



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 19, 2017

Mr. Thomas K. Spencer
Radiation Safety Officer
Sigma-Aldrich
3500 Dekalb St.
St. Louis, MO 63118

SUBJECT: REVIEW OF THE SIGMA-ALDRICH FORT MIMS SITE DECOMMISSIONING
FUNDING PLAN (DOCKET NO. 030-10716)

Dear Mr. Spencer:

In a transmittal letter dated January 18, 2017, Agencywide Documents Access and Management System (ADAMS) Accession No. ML17198A426, Sigma-Aldrich (Sigma) submitted its triennial Decommissioning Funding Plan (DFP) update (ML17023A071) for its Fort Mims site (Materials License No. 24-16273-01). By letter dated March 24, 2017 (ML17087A040), Sigma provided additional information to support the NRC staff's review.

The NRC staff has reviewed the Sigma's DFP submittal in accordance with Appendix A to Part 30 of Title 10 of the Code of Federal Regulations (10 CFR 30, Appendix A), 10 CFR 30.35, and NUREG-1757, Vol. 3, Rev. 1, Section 4 and Appendix A. Based on this review, staff has reasonable assurance that Sigma's DFP meets the regulatory requirements of 10 CFR 30.35.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions, please feel free to contact George Alexander at 814-297-8385 or by email at george.alexander@nrc.gov.

Sincerely,

/RA/

Stephen Koenick, Chief
Materials Decommissioning Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 030-10716
License No.: 24-16273-01

Enclosure: Safety Evaluation Report

cc: Cheryl Stipsits, Sigma-Aldrich

SAFETY EVALUATION REPORT

DOCKET: 030-10716

LICENSE: 24-16273-01

LICENSEE: SIGMA-ALDRICH

REVIEWER: Reginald Augustus, Financial Project Manager,
George Alexander, Project Manager

SUBJECT: 2017 SIGMA-ALDRICH FORT MIMS SITE DECOMMISSIONING
FUNDING PLAN

BACKGROUND

In a transmittal letter dated January 18, 2017 (ADAMS Accession No. ML17198A426), Sigma-Aldrich (Sigma) submitted its triennial Decommissioning Funding Plan (DFP) update (ML17023A071) for its Fort Mims site (Materials License No. 24-16273-01).

DISCUSSION

Regulatory Requirements

10 CFR 30.35(a)(1) requires an applicant for a specific license that authorizes possession and use of material exceeding certain quantities to submit a DFP.

10 CFR 30.35(e)(2) requires a licensee to resubmit a DFP, at least every three years, with adjustments that are necessary to account for any changes to costs or the amount of contamination.

10 CFR 30.35(e)(1)(i)-(iv) requires that the DFP, submitted for review and approval by NRC, must contain a detailed cost estimate for decommissioning that reflects: The cost of an independent contractor to perform the work; the cost of meeting the 10 CFR 20.1402 or 20.1403 criteria for unrestricted use; volume of contamination in the onsite subsurface material that will require remediation; an adequate contingency factor; identification and justification for key assumptions used in the cost estimate; a description of the method of assuring funds will be available for decommissioning; and a certification statement by the licensee that financial assurance has been provided in the amount of the cost estimate for decommissioning.

10 CFR 30.35(e)(1)(v) requires that the DFP include a signed original, or, if allowed, a copy, of the financial instrument to be used to cover the decommissioning costs. In addition, 30.35(f)(2) requires that when a Parent Company Guarantee (PCG) is used as the financial assurance instrument, it must adhere to the requirements in Appendix A to Part 30. Appendix A requires

the PCG include: an agreement with the specific terms and conditions of the PCG; passage of one of the financial tests outlined in Appendix A.1 or A.2 of Part 30; and a standby trust.

Review Guidance

The Nuclear Regulatory Commission (NRC) staff conducted their review of the Decommissioning Funding Plan (DFP) in accordance with NUREG-1757, Vol. 3, Rev. 1, Section 4 and Appendix A.

Staff Review

Submission of Updated Decommissioning Funding Plan

The DFP update was submitted to NRC staff by transmittal letter dated January 18, 2017. Sigma's submittal included an updated DFP for its Materials License. Sigma's most recent amended license allows for only decontamination and remediation activities associated with residual contamination in site soils. Specifically, Hydrogen-3 and Carbon-14 are the licensed sources within the site soils that will either be left in place or removed, as necessary, to meet decommissioning requirements.

The NRC staff has reviewed the DFP submittal. On the basis of the review, the NRC staff has determined that the licensee's materials and quantities are within its authorized amount. Therefore, the NRC staff finds that the licensee meets the requirement of 10 CFR 30.35(a)(1).

Sigma submitted its DFP to the NRC by transmittal letter dated January 18, 2017. The previous documented submittal of a revised cost estimate for decommissioning financial assurance was on June 4, 2007, which the NRC found to be acceptable (ML081580611). Although NRC staff could not locate documentation of a revised cost estimate between 2007 and 2016, NRC staff determined that the existing financial assurance was adequate for this period of time.

Detailed Cost Estimate

The licensee's cost estimate submission was developed based upon the work being performed by an independent contractor (Decontamination Decommissioning and Environmental Services (DDES) LLC). The cost estimate includes: a description of the facility where the source materials were used and where the residual contaminated soil remains; a description of how the materials were used; types and quantities of material; remaining residual soil to be kept in place or removed; labor costs for planning and preparation of the facility for decommissioning; final surveys; packaging, shipping, and disposal of radioactive soils; equipment and supplies; laboratory costs; and other miscellaneous costs.

The licensee's submittal states that the cost estimate was developed based upon the use of average costs and guidance from NUREG-1727, "NMSS Decommissioning Standard Review Plan, Section 3, Appendix F." The site is currently undergoing decommissioning with current activities including groundwater characterization and development of a site-specific derived concentration guideline levels for Carbon-14 and Hydrogen-3. RESRAD dose modeling will be used to establish the site meets the 25 mrem/year criteria for unrestricted use. The licensee's submission states that: the site is an open 3-acre parcel of land that was previously used for the manufacture of radiolabeled chemical compounds; all structures and utilities were removed from the site in 2010; and only residual soils contamination exists in the upper three meters with most activity in the upper six inches of soil.

The licensee's submittal includes a 25 percent contingency factor that has been added to the total decommissioning cost estimate. The total calculated cost for decommissioning is \$711,474.

The licensee's submission states that the facility structures were previously removed under prior decommissioning activities and that no building structures or underground structures currently exist. The estimate assumes that costs for labor, materials and disposal increase at 4 percent per year. The estimate also includes excavation, removal, transportation, and disposal volumetrically contaminated soils found to contain C-14.

The NRC staff has reviewed the cost estimate and notes that NUREG-1727 has been superseded by NUREG-1757. However, NRC staff determined that the information provided by the licensee is consistent with the guidance in NUREG-1757, Vol 1, Rev 2, App. M3.9. Based on this review, the NRC staff has determined that the cost estimate submitted by the licensee: (1) adequately reflects the costs to carry out all required decommissioning activities prior to license termination; (2) assumes costs for an independent third party contractor; (3) includes the costs of meeting the 10 CFR 20.1402 criteria for unrestricted use or 20.1403 for license termination with restricted release; (4) addresses whether or not it has any volume of onsite subsurface material containing residual radioactivity that will require remediation; (5) includes an adequate contingency factor of 25 percent; (6) identification and justification of key assumptions; (7) describes the methods of assuring funds through its cost estimate adjustments; and (8) will include a certification statement of its intention to provide financial assurance in the amount of the cost estimate in its revised PCG. Therefore, the NRC has determined that the licensee meets the requirements of 10 CFR 30.35(e)(1)(i)-(iv).

Financial Assurance Mechanism

In the March 24, 2017 letter (ML17087A040), the licensee stated that it intends to continue to use its PCG and STA as the financial instruments required to meet the requirements in 30.35(f)(2). The current PCG and STA, which were previously approved, will be revised to reflect the most recent decommissioning cost estimate and submitted with approximately 60 days of NRC approval of its DFP.

The NRC staff has reviewed the submission and subsequent letter dated March 24, 2017 (ML17087A040) from the licensee. Based on this review, the NRC staff has determined that the financial assurance mechanism to be revised and submitted by the licensee is adequate to ensure that sufficient funds will be available to carry out all required decommissioning activities prior to license termination, and therefore, meets the requirements in 10 CFR 30.35(e)(1)(v) and 30.35 (f)(2).

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DISTRIBUTION: P. Lee, RIII

ADAMS ACCESSION Number: ML17177A066

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