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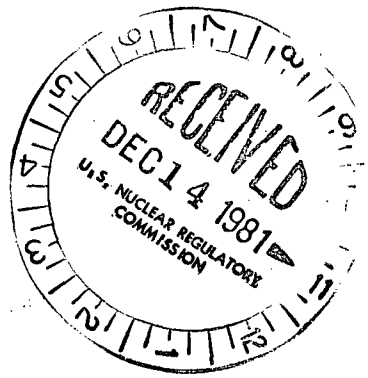
9 DEC 1981

Docket No. 70-687



Union Carbide Corporation
ATTN: Marcus H. Voth, Manager
Nuclear Operations
Medical Products Division
P. O. Box 324
Tuxedo, NY 10987

Gentlemen:

We have reviewed the information contained in your submittal dated December 23, 1980 on the subject renewal application for License No. SNM-639. In order for us to continue our environmental review, we request that you submit the additional information as described in the enclosed list.

Sincerely,

Original signed by
Leland C. Rouse

Leland C. Rouse, Chief
Advanced Fuel and Spent Fuel
Licensing Branch
Division of Fuel Cycle and
Material Safety

Enclosed: Additional information required

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ADDITIONAL INFORMATION REQUIRED

UNION CARBIDE CORPORATION

ENVIRONMENTAL ASSESSMENT

DOCKET NO. 70-687

Our review indicates that in order for an environmental assessment to be made concerning the environmental impact of the continued operation of the UCC's site, additional information is requested. The suggested format for this additional information is an Environmental Report (ER) as would be required under 10 CFR 70.21 (f). Suggested guidance for preparation of this information is the Draft Regulatory Guide entitled "Preparations of Environmental Reports for Nuclear Fuel Fabrication Plants," a copy which is enclosed. Disregard those sections which would not apply. The ER should address the following areas in considerable detail. These areas are:

- Description of liquid, gaseous, and solid waste effluent treatment systems - both radiological and nonradiological.

- Description of the environmental monitoring system and a quantitative description of historical environmental monitoring data.

- Description of UCC ALARA program.

- Description and analysis of credible accident for processing conducted in Building 2.

Information on Effluents

The discussion of the effluent systems (gaseous, liquid, and solid waste) should include schematic diagrams of the various systems. The diagrams need not be extremely detailed but should contain enough information to determine flow rates, location of filters, processing steps, accumulation points, monitoring points, etc. The discussion of the effluent treatment systems should include a description of the typical composition of the effluent. This composition includes radiological as well as chemical composition, physical attributes (e.g., particulate size distribution) and other relevant characteristics. If the particular effluent stream undergoes processing, (e.g., the liquid waste stream) then describe the processing that is performed.

The points where monitoring of one kind or another is performed should be identified on the schematic diagrams. The discussion of the monitoring should describe specifically what parameters are monitored (e.g., gross alpha, gross beta, ^{131}I, ^{131}I, heavy metals, pH, etc.) at each of the monitoring points. For those parameters that are monitored to ascertain compliance with a specific condition (SPDES, 10 CFR 20, etc.), identify the criteria for acceptance/rejection. Discuss whether compliance is on an individual measurement basis or on an average basis. Discuss the frequency of the monitoring (batch, continuous, weekly, etc.) for each monitoring point.

Describe the design features to ensure confinement of radioactive effluents under conditions of power failure, adverse natural phenomena, breakdown of

equipment, fire or explosion, improper flow of air, contaminated spills, and loss of filter integrity.

Sufficiently present data from the monitoring of liquid, gaseous and solid effluent from the UCC site to characterize the operation of the site during the last term of SNM-639 license.

Discuss the historical performance based upon these monitoring data. In particular, discuss trends, observation of effects of corrective actions, and any case where the specific data exceeded any applicable criteria.

Information on Environmental Monitoring Program

Briefly describe the environmental monitoring program that is in use at UCC. Discuss the frequency of sample collection, analysis performed (include the minimum detectable level for each analysis) and data reporting. Summarize the environmental data collected from the environmental monitoring program during the last 3-5 years of operations. If estimates of the radiological dose to an individual have been calculated based on monitoring data at any or all environmental monitoring stations, then provide estimates of these doses (explain the basis for the estimates).

ALARA and Health Physics Program

This section should provide information on methods for radiation protection and on estimated occupational radiation exposures to operating personnel

during normal operation and anticipated operational occurrences (including radioactive material handling, use, storage, and disposal; maintenance; routine operational surveillance; in-service inspection; and calibration). This section should also provide information on plant and equipment design, the planning and procedures programs, and the techniques and practices employed by UCC in meeting the standards for protection against radiation of 10 CFR Part 20 and the guidance given in the appropriate regulatory guides. Reference to other sections for information needed in this section should be specifically made where required.

Describe the management policy and organizational structure related to ensuring that occupational radiation exposures are ALARA. Describe the applicable activities to be conducted by the individuals having responsibility for radiation protection. Discuss the role and activities of the Nuclear Safeguards Committee with respect to SNM-639 activities.

Describe plant and equipment design considerations that are directed toward ensuring that occupational radiation exposures are ALARA. Describe how experience from any past designs is utilized to develop improved design for ensuring that occupational radiation exposures are ALARA and that contamination incidents are negated. Include any design guidance (both general and specific) given to the individual designers. Describe how the design is directed toward reducing the (1) need for maintenance of equipment, (2) radiation levels and time spent where maintenance is required, and (3) contamination in handling, transfer, and storage of radioactive materials.

Describe the methods used to develop the detailed plans and procedures for ensuring that occupational radiation exposures are ALARA and that operational safeguards are provided to ensure that contamination levels are as low as achievable.

Characterize the sources of radiation associated with the activities covered by SNM-639. Characterize the occupational exposure history at the site during the last term of the SNM-639 license. On an annual basis, provide, by job description, the number of people in the exposed, average exposure, maximum exposure, and the minimum exposure categories. Discuss the major contributor to occupational doses and illustrate how ALARA is being implemented at UCC's Tuxedo Park site.

Describe the administrative organization of the health physics program including the authority and responsibility of each position identified.

Provide the criteria for selection of portable and laboratory technical equipment and instrumentation for (1) performing radiation and contamination surveys, (2) airborne radioactivity sampling, (3) area radiation monitoring, and (4) personnel monitoring during normal operation, anticipated operational occurrences, and accident conditions. Describe the instrument storage, calibration, and maintenance facilities. Also describe the health physics facilities, laboratory facilities for radioactivity analyses, protective clothing, respiratory protective equipment, decontamination facilities (for equipment and personnel), and other contamination control equipment and areas that will be available.

Provide the location of the respiratory protective equipment, protective clothing, and portable and laboratory technical equipment and instrumentation. Describe the type of detectors and monitors; and the quantity, sensitivity, range, and frequency and methods of calibration for all of the technical equipment and instrumentation mentioned above.

Describe the methods, frequencies, and plans for conducting radiation surveys. Describe the health physics plans that have been developed for ensuring that occupational radiation exposures will be ALARA. Describe the physical and administrative measures for controlling access and stay time for radiation areas.

Describe the methods and plans for neutron, gamma, and x-ray personnel dosimetry for normal operations and criticality accidents including methods for recording and reporting results. Describe how dosimetric results are used as a guide to operational planning. The criteria for performing whole body and/or lung counting and bioassays should be provided. Describe the methods and procedures for evaluating and controlling potential airborne radioactivity concentrations, including any requirements for special air sampling. Discuss the use of respiratory protective devices including the respiratory protective equipment fitting programs and training of personnel.

Accident Safety Analyses

The evaluation of safety is accomplished in part by analyzing the response of the plant to postulated accident events in terms of (1) minimizing the causes

of such events, (2) the quantitative identification and mitigation of the consequences, and (3) the ability to cope with each situation should it occur.

There are two types of events that should be discussed in this section; abnormal occurrences and accidents. A description of the flooding of the waste water storage cell that occurred in March of 1979 should be provided. Other accidents or abnormal occurrences that should be discussed include loss of power, fire, and criticality.

Also provide a discussion of the natural phenomena at the site. Describe the plant's ability to withstand natural phenomena events.

Abnormal Occurrences

In this section events which could occur from malfunctions of systems, operating conditions, or operator error should be presented. In general, the magnitude of the events discussed in this section would not have a significant effect beyond the exclusion area.

Identify the occurrence including the location of event, type of failure of maloperation, and system or systems involved. Describe the sequence of occurrences that could initiate the event under consideration and the bases upon which credibility or probability of each occurrence in the sequence is determined.

The following should be provided:

1. Starting conditions and assumptions,

2. A step-by-step sequence of the course of each accident identifying all protection systems required to function at each step, and

3. Identification of any operator actions necessary.

The discussion should show the extent to which protective systems must function, the effect of failure of protective functions, the credit taken for process safety features, and the performance of backup protection should also include credit taken for the functioning of other systems and consequences of failure.

The analysis given should permit an independent evaluation of the adequacy of the protection system as related to the event under study. The results can be used to determine which functions, systems, interlocks, and controls are safety related and what actions are required by the operator under anticipated operational occurrence and accident conditions.

Discuss the means or methods to be provided to detect the abnormal operation using visual or audible alarms or routine inspections performed at a stated frequency. Provide for each an assessment of response time.

Analyze the effects and particularly any radiological consequences of the event. The analysis should:

1. Show the methods, assumptions, and conditions used in estimating the course of events and the consequences;

2. Identify the time-dependent characteristics, radioactivity and release rate of fission products, or other transmissible radioactive materials within the confinement system that could escape to the environment; and

3. Describe the margin of protection provided by whatever system is depended on to limit the extent or magnitude of the consequences.

Accidents

Provide in this section analyses of situations where primary and/or secondary confinement may credibly be breached to the extent of releasing radioactive materials beyond the exclusion area or in such quantity as to seriously endanger personnel within the exclusion and restricted area.

Identify for each accident, the location or portion of the facility involved, and the type of accident. Discuss each accident sequentially.

For each accident analyzed, describe and list the sequence of events leading to the initiation of the accident. Identify, with respect to natural phenomena, human error, equipment malfunction, or equipment failure. Address possible compound accidents, for example: a natural phenomena initiated equipment malfunction followed by human error and resultant equipment failure. Address the possible "domino effect" in Building 2 from a reactor accident. Include an estimate of probability and how this probability estimate was determined.

Analyze the effects and particularly any radiological consequences of each accident. As with the abnormal event analysis, show the methods, assumptions, and conditions used in estimating the consequences, the recovery from the consequences, and steps used to mitigate each accident. Assess the consequences of the accident to persons and property offsite.