EXPLANATORY NOTE

Docket Number A-80-7
Document Subcategory II-I-44

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FROM: Gregory P. Lathan

TO: Synthetic Fibers NSPS Docket

SUBJECT: Correspondence between the Virginia State Air Pollution Control Board and Celanese Fiber Company's Celco Cellulose Acetate Manufacturing Plant Concerning Air Emission Data.

INTRA AGENCY MEMORANDUM
STATE AIR POLLUTION CONTROL BOARD

A-80-7

MEMORANDUM TO : Director, Region II

FROM : Engineer, Region II

SUBJECT : Permit Engineering Analysis - Registration No. 20304
Celanese Fibers Company, Narrows

DATE : November 22, 1974

Mailing Address : Celanese Fibers Co., P.O. Box 1000, Narrows 24124

INTRODUCTION

Company proposes to expand (1) cellulose acetate flake and (2) acetate fiber manufacturing process operations at existing plant by approximately 20%.

BACKGROUND

Chemical Plant to be expanded is located on Route 460 between Narrows and Pearisburg in a mountain valley. Employment is approximately 2000. This process expansion will not affect the size or control program for the coal fired power plant boilers where precipitators are being added. Odor near the plant is noticeable.

PERMIT APPLICATION

Company applied November 1, 1974, for a "new source" permit but this should be treated as a "modification" to increase capacity.

Chemical process expansion will result in the following capacities:

Manufacturing Process	Present Capacity	Permit Addition	% Increase	Total Capacity
1. Cellulose acetate flake from wood	14.9 tons/hr	2.23 tons/hr	15%	17.13 t/hr
2. Cellulose acetate fiber from flake	11.6 tons/hr	3.61 tons/hr	31%	15.21 t/hr

Control equipment will be as follows:

Manufacturing Process	Control Equipment	% Efficiency
1. Cellolose acetate flake	wetted baffle scrubber of Celanese design	99.7%
2. Cellulose acetate fiber	Activated charcoal	98.6%

Additional hydrocarbon storage capacity will be:

Acetone - 30,000 gal. underground tank with vapor collection system.
#2 Fuel oil - 500,000 plus 300,000 gal. above ground tanks without emission controls.

Stack test proposals were not made by the source. Employment was indicated unchanged at 2160. Schedule proposed as follows:

Commence construction	January 1, 1975
Complete construction	September 1, 1975

DISCUSSION

Source estimates of hydrocarbon emissions - the largest emission by far for expansion - are by material balance representing most of the make up material added to the fiber process. Stack test provisions are not indicated.

ENGINEERING EVALUATION

Process emissions to ambient air following control devices for expnasion are estimated by source as follows:

Manufacturing Process	Particulates	Hydrocarbons
(1) Cellulose acetate flake	0.1 lb/hr 0.4 ~~lbs~~/yr	0
(2) Cellulose acetate fiber	0	571 lb/hr 2500 tons/yr

Note that particulate emissions are insignificantly small. However, hydrocarbons are a huge 2500 tons/yr. This is primarily acetone - a highly volatile and flammable solvent. This 2500 tons/hr fiber process hydrocarbon emission will add to the existing 6950 ton/yr for a total 9,450 ton/yr hydrocarbon from the fiber process.

Although acetic acid is smelled near the plant, source estimates essentially zero additional emission from the flake manufacturing addition, which uses acetic anhydride in large quantities.

The source estimates 0 hydrocarbon emissions from the flake manufacturing process expansion. This emission would be 23.8 tons/yr if calculated in the same proportion as the existing plant's 6/15/72 registration for flake manufacturing. This would still be less than 1% of the fiber emission and its escape directly and immediately to the air (as opposed to waste water) from the plant is reportedly actually very low.

Emission control device collection efficiencies are high at a designed 99.7% for the flake wet centrifugal scrubber and 98.6% for the fiber activated carbon adsorber. The large emission tonnage relates to the large quantities of materials handled.

Emissions from additional hydrocarbon storage tanks are estimated as 1 ton/yr acetone and 8 tons/yr #2 fuel oil.

This present regional evaluation assumes the Richmond staff will determine compliance status of hydrocarbon emissions. Note this is an expansion instead of a new source, located in Region II.

RECOMMENDATION

Recommend approval subject to the following:

(1) quarterly and completion reports

(2) hydrocarbon emission approval by Richmond staff

(3) stack test as determined by Richmond staff.

R. O. Goetz