

June 22, 2015

Robert Peacock  
Vice President and General Manager  
Stepan Specialty Products, LLC  
100 West Hunter Avenue  
Maywood, NJ 07607

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE  
STEPAN COMPANY REQUEST FOR TERMINATION OF LICENSE STC-1333

Dear Mr. Peacock:

By letter dated August 15, 2014, Stepan Company submitted to the U.S. Nuclear Regulatory Commission (NRC) a request for termination of NRC License STC-1333 (ADAMS Accession No. ML14259A108). The NRC staff has reviewed the information submitted and has identified, in the enclosure, areas where additional information is needed to complete the review.

Please provide your response to the request for additional information within 30 days of the date of this letter. If you have any further questions, please contact me at (301) 415-1335 or via email at [kimberly.conway@nrc.gov](mailto:kimberly.conway@nrc.gov).

Sincerely,

**/RA/**

Kim Conway, Project Manager  
Reactor Decommissioning Branch  
Division of Decommissioning, Uranium Recovery,  
and Waste Programs  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 40-8610  
License No.: STC-1333

Enclosure:  
Request for Additional Information

Cc: Stepan Company Service List

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**OFFICIAL RECORD COPY**

Stepan Company Service List  
cc:

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## **Stepan Company License Termination Request Requests for Additional Information (RAIs)**

### **RAI 1.**

#### **Comment:**

Based on the conclusions made in the dose assessment provided to the U.S. Nuclear Regulatory Commission (NRC) staff, Stepan assumes that the site will continue to operate as an industrial/commercial site for the near future. Documents provided to the NRC do not provide a clear understanding of why the industrial/commercial exposure scenario is the most appropriate scenario for the site and why other, more conservative scenarios (e.g., residential scenario) were not considered to be appropriate. For example, Section 2, "Scenario Descriptions," of the report "Derivation of Uranium Residual Radioactive Material Guidelines for the Maywood Site" included in Appendix C to the "Feasibility Study for Soils and Buildings at the FUSRAP Maywood Superfund Site" (ADAMS Accession No. ML15125A165) indicates that "[c]urrent land use at properties composing the Maywood site ranges from residential to commercial/industrial to recreational." The report also discusses the close proximity of residential sites to the Stepan site.

#### **Basis:**

NRC guidance dictates that the bases for the most logical exposure scenarios be included when submitting a site-specific dose assessment for NRC review. NRC staff use this information to determine whether the licensee's proposal to release the site for unrestricted use meets the requirements outlined in 10 CFR 20.1402 and its related guidance.

#### **Path Forward:**

Provide the NRC with the basis for the use of the industrial/commercial scenario as the exposure scenario that represents the maximum risk associated with Stepan site. In addition, information should also be provided that demonstrates why other, more conservative scenarios (i.e., resident or resident farmer) are not expected to be receptors of concern at Stepan.

### **RAI 2.**

#### **Comment:**

The dose assessment provided with the "Feasibility Study for Soils and Buildings at the FUSRAP Maywood Superfund Site" (USACE, 2002), considers a variety of different exposure scenarios and corresponding site-specific parameter values. Whenever possible, NRC staff requests the use of site-specific parameter values associated with the different scenarios. The RESRAD analyses included with the dose assessment provided includes site-specific values but minimal justification for their use.

#### **Basis:**

NRC guidance dictates that site-specific parameter values and the basis for their use should be included when performing RESRAD analyses as part of a specific site's dose assessment.

Site-specific information and the basis for their use assists NRC staff with their review of the dose assessment and helps determine whether the results meet the requirements provided in 10 CFR 20.1402 and its related guidance.

**Path Forward:**

Provide the basis for the site-specific parameter values provided in the RESRAD analyses on which the RESRAD-calculated doses are based. If a range of values are considered for specific parameter values then a probabilistic analysis should be included as well.

**RAI 3.**

**Comment:**

As part of the initial review, NRC staff was unable to duplicate the results of the RESRAD analyses used in the "Feasibility Study for Soils and Buildings at the FUSRAP Maywood Superfund Site" (USACE, 2002) report to calculate doses associated with the residential and industrial/commercial scenarios. The submittal includes tables documenting the site-specific values used for the RESRAD dose assessment calculations. However, in some cases NRC staff had difficulty determining which parameters were being modified based on the descriptions provided in the tables.

**Basis:**

In addition to the RESRAD analyses submitted with the request for unrestricted release of the Stepan site NRC guidance dictates that site-specific parameter values and the basis for their use should be included when performing RESRAD analyses as part of a specific site's dose assessment. Site-specific information and the basis for their use assists NRC staff with their review of the dose assessment and helps determine whether the results meet the requirements provided in 10 CFR 20.1402 and its related guidance.

**Path Forward:**

Provide a detailed list of all the input parameters used in the RESRAD analyses provided with the dose assessment. Justification for the use of a specific value as well as the basis for using the default values should also be provided. Printouts of the RESRAD analyses and, if possible, copies of the actual RESRAD computer files should also be included.

**RAI 4.**

**Comment:**

Documents provided to NRC staff include site-specific cleanup criteria values (i.e., derived concentration guideline levels (DCGLs)) that do not appear to be related to a dose assessment process used to evaluate the site against the NRC requirements in 10 CFR 20.1402. Furthermore, there does not appear to be any evidence that the NRC was involved in the development and approval of these values. Initial analyses using these cleanup criteria values result in doses below 25 mrem/yr when considering a general industrial scenario but exceed the

25 mrem/yr regulatory value established in 10 CFR 20.1402 for general unrestricted use of a site for residential purposes.

**Basis:**

The NRC staff review process for accepting the release of a site for unrestricted use under 20.1402 may include doses calculated using site-specific parameter values and RESRAD or the use of site-specific cleanup criteria values (e.g., DCGLs) which document the concentrations of radionuclides required to meet the 25 mrem/yr dose values for the specific site.

**Path Forward:**

Provide further details as to how these site-specific cleanup criteria values (aka, DCGLs) were developed and a basis for their use in meeting the 20.1402 requirements for unrestricted use. Additional information is also required to explain the development and use of the combined Ra-226+Th-232 DCGL, including how it is calculated, the basis for its use, and further discussion on how to apply it when calculating the overall dose associated with the site. If Stepan chooses to revise these site-specific cleanup criteria values, include the new values and justification for their use.

**RAI 5.**

**Comment:**

Survey Unit 10A-30 required an elevated measurement comparison (EMC) analysis. However, the EMC equations in Section 5.6.2.3 (Final Status Survey Data Evaluation) of the Post Remedial Action Report for Burial Pit 1, which describe the EMC unity rule and dose analyses, are blank.

**Basis:**

The analysis of elevated areas of residual radioactivity is described in NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)," Section 5.5.2.4 (Determining Data Points for Small Areas of Elevated Activity). Section 8.5.2 (Interpretation of Statistical Test Results) of MARSSIM describes the assessment of the total dose within a survey unit.

**Path Forward:**

Provide the equations used by Stepan to assess elevated areas of contamination, per the  $DCGL_{EMC}$ , and to assess the total dose from all sources in a survey unit.

**RAI 6.**

**Comment:**

It was indicated in the Post Remedial Action Report for Burial Pit 1 that an area factor of 2.3 was selected for the corresponding 30 m<sup>2</sup> elevated area. Per the Master Final Status Survey Plan, this area factor was taken from the New Jersey Department of Environmental Protection Sample Procedures Manual, Chapter 12. The referenced Sample Procedures Manual was

reviewed, and it appears that the area factors provided in the manual were generated using RESRAD software for a specific example in the manual. In a similar fashion, NRC's MARSSIM guidance provides example area factors in Section 5.5.2.4, but also notes that the MARSSIM user should consult with the responsible regulatory agency for guidance on acceptable techniques to determine area factors. NRC guidance does not provide default area factors, but rather expects them to be developed on a site specific basis.

**Basis:**

Area factors are described in Section 5.5.2.4 (Determining Data Points for Small Areas of Elevated Activity) of MARSSIM.

**Path Forward:**

Justify the usage of an area factor of 2.3 or determine a site specific area factor.