U.S. Nuclear Regulatory Commission
Docket No. 040-08610
October 19, 2009

Technical Evaluation Report
For the Stepan Chemical Company, Maywood, New Jersey Facility
U.S. Nuclear Regulatory Commission Materials License No. STC-1333

Background

Thorium ore was processed at the Maywood facility from 1916 to 1956 by the Maywood Chemical Works. In 1959, Stepan Chemical Company purchased the Maywood Facility. Approximately 19,000 cubic yards of thorium waste were buried in three (3) on-site pits. Thorium waste disposal occurred on-site prior to Stepan's involvement. The first license was issued to Stepan on April 4, 1978, and was last amended on November 5, 1987 (License Amendment No. 3).

In 1984, the U.S. Department of Energy (DOE) assumed responsibility for remediating the burial pits at the Stepan, Maywood facility under the authority granted by the Energy and Water Development Appropriation Act and, as a result, the Stepan, Maywood site was included under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). In addition, in 1983, the U.S. Environmental Protection Agency included the site on its National Priority List for cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In October 1997, the management and administration of FUSRAP was transferred to the U.S. Army Corps of Engineers (USACE).

In July 2001, a Memorandum of Understanding [ML011630081] was executed between the U.S. Nuclear Regulatory Commission (NRC) and the USACE to facilitate remediation of the Stepan facility under FUSRAP. The USACE has initiated remedial actions for 3 burial pits pursuant to the Maywood Site Record of Decision, dated September 22, 2003. On October 21, 2008, the NRC executed a Confirmatory Order to suspend Stepan's License, contingent upon USACE notifying the NRC that they have taken physical possession of all, or part, of the licensed site. In December 2008 and August 2009, USACE notified the NRC that it had taken physical possession of Burial Pits No. 3 and No. 2 respectively. Accordingly, License STC-1333 is now suspended with respect to Burial Pits No. 3 and 2.

In June 1983, Stepan installed three (3) groundwater monitoring wells in the vicinity of each burial pit to evaluate radionuclide concentrations and the potential for groundwater contamination. Under License Condition 12, Stepan is required to sample and analyze groundwater from these wells on a quarterly basis.

On February 19, 2009, NRC issued a Notice of Violation [ML090410041] to Stepan for failure to sample and analyze water samples from monitoring well No. 6 (MW6) located near Burial Pit No. 1, for the period September 2006 through February 2009. Stepan's response letter, dated May 20, 2009, [ML091540234] requested authorization to discontinue future monitoring of MW6 because: (i) the well cannot be located; (ii) historic sampling data does not indicate that material in Pit 1 is being released; and, (iii) future remedial activities by the USACE could potentially compromise the well's integrity.

In addition to Stepan's request to discontinue monitoring in Well No. 6, several License Conditions have been modified to reflect updated information. This Technical Evaluation Report (TER) provides an assessment and the basis for License Amendment No. 4. Pit 1, which is not yet under the control of the USACE, shall continue to be managed by Stepan in accordance with the terms and conditions of the license.

Evaluation:

Licensee Name - License Condition No. 1

This condition reflects the licensee's change of name from Stepan Chemical Company to Stepan Company.

License Expiration Date - License Condition No. 4

The license has been revised to be effective until license termination, when cleanup of the burial pits meets NRC's unrestricted release criterion pursuant to 10 CFR 20.1402.

Radiation Safety Officer - License Condition No. 11

In a letter dated January 30, 2008, Stepan Company identified Mark Stanek as the new plant manager and point of contact for the Maywood Facility. Mr. Stanek succeeded J.G. O'Brien who was previously listed as the supervisor for the underground storage. Instead of listing a specific individual, License Condition 11 has been updated to include requirements outlined in NUREG 1757 *vol 1. rev. 2* (Section 17.2.3.1) that specifies the specific education, training and qualifications to act as a Radiation Safety Officer.

Future Groundwater Monitoring - License Condition No. 12 and 13

According to the Licensee, several attempts were made to locate MW6, which included visual observations and the use of a metal detector, but, to date, the well could not be located. Based on extensive groundwater sampling data reviewed for MW6, there has been no groundwater contamination from radionuclide(s) and gross alpha activity has remained stable since 1998 and is well below the NRC's license requirement of 15pCi/L.

There is no benefit in replacing MW6 with a new shallow monitoring well because, for over 25 years, the buried waste has not resulted in any adverse effect on the environment. More specifically, long term groundwater monitoring data from 1983 through 2009 for the entire monitoring well network continues to show stable trends for radionuclide(s) and gross alpha activity with no migration of contaminants off-site. The staff finds that excluding MW6 from the required groundwater monitoring program will not result in any significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The shallow water bearing zone in which the monitoring wells are screened is not identified as a drinking water supply source, nor is it utilized for irrigation purposes. Moreover, this localized zone containing below-grade pits of FUSRAP material has been buried for over 25 years, and has not shown the propensity for off-site migration. This limits the risk of exposure to the public. In addition, the staff finds that excluding MW6 from the required groundwater monitoring program will not significantly increase the individual or cumulative occupational radiation exposure in the area. Source removal of FUSRAP material from each burial pit is being conducted for

proper disposal off-site, and no construction of any infrastructure related to any NRC-licensed operations is required. The staff thus finds that excluding MW6 from the required groundwater monitoring program will not have any construction impact. As stated above, the groundwater sampling data for MW6 continues to show that radionuclide(s) and gross alpha activity have been stable since 1998, and have been well below the NRC's licensing requirements. The staff thus finds that excluding MW6 from the required groundwater monitoring program will not significantly increase the potential for or consequences from radiological accidents.

Based on the aforementioned findings, the NRC staff concludes that the licensing action is categorically excluded pursuant to 10 CFR 51.22(c)(11) and requires no further environmental review.

The groundwater monitoring requirements imposed by the NRC and the sampling data reviewed for MW6, confirms that the public is adequately protected. Therefore, no replacement monitoring well is necessary for MW6. However, Stepan shall continue to monitor the remaining eight groundwater monitoring wells (1, 2, 3, 4, 5, 7B, 8 and 9) in accordance with License Conditions 12 and 14.

The sampling frequency shall remain quarterly. Inconsistencies have been identified in the groundwater monitoring data for the analyses of specific radionuclides when groundwater samples exceed 15 pCi/L for gross alpha activity (e.g. MW8 and MW9). Therefore, License Condition 12 has been revised to include new reporting requirements. The Licensee shall submit groundwater monitoring reports to the NRC on a quarterly frequency, in accordance with sampling analyses required in License Condition 14.

License Condition 13 was deleted and incorporated into License Condition 12 for consolidating all groundwater monitoring requirements.

Sampling Analyses – License Condition 14

Due to organizational changes that occurred in recent years at the NRC, the point of contact is no longer the Office of Nuclear Material Safety and Safeguards. The correct contact information is being included in License Condition No. 17.

Pertinent Documents – License Condition 15

This new License Condition references pertinent documents governing NRC's requirements for License Amendment No. 4.

Financial Assurance – License Condition 16

There is no financial assurance instrument in place for the cleanup of the Stepan, Maywood facility. The NRC did not require financial assurance for the Stepan site because, in 1984, DOE assumed responsibility for remediating the burial pits under its FUSRAP program. Since 1997, the USACE has been assigned the management and administration for remediating the burial pits under FUSRAP consistent with CERCLA, and its cost recovery provisions [see ML 030570679].

Reporting Requirement's – License Condition 17

License Condition No. 17 has been added to provide the updated NRC addressees for prompt reporting.

Conclusion:

Based on the monitoring data evaluated for the Maywood facility, it is NRC's conclusion that Stepan's request for license amendment is reasonable. Therefore, Material License No. STC-1333 Amendment No. 4 is provided based on the aforementioned technical justification for changes to several license conditions.