



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING & COMPLIANCE

APPLICATION PROCESSING AND CALCULATIONS

Table with 2 columns: Pages, Page, A/N, Date, Processed by, Checked by. Values include 6, 1, 493510 & 494095, 03/22/2011, AED, SMKE.

P/C to P/O EVALUATION FOR CHANGE OF CONDITION OF AN EXISTING CARBON ADSORPTION SYSTEM

Facility ID: 009668
Legal Owner or Operator: DELUXE LABORATORIES INC.
Mailing Address: 1377 N. SERRANO AVE. HOLLYWOOD, CA 90027-5623
Equipment Location: SAME AS ABOVE

Equipment Description:

A/N 493510 :P/C to P/O (change of condition of P/O F84309, A/N 459631)

AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

- 1. CARBON ADSORBER, CROFTSHAW, REGENERATIVE ADSORBER TYPE, FOUR CARBON CANISTERS, EACH 2'-10" DIA. X 4'-1" H. (INSIDE DIMENSIONS), EACH WITH 350 POUNDS OF CARBON, AND AN AUTOMATIC STEAM DESORPTION SYSTEM.
2. RECLAIMED SOLVENT TANK, DUAL COMPARTMENT, EACH WITH A 250-GALLON CAPACITY, AND ONE 3/4-HP TRANSFER PUMP.
3. EXHAUST SYSTEM WITH ONE 5-HP BOOSTER-AXIFLOW BLOWER, FOUR 3-HP EXHAUST BLOWERS AND ONE 7.5 H.P. STROBIC BOOSTER BLOWER VENTING TWELVE (IN ANY COMBINATION) FILM-CLEANING AND WET-GATE PRINTING MACHINES.

HISTORY:

On 12/03/08 Deluxe Laboratories submitted one application to change permit condition for Permit to Operate the equipment described above. The applicant was proposing to change the condition of the existing carbon adsorption system that is controlling perchloroethylene from the operation of twelve, in any combination, film cleaning and wet-gate printing machines. The change in condition of the existing permit to adjust the regeneration frequency does not result in an increase in emissions. A permit to construct was issued on 05/15/09. The applicant has been following the revised conditions.

The average & maximum operating schedule for this equipment:

Table with 4 columns: 18 hr/day, 6 dy/wk, 52 wk/yr (average); 24 hr/day, 7 dy/wk, 52 wk/yr (maximum)

This is a Title V facility, and the Title V renewal permit was issued to the facility on October 1, 2006. This project is the 2nd revision since the issuance of the Title V renewal permit.

The facility has had no citizen complaints filed in the last two years. However, the facility was issued a Notice of Violation on 04/16/2009 requiring the applicant to submit Forms 500-ACC and 500-SAM in



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timely manner, and NC # D28787 on 04/06/2010 requiring the facility to demonstrate compliance for all the operating boilers between 400,000 BTU/hr up to 2MM BTU/hr per Rule 1146.2. The facility has complied with both notices.

PROCESS DESCRIPTION:

The film development lab at Deluxe Hollywood develops color-positive, color-negative, and black & white film for the movie production industry. As part of this existing operation, the company controls perchloroethylene emissions released from the operation of film printing and cleaning machines by the regenerative activated carbon system under this project. Since the quantity of daily perchloroethylene usage at the facility has decreased during the past years and the District imposed a perchloroethylene usage cap of 10,000 ton/year upstream of the activated carbon system due to the NESHAP requirement, the applicant is requesting to change the operating condition of the existing permit to reflect the current operational criteria of the equipment. The proposed change of condition consists of, changing the adsorption cycle for each carbon drum (total of 4 drums) from 2 hours to 18 hours. This change in permit condition will not cause an increase in emissions from this equipment or the basic equipment it is venting.

The request for the change in the permit conditions for the perchloroethylene regenerative carbon control system was based upon the current use of the system. Historically, the APC was used to control the release of VOC from all of the cleaners and printers at Deluxe (prior to the use of perchloroethylene). During that period, much more VOCs were being sent to the APC and the limit for adsorbing/desorbing was a 2 hour cycle for all four drums (90 minutes for adsorbing on each of three drums and 30 minutes for the fourth desorbing drum. When Deluxe was required to change to perchloroethylene (in 1995), solvent recovery was added to the operation due to the high cost of perchloroethylene. Now the majority of film cleaners use other solvents and cannot be vented to this APC due to solvent cross contamination. The wet-gate printers are the primary source of perchloroethylene into the APC. Thus, there has been a significant reduction of perchloroethylene sent to the APC.

The maximum (permitted) amount of perchloroethylene sent to the APC was capped by permit condition at 10 tons/year (20,000 lb/yr) equivalent to 54.8 lb/day. This equates to 13.7 pounds (lb) of perchloroethylene per day for each carbon drum. Since each canister has 350 lb of carbon, the carbon loading would be less than 4 percent of the carbon in each drum (13.7 lb/350 lb) each day. For general loading of carbon, carbon manufacturers recommend a 20 percent loading capacity ($0.2 \times 350 \text{ lbs} = 70 \text{ lb/drum}$). Thus, based upon permitted limits of perchloroethylene sent to the APC, increasing the loading period from 2 hours to 18 hours (the remaining 6 hours would be in desorbing mode) would result in the loading of each drum to close to 4 percent of its capacity and well below the manufacturer's 20 percent specification.

Deluxe conducts daily inlet and outlet testing of the carbon control system and the data consistently shows the current system having over a 98 percent control efficiency. Thus, the carbon system will operate well below its recommended capacity and achieve a control efficiency of 85% required by Rule -1425 (d)(1). The APC system is not required to comply with NESHAP as long as the equipment complies with the permit conditions (10 ton/year perchloroethylene input to the carbon bed).



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The request for the extended adsorption time also provided several environmental benefits. First, the amount of steaming cycles would be reduced significantly, saving water and reducing wastewater levels. Second, steaming for a longer period of time will more efficiently “clean” the carbon and achieve higher recovery rates of perchloroethylene. Finally, it reduced the steam requirements from the boilers, reducing their operation and emissions.

The company also requested removal of permit condition no. 5 that required that “only 9 of the 12 of any combination of film cleaning machines and film printing machines vented to this equipment shall be in operation at any one time.” This condition was originally imposed when there was a lot of solvent being vented to the APC. Since the 10,000 lb/yr perc limit has been imposed and many film cleaners have been converted to other solvents and no longer vented to the carbon, this condition was removed.

EMISSION CALCULATIONS:

The emissions are perchloroethylene and TOG:

Assume that 20,000 lbs/year, 365 days per year of perchloroethylene will run through carbon system.

$20,000 \text{ lbs/year} / 365 \text{ days/year} = 54.8 \text{ lbs/day}$ of perc. will enter the carbon system

Maximum daily quantity of perchloroethylene enters each drum $54.8 \text{ lbs/day} / 4 \text{ drums} = 13.7 \text{ lbs/day}$

The amount of carbon in each drum is 350 pounds

There are a total of 4 carbon drums in parallel

At 20% carbon adsorption capacity:

$(0.2 \times 350 \text{ lbs carbon in each canister}) = 70 \text{ lbs of perc. can be adsorbed/canister}$

In this case $(13.7 \text{ lbs per drum}) / (350 \text{ pounds of carbon})(100) = 4 \text{ percent of weight of carbon}$
Therefore, the system is adequate to handle the operation under the new the proposed condition.

Emissions of Perc/TOG will be:

R1, Perchloroethylene, TOG = $(54.8 \text{ lbs/day}) / (18 \text{ hrs/day}) = 3.05 \text{ lb/hr}$

R2 = Perchloroethylene, TOG $[(54.8 \text{ lbs/day})(1-0.90)] / (18 \text{ hrs/day}) = 0.3 \text{ lb/hr}$

To be conservative, assume that the equipment operates 5 days per week, 50 wks per year or 250 days/yr:

$20,000 \text{ lbs/yr} / 250 \text{ days/year} = 80 \text{ lbs/day}$ or $20 \text{ lbs/canister/day}$.

This is still well below the carbon adsorption capacity of 20% or 70 lbs.
 $(20 \text{ lbs perc.}) \div (350 \text{ lbs of carbon})(100) = 5.7\%$ which is below 20%



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AIR TOXIC EVALUATION:

The proposed change of condition request for this equipment will not result in an increase in toxic emissions.

RULE EVALUATION:

- Rule 212(c)(1): This section requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school. Since there is no school located within 1,000 ft, a public notice is not required.
- Rule 212(c)(2) &(g): These sections require a public notice for all new or modified facilities or sources that have on-site emission increases exceeding any of the daily maximums as specified by Rule 212(g). The change in condition of the carbon adsorber permit will not result in an emission increase, therefore, public notice is not required.
- Rule 212(c)(3): Public notice is not required – there is no increase in toxics emissions.
- Rule 401: Compliance is expected. Visible emissions are not expected with the proper operation of the equipment.
- Rule 402: Compliance is expected. Nuisance is not expected with the proper operation of the equipment, no complaints on file.
- Rule 1303(a): The change in condition of the carbon adsorber permit will not result in an emission increase of any criteria pollutant, therefore, the equipment is not subject to BACT requirement.
- Rule 1303(b)(1): Modeling for perchloroethylene is not required.
- Rule 1303(b)(2): There are no emission increases from the facility as a result of this change. Therefore, offsets are not required.
- Rule 1401: Compliance is expected. The proposed change of condition of the existing permit will not result in an increase in toxic emissions. Therefore, this rule is not triggered.
- Rule 1425: Perchloroethylene from the film cleaning and wet-gate printing machines at this facility will continue to be vented to the carbon adsorber with at least 90% collection efficiency (rule requirement is 85%). Compliance is expected.



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REGULATION XXX: TITLE V

This equipment was previously issued Permit to Construct and was included in Section D of the Title V facility permit. Since the change of condition is completed, and the equipment has been operating under the new conditions, a permit to operate is recommended since the applicant has demonstrated to the District that this equipment operated in compliance with all applicable rules and regulations.

This revision also includes several other changes, as summarized in the following table (these evaluations were done separately). The following table summarizes the cumulative emission increases resulting from all permit revisions since the Title V renewal permit was issued:

Title V Permit Revisions Summary

Revision	HAP	VOC	NO_x	PM₁₀	SO_x	CO
1 st Permit Revision, modification of eight film cleaning and two film printing machines by venting them to a new RTO (Application #s 481187, 481189-98), removal of A/N 418285 (F64065), a film cleaning machine.	0	0	1	0	0	0
2 nd Permit Revision, change of condition of one activated carbon permit under P/O F84309 by changing the adsorption cycle (A/N 493510)	0	0	0	0	0	0
3 rd Permit Revision, De minimis Significant Revision: installation of a functionally identical film cleaning (A/N 511419), install new ICE (A/N 516869), Administrative Revision: P/C to P/O for RTO (A/N 481187), Carbon Adsorber (A/N 493510), 8 film cleaners (A/N 481189-481196) & 2 wet-gate printers (A/N 481197-8)	0	0	11	0	0	3
Cumulative Total	0	0	12	0	0	3
Maximum Daily	30	30	40	30	60	220



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Pursuant to Rule 3000(b)(1)(D), the issuance of a final Permit to Operate for equipment previously issued Title V Permit to Construct is considered as an “administrative permit revision”. A final permit to operate for equipment will be used to previously issued Title V permit to construct, with no change in permit terms and conditions except for the removal of permit to construct terms or conditions which are no longer applicable. However, since this revision will be included with the “de minimis significant revision” for the new ICE and replacement of a film cleaning machine, it will be sent to EPA for 45-day reviews before issuance of the revised TV permit. This will also include the administrative revision to convert P/Cs to P/Os for a RTO, 8 film cleaning machines and two wet-gate printers.

CONCLUSION/RECOMMENDATION:

The proposed project is expected to comply with all applicable District Rules and Regulations. The proposed project is considered as an administrative revision, however will be included with the “de minimis significant permit revision”. It is exempt from the public participation requirements under Rule 3006(b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V permit will be issued to this facility with P/Os for this carbon adsorber, the RTO, 8 film cleaning machines and two wet-gate printers, and replacement film cleaner, and P/C for the IC engine.