved the National Emergency Preparedness and Response Action Plan in Case of a Nuclear or Radiological Incident/Accident. This plan is aligned with the European Acquis and the IAEA standards on emergency preparedness and response and allocates relevant responsibilities to various governmental and local (at district level) authorities, including sampling, transport of samples for analysis, area surveillance, radiological assessment in the field of operations etc. These arrangements include the initial assessment of the situation in case of an emergency with appropriate radiation monitoring and identification equipment and provision of appropriate education and training to the staff to be involved in such situations, including the Police, the Fire Service, medical services and the Customs. Therefore, the existing arrangements, through the national radiation emergency action plan, for coordinating the initial response and appropriately obtain a comprehensive picture of the radiological situation in a radiation emergency situation, are considered as adequate and fulfilling this last verification team's recommendation.