



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



March 24, 1987

Mr. John Fleming
Chief, Environmental Compliance
AVCO Lycoming Textron
550 South Main Street
Stratford, CT 06497

Dear Mr. Fleming:

Please find enclosed comments regarding the closure plan for the surface impoundments at AVCO Lycoming. These comments reflect the concerns of DEP and EPA. Please revise your closure plan according to these comments and resubmit within 30 days. It is anticipated that the revised plan(s) will be public noticed.

Enclosed for your information, to assist you in preparation of the plan revision, are pertinent extracts from the EPA Protocol for Evaluating Interim Status Closure/Post-Closure Plans (August, 1986).

Should you have any questions regarding the closure of these surface impoundments, please do not hesitate to contact us.

Sincerely,

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NOTICE OF DEFICIENCY

I. Introduction:

The closure plan submitted by AVCO Lycoming has been reviewed. Based on this review, comments have been prepared regarding several issues which need to be addressed prior to final approval of the plan. These comments are divided into those of a general nature and those referring to specific statements in the submitted closure plan. The general comments present how certain closure regulations apply to AVCO Lycoming and indicate the manner in which closure and post-closure plans should be organized. In developing the specific comments the closure objectives of AVCO Lycoming were not presumed; therefore, it is likely that some of the comments will not apply to the final closure plan. A brief review of the closure requirements as they generally apply to surface impoundments precedes the comments.

II. Regulatory Requirements:

- A. The regulations pertaining to the closure of surface impoundments subject to interim status requirements are presented in 40 CFR Part 265 Subparts G, H and K and regulations referenced therein. Connecticut regulations pertaining to closure are presented in Section 22a-449(c)-29 of the State's Hazardous Waste Management Regulations.
- B. In order to close under Section 265.228(b) ("Clean Closure" applicable to storage, treatment and disposal surface impoundments (SIs)) owners and operators (owners) must remove all of the materials listed in Section 265.228(a) to specified standards (see Attachment I). Removal of these materials includes removal of contaminated groundwater.
 1. Methods to define the background chemistry of both groundwater and soil must be clearly outlined.
 2. Existing data to be used in defining background must be presented and evaluated for integrity.
 3. Groundwater monitoring (gwm) data is necessary to ensure that the closure standards of Section 265.228(b) are met.

A copy of EPA Region I's guidance concerning closure under Section 265.228 is enclosed (Attachment I).

- C. On May 2, 1986, EPA published in the Federal Register (50 FR 16422) amendments pertaining to closure and post-closure requirements of interim status and permitted facilities. The amendments contain provisions pertaining to owners of interim status surface impoundments who intend to remove all hazardous wastes at closure. Owners of storage and treatment SIs, as identified in their Part A permit, who are unable or unwilling to meet the requirements of Section 265.228(b), are required to close these impoundments under 40 CFR

Part 265, Subpart G and Section 265.310 (closure as a landfill) and must, as required under 40 CFR Part 265.112(c)(2), amend their closure plan to reflect changes in closure procedures. In addition, they must prepare and submit a post-closure plan pursuant to Section 265.110 and Section 265.118. This plan must satisfy the requirements of Section 265.116-120 and must be submitted after determining that the requirements of Section 265.228(b) will not be met.

- D. In order to be approved, a closure plan must demonstrate an owner's ability to satisfy the pertinent closure requirements. For example, an owner attempting to close SIs pursuant to Section 265.228(b) must present the method by which contaminated groundwater will be removed during the closure period. The proposed method must be technically adequate and feasible.
- E. An important point to consider: Regulated units (i.e. a unit receiving hazardous waste after July 26, 1982) closed under interim status regulations are nonetheless subject to the closure standards of 40 CFR Part 264. Specifically, units closed under Section 265.228(b) are subject to the closure by "removal or decontamination" standard of Section 264.228(a). Section 3005(i) of the 1984 Hazardous and Solid Waste Amendments to RCRA establishes this requirement.
- F. Pursuant to Section 265.90(b), interim status groundwater monitoring must continue throughout the closure period. Also, pursuant to Section 265.90(b) and Section 265.310(b)(2), groundwater monitoring in accordance with Part 265, Subpart F is required during the post-closure care period (30 years) at SIs closed as landfills. Section 22a-449(c)-29(g) of the Connecticut Hazardous Waste Management Regulations requires post-closure groundwater monitoring meeting State requirements regardless of manner of closure. The owner may petition to reduce post-closure requirements during the post-closure period.

As part of the closure and post-closure plans the owner should clearly describe the groundwater monitoring program currently being implemented at the facility; citing the applicable regulations.

III. General Comments:

- A. Closing pursuant to Section 265.228(b); "Clean Closure"
 - 1. For the following reasons it is quite unlikely that AVCO Lycoming will be able to demonstrate that contaminated soil and groundwater can be treated/removed to background levels:
 - a. Unlined surface impoundments are not hydrologically isolated from underlying aquifers.

- b. Contaminated groundwater has been detected (see gwm program reports) at AVCO Lycoming.
 - c. In order to treat the contaminated groundwater, the contaminant plume needs to be characterized.
 - d. Treating or removing the contaminated groundwater is likely to require many months or years.
 - e. In the absence of an extension, closure must take place within 180 days of the closure plan approval date.
2. As a result, it is anticipated that AVCO Lycoming will be required to submit a revised closure plan, which provides for closure as a landfill under Section 265.310, and a postclosure plan.

B. Organization of a Closure Plan

1. The objectives of closure need to be expressed explicitly. Cite the applicable regulations (for example, "clean closure" under Section 265.228(b) or closure as a landfill pursuant to Section 265.310).
2. The closure plan should be organized to clearly indicate the manner in which the closure objectives and associated requirements are to be satisfied.
3. Closure and post-closure plans are distinct items that satisfy different sets of requirements. They should be presented as such.
4. The closure plan submitted describes the steps to close four surface impoundments at the facility. Because the plan does not include a description of closure of storage units, the closure plan describes partial closure. The closure plan should state that the facility intends to perform a partial closure and that the partial closure includes all regulated land disposal units.

IV. Specific Comments

- A. Most of the closure plan submitted is based on an incorrect definition of "clean closure." Clean closure under Section 265.228(b) requires removal, from both soils and groundwater, of all contamination in excess of background (see Section II B of this document and also Attachment I).

- B. If, as is anticipated, AVCO Lycoming determines that clean closure of the surface impoundments is not possible, the requirements of closure and post-closure plans for a landfill can be found in the May 2, 1986 Federal Register and 40 CFR Sections 265.112 and 265.118. In addition to the Federal requirements, the State of Connecticut DEP strongly encourages removal of all hazardous waste and any contaminated soil which exceeds either Connecticut action levels for organic pollutants or ten times drinking water standards in a leaching test for inorganic pollutants.
- C. The Facility Description section should incorporate discussions of soil contamination and groundwater quality. Some of the soils information is presently located in other parts of the report but groundwater quality information is lacking in the closure plan document.
- D. The specific comments concern procedures described in the closure plan.

<u>Page/Paragraph</u>	<u>Comment</u>
1/1	Because wastewater from the plating area constitutes only a small portion of the total wastewater flowing to the treatment system, the sludge may contain hazardous constituents from sources other than the plating area. The closure plan should describe all sources of wastewater so that the sludge composition is better understood.
2/2	State the EPA Hazardous Waste Identification Number for the material placed in the surface impoundments. AVCO Lycoming is subject to Connecticut and Federal hazardous waste regulations. This applies to interim status and permitted facilities.
5/3	The expected date of closure must be revised.
6 and 7	Graphical presentation of geologic and stratigraphic information through the use of maps and cross sections is desirable.
10/2 and 13/1	Boring log information, laboratory soil data, aquifer test data, recent groundwater monitoring data, and evaluations of these data must be included to substantiate permeability and three dimensional groundwater flow direction.

- 11/3 An investigation of the tidal effects on groundwater flow should be undertaken to aid in determining groundwater flow direction(s).
- 13/2 Provide additional detail on the effects of soil strata on contaminant transport.
- 14/2 Indicate the applicability of precipitation and pan evaporation data presented in this paragraph.
- 15/1 and 2 The closure schedule must be revised.
- 18/2 A description and the results of soil sampling must be included in the closure plan.
- 19/4 The closure activities must comply with interim status regulations found in 40 CFR Part 265.
- 20/2 and 3 Waste characteristics must consider either hazardous constituents contributed by all sources of wastewater, based on a comprehensive environmental audit, or be limited by data from a comprehensive analysis of sludge and supernatant liquid for each lagoon. A list of hazardous constituents may be found in 40 CFR 261, Appendix VIII.
- 21/1 Soil and groundwater samples must be analyzed for all hazardous constituents, unless AVCO Lycoming can demonstrate that the analyses should be limited to a subset of this list. Based on the limited analysis performed on soil samples, it cannot be assumed that there is not contaminated soil beyond the lagoons.
- 24 The amount of contaminated material must reflect the amount of material (soil and groundwater) contaminated above background with hazardous constituents and the amount of material exhibiting a hazardous characteristic. The estimated amount of contaminated material must be increased to account for this.
- 28 & 29 Specify if the filter press will be that used in the new treatment system or contractor supplied. Provide details of the filtrate containment system if a contractor supplied press is used.
- Details of a periodic monitoring program for filtrate contamination must be provided if all filtrates are not routed through the treatment system.

The Connecticut DEP Water Compliance Unit must be notified of the additional treatment system inputs prior to commencement of operations.

29 and 30

For clean closure, the testing program to determine when the site is clean must include:

- o Groundwater and soil sampling procedures, including frequency;
- o A map indicating groundwater monitoring well and soil sampling locations. Note: one soil sample per lagoon is not adequate to assess contamination of soil with volatile organics;
- o Parameters to be tested for, including a justification of the parameters selected;
- o Test or analytical procedures to be used. Note: mass analysis is recommended for determining presence of constituents in soil to minimize additional sources of variation; and
- o A detailed discussion of the criteria to be used to evaluate test results in order to determine whether the site is considered clean. If the waste tested for is a characteristic waste, treatment and/or removal of contaminated material must continue until the sampled materials no longer exhibit a characteristic. If the waste is tested for a listed waste or constituent, the plan should specify the contaminant level at which soils will be considered clean. In most cases, the level specified will be the background concentration in surrounding uncontaminated soils. In some instances, "...below the level of detection" will be specified.

Soil sampling must be performed on all surface impoundments including the equalization lagoon.

31/2

The storage pad as described in this section may be considered a waste pile. Additional engineering and operational details must be provided before this proposal can be evaluated.

32/1

More stringent regulations concerning exporting hazardous waste became effective on November 8, 1986 (see 51 Federal Register 28664, August 8, 1986). The closure plan must incorporate these new requirements.

- 33/2 As part of restoring the excavated area the closure plan should describe what type of vegetative cover will be placed over the area.
- 34/1 The closure plan must describe procedures used to collect, sample, treat and dispose of, if necessary, washwater involved with decontaminating equipment/facilities.
- Treatment system components to be decommissioned must be identified and procedures for decontamination and removal should be specified.
- 34/2 The plan must specify that within 60 days of completion of closure of surface impoundment, the owner/operator will submit certification that the units have been closed in accordance with the approved closure plan.
- The certification must be sent by registered mail and must be signed by the owner/operator and an independent registered professional engineer.
- The plan should specify which closure milestones will be evaluated, at what intervals, to ensure adequate documentation of closure is developed.
- The plan must specify that documentation supporting the engineer's certification will be furnished upon request until the owner/operator has been released from the financial assurance requirements under Section 265.143(h).
- 37/1 The closure plan must include a revised cost estimate.

V. Public Comment Response:

During the Public Notice period the Environmental Defense Fund (EDF) and the Connecticut Fund for the Environment (CFE) expressed interest in commenting on the Avco Surface Impoundment Closure Plan. Joint comments (Attachment II) were received during an approved extension of the comment period. The following discussion summarizes and responds to these comments.

A. Level of Removal

1. EDF and CFE object to the intent to leave in place, without provision for post-closure care, soils containing contaminant concentrations higher than background levels.

DEP and EPA regulations require either removal of all contamination exceeding background levels (see attachment I) or provisions for post-closure care in compliance with 40 CFR 265.310. AVCO has been notified of this requirement in this Notice of Deficiency.

2. EDF and CFE suggest that contamination may be more extensive than reported, due to subsurface presence of peat capable of binding metals.

Available data are not adequate to support or refute this supposition. Further details regarding the soil contamination boring program and site hydrogeology have been requested by DEP and EPA in this Notice of Deficiency and shall be duly evaluated.

B. Use of the EP Toxicity Test

1. EDF and CFE consider the Extraction Procedure (EP) test inappropriate for use to determine extent of contamination by a listed waste.

This Notice of Deficiency recommends determination of extent of contamination through use of mass analysis, thereby avoiding biases introduced as a result of contaminant mobility and minimizing additional sources of contamination.

2. EDF and CFE consider the EP test inadequate to determine contaminant mobility, especially when the site hydrochemical environment is considered.

The points raised are worthy of consideration if clean closure is not attained. A site-specific study of waste constituent mobility, addressing spatial and temporal variability of the hydrogeologic and chemical environments, is desirable if a significant source of contamination remains on-site. Such a study is an appropriate part of the post-closure permitting process under the provisions of 40 CFR 270.

C. Contaminated Groundwater

1. EDF and CFE consider the removal of contaminated groundwater essential to reach background levels.

If clean closure is to be achieved contaminated groundwater must be addressed. This Notice of Deficiency requires AVCO to address this issue.

2. EDF and CFE imply the groundwater monitoring program cannot provide for adequate determination of background or groundwater flow direction.

The present groundwater monitoring program is technically adequate to give a general indication of the magnitude of the contamination problem at the site. Improvement of details of the groundwater monitoring program at Avco Lycoming has been required by Connecticut's Department of Environmental Protection Hazardous Materials Management Unit through Administrative Order HM-358 (Attachment III), issued September 25, 1986. It is expected that further groundwater data and interpretations will be incorporated into the revised closure plan as part of the response to this Notice of Deficiency.

The footnote regarding the inspection history at the site is inaccurate in detail: the 1984 inspection referred to was under EPA auspices. The statement that presence of mounding prevents determination of groundwater flow is not accurate; mounding may mask subtle regional flow directions but, by definition, is indicative of radial outward flow. The statement that no wells show water level fluctuations associated with the tidal cycle is not correct; in fact well number 5 is reported in the closure plan (page 11) to respond to tidal influence.

D. Other Comments

1. Analysis for Volatile Organics

EDF and CFE consider the proposed volatile organic sampling program inadequate.

DEP and EPA agree that the proposed volatile organic sampling program is inadequate thus this Notice of Deficiency requires additional sampling for volatile organics.

2. Temporary Waste Pile

EDF and CFE consider design details of the temporary waste pile inadequate.

DEP and EPA agree that the temporary waste pile design details are inadequate thus this Notice of Deficiency requires further technical details.

3. Export Requirements

EDF and CFE note that revision of the plan to reflect new export requirements is needed.

This Notice of Deficiency formally informs the company of this requirement.

4. Soil Permeability

EDF and CFE consider laboratory derived permeability values inadequate.

Several existing monitoring wells have had field permeability tests. This Notice of Deficiency requests this aquifer test data and also supporting laboratory data for the reported values.

5. Equipment Decontamination

EDF and CFE consider the description of equipment decontamination, particularly washwater collection, inadequately detailed.

DEP and EPA agree that the washwater collection procedures are inadequately described thus this Notice of Deficiency requests additional detail in the description of equipment decontamination procedures.

6. Vegetative Cover

EDF and CFE consider specification of vegetative cover details necessary.

DEP and EPA agree that specifications for vegetative cover are necessary thus this Notice of Deficiency requests additional details.

VI. Closing Remarks

- A. Please revise your closure plan according to these comments and resubmit within thirty days. The revised plan should specifically provide for contingent closure as a landfill with post-closure care if the clean closure performance standard cannot be met.
- B. All of the modifications should be consolidated into a single document (i.e. no amendments).
- C. While revising the plans keep in mind that they are reviewed by the public. Therefore, extra care should be exercised to present the plans in a manner which clearly indicates that the pertinent requirements have and will be met.

Ltr/John Fleming/AVCO Lycoming Textron
March 1987
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KF/vh
Enclosures