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March 19, 2009

George M. McCann
U.S. NRC Region III
2443 Warrenville Rd
Lisle, IL 60532-4352

REF: NRC/Sigma conference calls of 03-06-09 and 03-11-09 regarding NRC follow-up questions to RAI's. Sigma Response

License no: 24-16273-01

Dear Mr. McCann,

In the attached document, I have provided Sigma answers to the questions you discussed during the referenced conference call.

Please let me know if you require additional information.

Best regards,

Thomas K Spencer
Manager, RSO
Sigma-Aldrich Company
3500 DeKalb St
Saint Louis, MO 63118
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Attachment:

NRC Follow-up Questions to RAI's – Sigma Responses

Attachment
NRC Follow-up Questions to RAI's – Sigma Responses

LICENSEE: Sigma-Aldrich Company
Maryland Heights, Missouri
License No. 24-16273-01
Docket No. 030-10716

DATE OF CALLS: March 6 & 11, 2009

PARTICIPANTS: Sigma-Aldrich Company
Thomas Spencer
Cheryl Stipsits

Philotechnics
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Nuclear Regulatory Commission
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SUBJECT: DISCUSSION REGARDING REQUEST FOR ADDITIONAL INFORMATION RESPONSES FROM SIGMA ALDRICH FOR REVIEW OF DECOMMISSIONING PLAN

On the above dates, Sigma-Aldrich Chemical Company (SAC), the licensee, was contacted to discuss responses to NRC Requests for Additional Information for review of the Decommissioning Plan provided on February 6, 2009. The Decommissioning Plan was provided on October 22, 2008 to discuss remediation of the Fort Mims facility located in Maryland Heights, Missouri. The licensee provided responses to Requests for Additional Information on February 19, 2009, in a letter dated February 6, 2009.

The licensee was informed that Missouri Department of Conservation stated that there were no endangered species issues regarding the decommissioning of the facility. The NRC also informed the licensee that the Missouri Department of Natural Resources was contacted for consultation and that the department indicated that they may be able to complete the review in 2 weeks, even though they are allowed a 30 day review period.

The following questions were discussed during the call:

1. In response 1, the licensee states that the Fort Mins Facility Building will be demolished after a Final Status Survey has been complete.

The licensee was asked to confirm "prior to building demolition" that the below commitments will be complied with as follows:

A. The licensee will submit a final building FSS data for NRC review and approval.

Sigma Response: Sigma agrees to submit a final building FSS data for NRC review and approval prior to building demolition.

B. Confirm that the term significant refers to contamination greater than either the soil or building screening values.

Sigma Response: Sigma confirms that the term significant refers to contamination greater than either the soil or building screening values.

C. the NRC will have completed and issued a report on an NRC confirmatory survey. If we can coordinate our survey with the contractor's it may save time.

Sigma Response: Sigma agrees that the NRC will have completed and issued a report on an NRC confirmatory survey. We also desire to coordinate the survey with the NRC and contractor to save time.

2. In question 2, the licensee did not answer the question regarding what had been done to determine if the septic tank and leach field could be ascertain by records review. There is no mention regarding checks with local building authorities.

The licensee was asked to provide additional information regarding this question.

Sigma Response: Sigma did attempt to determine status of the septic tank and leach field. This attempt included:

i. **A search of building files and blueprints**
ii. **Interview of the previous owner (owner could not remember)**
iii. **Contacting the Saint Louis Metropolitan Sewer district (This confirmed the city sewer switchover date as July, 1981, approximately six years after the start of operations.**

3. In response 2, Sigma-Aldrich states soil excavation and sampling plans would be completed if significant levels of contamination are identified.

The NRC staff advised the licensee if survey information determines that residual contamination in the septic tank and leach field are below the screening values, then they are done. However, if they are above the screening values, then the licensee will have to stop and provide the excavation plan, and groundwater sampling plan for our review. Alternatively, these plans can be submitted now for our review.

Sigma Response: If and when survey information determines that residual contamination is above screening values, Sigma will submit an excavation and groundwater sampling plan for NRC review.

4. In response 2 h, the licensee states any potential chemical contamination would be accompanied with radioactive contamination and therefore, chemical contamination would only be considered if radioactive contamination is found above threshold limits. This was an incomplete response. The licensee needs to address the following.

   A. Specify what were the chemicals tagged to the C-14 during production and what could be expected if radiological values greater than the screening values are detected in soil samples. Explain the use of the threshold.

      Sigma Response: A representative list of tagged chemicals can be found in one of our printed catalogs, which is available for review. Some of these chemicals include volatile and semi volatile organic compounds, the most likely to be found in soil due to their mobility and relatively higher volume of use.

      One could expect a possibility of detecting chemical contamination if radiological screening values are exceeded.

      The threshold value will be use to guide the sampling for volatile and semi-volatile organic compounds. If activity is found above the threshold screening value, then a soil sample from that area will be taken for chemical screening.

   B. If there is the potential for chemicals in the building, soil, septic tank, and or leach field provide information which supports your reasoning that monitoring for chemical contaminants is not necessary. We need additional information that supports the validity of your statement. If you do not detect radiological contamination, can you ensure that there aren't hazardous materials present?

      Sigma Response: Radiolabeling production operations occurred over a period of approximately 32 years. Virtually all unlabeled chemicals and solvents were intimately mixed with radioactivity as they were consumed. The possibility that pockets of chemical contamination could develop without associated radioactivity levels above screening values is almost non-existent.

      Nevertheless, Sigma will be alert for any other indications of chemical contamination, such as odor or visual disposition of the soil. Should such indications be present, an FID/PID vapor monitoring device will be readily available on-site to provide immediate qualitative characterization. If the monitoring instrument indicates possible presence of volatile/semi-volatile organics, then a soil sample will be collected and sent off-site to an EPA-certified third-party laboratory for further characterization.

   C. Confirm if chemical contamination is found, the licensee will stop work and consult with the NRC.

      Sigma Response: If chemical contamination is found, Sigma will stop work and consult with the NRC.

5. In response 2 e, the licensee states test trenching will be used in combination with radar to identify the location of the former septic tank and leach field.

   The licensee was asked to provide information regarding the trenching activity and what precautions would be taken to limit surface water run-off and groundwater intrusion. We need to understand the scope of this operation and the potential impacts as a result of it.

   Sigma Response: The contractor will use a mini excavator to trench as needed to locate the septic tank and associated laterals. All soils will be replaced immediately following sampling. Weather forecasts will be utilized to ensure trenching activity is done in dry weather. Additionally, sufficient water resistant covering will be on hand to cover any disturbed soil that has been found to contain activity above soil screening limits.

6. In response 6, the licensee states that Philotechnics Quality Assurance Project Plan is proprietary, and will be kept onsite for review by the NRC during inspection, but will not be submitted formally to the NRC. The NRC informed the licensee that the plan may be submitted to the NRC under an affidavit or it can be regarded as inspection related material sent to us for review and we will not put it into ADAMS and returns it after we have reviewed the material. We are currently checking with our Agreement State Officer, who will contact the State Program.

   The licensee was advised that if they still did not want to submit the plan to the NRC, that the NRC would consider an on-site visit, but the soonest that we could support this would be later in March (potentially March 19).

   Sigma Response:

   Sigma commits to ensuring that the decommissioning contractor follows a site-specific quality assurance plan consistent with the requirements of ASME NQA-1/10 CFR 830.120 for Nuclear Facilities and the guidelines specified in NUREG1575. The contractor has developed a written plan, the Quality Assurance Project Plan (QAPP) to achieve this requirement.

   Sigma also commits to ensuring that the decommissioning contractor follows a site-specific health and safety plan consistent with the following regulatory standards:

   - **OSHA Construction Standards, 29 CFR Part 1926, et seq.**
   - **OSHA General Industry Standards, 29 CFR Part 1910, et seq.**
   - **Standards for Protection Against Radiation, 10 CFR Part 20.**

   The contractor has developed a written site-specific plan, the Health And Safety Plan (HASP) to achieve this requirement.

   Both the QAPP and HASP are available for on-site inspection, and will remain on file as part of the historical decommissioning files.

The NRC stated that the above questions did not constitute a required resubmitted of responses to the request for additional information but a written response to this conversation record would be acceptable. The NRC and licensee set up a tentative site visit to review quality assurance project plans on March 20, 2009.

End of conversation record.

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