

Legalization of In-Situ Remediation Practice of Contaminated Drain Pits by TE-NORM close to El-WAHAT Libyan oil fields

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ABSTRACT

Low Specific Radioactivity Scales (LSRS) that associated with Libyan oil and gas production facilities are of natural origin. Its recognition, existence and significance were studied by oil and gas industries in Libya since 1997. Surface disposal of radioactive sludge/scale, and produced water (as practiced in the past) might lead to ground and surface water contamination. Because TE-NORM contaminated wastes in oil and gas production operations were not properly handled. Thus disposal of generated wastes that resulted in environmental contamination in and around production facilities require promulgated practices.

Thus in this paper the author trying to stress on the lack of promulgated legislative framework and its impact on safety of oil and gas worker in Libya and, to highlight the actions that has been carried out to come over the problem.

INTRODUCTION

In most countries promulgated rules and regulations governing and controlling the utilization of sources of ionizing radiation were intended to be applicable to products of nuclear industry. By the time of oil discovery and particularly in middle of 20th century many national governments have been reluctant to get involved in regulations of controlling radioactive materials of natural and/or environmental origin. Lately and after many researches it becomes clear that, the exposure of human beings to ionizing radiations from NORM/TE-NORM sources is of great concern. Such concern was so important particularly, to national authorities dealing with public health and protection of radiation workers. Although TE-NORM is generated from natural sources and become in existence due to human activities. Regulations concerning both safety and waste handling of TE-NORM have generally been derived from different safety standard that were put for handling, management, control, and disposal, of man-made radioactive sources. Thus many national and international associations and commission contributed to total integrated radiation dose to human from all radioactive sources, among them: ICRP, EPAs, UNSCAR, CRCPD, IAEA, HPS, NRCs, IUR, NRPB, EURATOM, NNRs, and IRPA.

METHODOLOGY

In-Situ Remediation procedures that require legalization was conducted by Wintershall-Libya to clean and remediate NORM contaminated area measuring about 35,000 square meter, and comprises of two drain pits and a slim oil pit that were operated between 1977 to 2004 for discharge of produced water in the middle of Libyan Sahara near EL-WAHAT Oasis. The remediation procedure conducted in Four phases they were:

Phase one: Preparatory measures to allow for remediation.

Phase Two: Monitoring and contouring of site to be remediated to allocate hot spots and to predict level of contamination.

Phase Three: Construction of the covers that needed for remediation process.

Phase Four: Closing measures, that include verification of remediation success.

RESULTS:

In-situ approaches as criterion for remediation of NORM/TE-NORM contaminated pits that performed by Wintershall allow for 60% reduction in average gamma dose rate on the disposal site, taking into consideration levels of doses defined in NOC "NORM Management Manual". The outcome of such procedure produced water disposed by salt water disposal system after separation and pumping it back in to reservoir. Additionally this In-Situ process ensures long-term stability of remediated site against erosion process due to construction of radiation shielding cover on the refilled pit.

Conclusion

Although the conducted criterion for remediation of contaminated pits by NORM was not approved by General Environmental Authorities of Libya. It is evident that the huge existing quantity of TE-NORM waste generated annually are contributing to the growing radiation exposure of workers and members of public. Lack of regulatory infrastructure impedes development of national standards for the control of TE-NORM outside of the coverage of the Atomic Energy Commission. In general the applied procedure "In-Situ Remedi-

ation Practice of Contaminated Drain Pits by TE-NORM close to El-WAHAT Libyan oil fields” was successful, applicable, and might be effective. Further investigations are still required for making such procedure generalized. However, when a country need to establish a promulgated regulatory framework for controlling, management, and disposal of TE-NORM four important radiation protection issues need to be considered: (i) technical enhancement operations, (ii) TE-NORM deposition, (iii) remediation procedures, and (iv) exemption levels.

REFERENCES

[1] AL-MASRI, M. S., ABA, A., Distribution of Scales Containing NORM in Different Oil Fields Equipment. Appli. Radia. Isot. May (2005), 55:1-7.

[2] FAWARIS , B. H., .and AHMAD, A. SAAD , Natural Radioactive Scales in oil and Gas Fields of Jamahiriya: A Challenge to Radiation Safety of Workers. Presented in the 7th Arab Conference on the Peaceful uses of Atomic Energy, Sanaa - Yamen 4-8 Dec., (2006).

Country or International Organization

LAEE-Libya

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