

T. B. BONNEY
PITTSBURGH OFFICE

MR. G. D. BRUNO
WENATCHEE WORKS

December 19, 1967

CONFIDENTIAL

RE: INDUSTRIAL HYGIENE

PLAINTIFF'S EXHIBIT

AL-1900

Concerning our recent phone conversation, you mentioned that the Marinite sawing operation on the unventilated Carpenter Shop Circular Table is a regular job. It entails perhaps 1 1/2 - 2 hrs. per day. Because of the regularity of the job, we feel that the dust generated should be controlled by exhaust ventilation; especially in view of the bad favor in which asbestos is presently being held.

Respiratory protective devices have serious limitations and to use them as primary environmental control measures is poor industrial hygiene practice. Their applications are intended for experimental or infrequent operations and, in the case of regular jobs, where the contaminants cannot be adequately controlled by other means.

Ventilation systems are commonly used on table saws such as you described. I have enclosed an example of one taken from the ACGIH Industrial Ventilation Manual. Even in the light of your recent dust survey, we recommend that the feasibility of ventilating the saw be examined.

I spoke to Dr. Colwell concerning the asthmatic who works in this area. He stated that dust of any type will tend to irritate an asthmatic, however, it would appear that this man is not sensitive to the Marinite components. If effective engineering controls are installed, he will probably tolerate his environment quite well. If the man is sensitized to Marinite, he and everyone else will be aware of it, and the man won't be able to tolerate a minimal amount, even after installation of control methods.

Dr. Colwell feels that it would not be wise to have the man make a special visit to discuss his problem with Dr. Miller. However, if your local physician already is familiar with the case, Dr. Colwell would like to discuss the case with him and suggests that Dr. Miller give him a call at his convenience.

Concerning the degreaser in the Mold Maintenance room, it would appear that the degreaser hood is not ideally located. Apparently, the canopy hood carries the solvent vapors past the worker's nose. I've also enclosed a drawing of a ventilation scheme (slot ventilation) commonly used on degreaser units.

I might also add that, quite often, it is possible to operate small degreasers (e.g. less than five square feet surface area) without any ventilation control whatsoever. This requires that

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the degreaser be maintained according to the manufacturer's recommendations, be located in a large room (e.g. more than 20,000 cu.ft.) with few drafts and not be used for parts whose configuration cause the liquid solvent to be carried out. If your operation can meet these qualifications, you may be able to attain better control with the canopy hood removed. (see the enclosure from the ASTM Vapor Degreasing Handbook)

I spoke to Mr. Small about the ventilation of the table saw and degreaser. Should your engineering people desire any assistance from Pittsburgh Environmental Control Engineering, they will be pleased to help out in any way they can.

Finally, a word about the collection and evaluation of coal tar pitch volatiles. Glass fiber filters do not tend to pick up much moisture from the air as does filter paper. If the sample you collect is 10 milligrams or less, you will probably wish to desiccate the glass fiber filter before weighing--both prior to and after sampling. If your sample weight is more than 100 mg., you can forget the desiccation step unless you have reason to suspect that you have collected water with your pitch fume sample. If the sample weight is somewhere between 10 and 100 mg., you'll have to play it by ear. Whether or not you make a correction for water pick-up will depend on how well you like the uncorrected concentration value.

If, by any chance, you get into any benzene extraction of the collected material, a blank on an unused filter is a must. I have seen reports that some of the blanks run pretty high. If they are high and variable, washing them with benzene (i.e. prior to the initial weighing) may be helpful.

Hope the enclosures prove useful to you. Best wishes for the holidays.

Thomas B. Bonney

TBB:mh

Enclosures*

cc: D. W. Hitson - Attn: B. R. Small, Pgh - 2
✓ M. O. Colwell, L. V. Cralley, file

*Ind. Vent. Manual

① pg 4-10

VS-706

VS-501

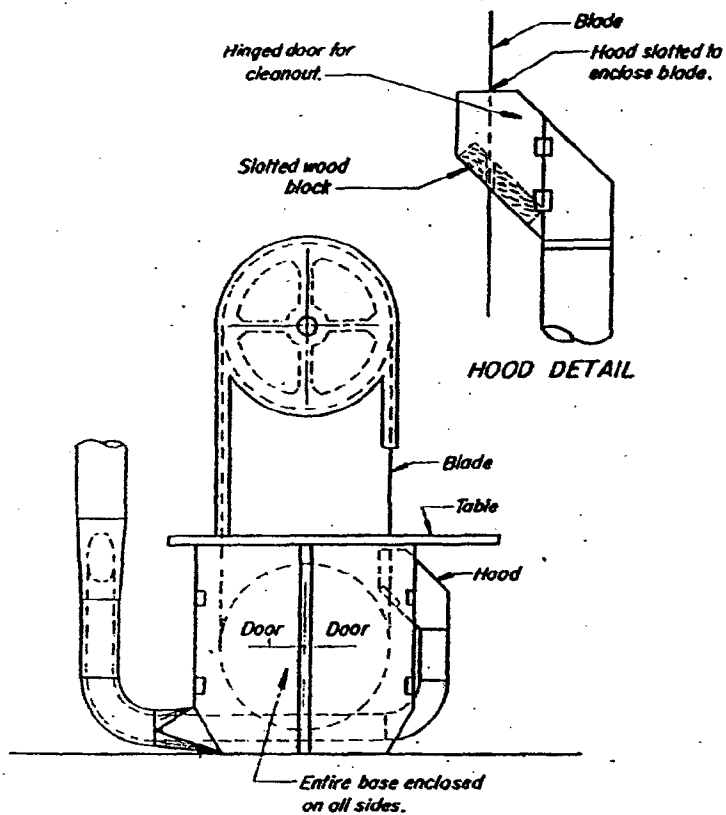
VS-708

② ASTM Handbook on Vapor degreasing pg 15

③ 1967-TLV's

④ A/248. Nov-Dec 1967 "Meeting Compliance with TLV's for Respirable Dust."

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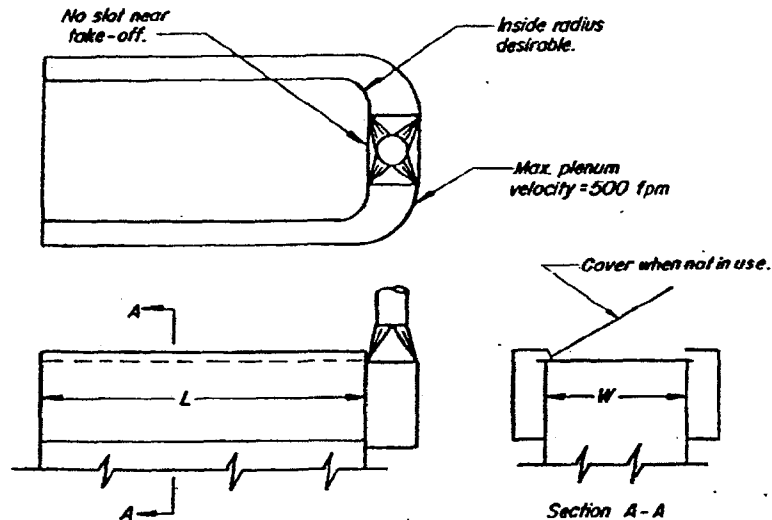
Blade width, inches	Exhaust volume, cfm		
	Bottom	Top	Total
Up to 2	350	350	700
over 2 to 3	350	550	900
over 3 to 4	550	800	1350
over 4 to 6	550	1100	1650
over 6 to 8	550	1400	1950

Duct velocity = 3500 fpm.
Entry loss = 1.0 duct VP

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BAND SAW

DATE 1-64 VS-706



$$Q = 60 LW^*$$

Slot velocity = 1000 fpm maximum

Entry loss = 1.78 slot VP + 0.25 duct VP

Also provide:

1. Separate flue for combustion products if direct-fired unit.
2. For cleaning operation, an air-line respirator is necessary.
3. For pit units, the pit should be mechanically ventilated.

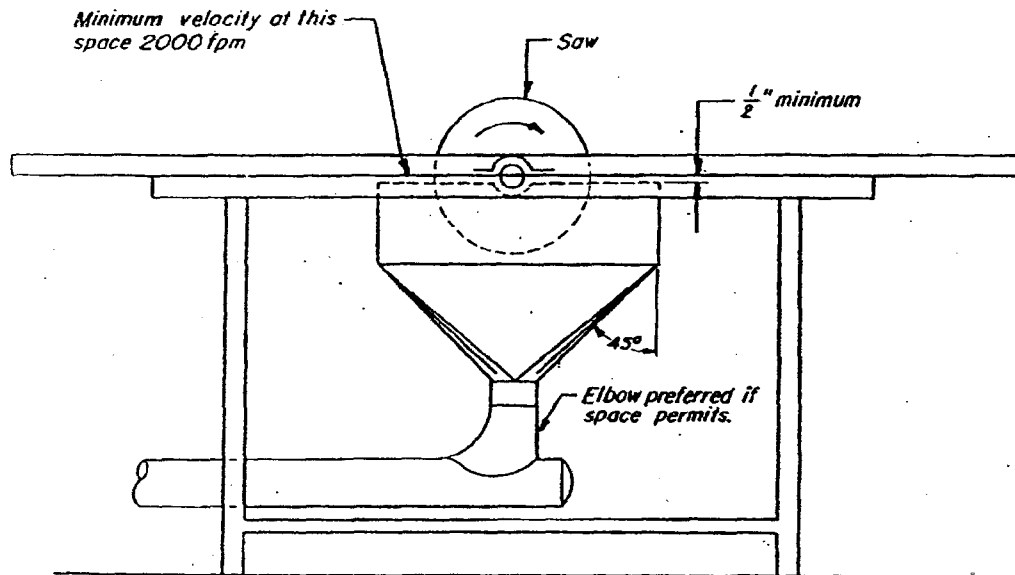
NOTE: Provide downdraft grille for parts that cannot be removed dry; $Q = 50$ cfm/sq ft grille area.
 Properly operated, properly located degreasers may not require ventilation in rooms over 20,000 cu ft in volume.

* ASTM Handbook of Vapor Degreasing.

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SOLVENT DEGREASING TANKS

DATE 1-64 VS-501



Table, rip, mitre and variety saws.

Saw diameter, inches	Exhaust volume, cfm
Up to 16 incl.	350
over 16 to 24 incl.	440
over 24	550
variety with dado	550

Duct velocity = 3500 fpm

Entry loss = 1.0 slot VP + 0.25 duct VP

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TABLE SAW

DATE 1-64

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machine is being cleaned out, all gas, including the pilot, should be shut off. Thermostatic control should be provided to shut off all gas if the boiling temperature of the liquid gets beyond a preset temperature. Oils and greases dissolved in the solvent raise the boiling point, and this rise should be limited. For trichlorethylene, a setting of 235 to 240 F is recommended, with 295 F for perchlorethylene machines. In normal operation, the degreasers should be cleaned out before becoming this heavily contaminated, as discussed later under Degreaser Operation. The high temperatures possible with gas make such control mandatory and it should be of the manual reset type. An automatic valve or device should be installed in the gas supply line for shutting off the gas in case of excessively high vapor level. This should be of the manual reset type calling for investigation of the cause of high vapor level and then manual resetting of the valve.

3. Electrically Heated Degreasers.—Except for the small laboratory units, all electrically heated degreasers should be provided with thermostats to shut off heat due to excessively high vapor level, or elevated temperature of the boiling liquid, and if possible a device for shutting off heat in case of low liquid level. A low liquid level device can be thermostatic or of the mechanical float type. In all cases, the wiring should be for manual resetting.

Mechanical Ventilation:

Mechanical ventilation should be considered for tanks having an open area of 5 sq ft or more and installed in a room smaller than 20,000 cu ft. The ventilating system is best designed and provided by the manufacturer of the degreasing equipment. Where exhausting is applied to open tanks, suction slots running the length of the two opposite longer sides

with a connecting chamber at one end, are used. The connecting chamber is provided with a take-off for local exhaust or for a separate motor and blower. Exhaust rates are generally of the magnitude of 60 cu ft per min per square foot of evaporative area with velocities at the slot of 500 to 1200 ft per min. However, local laws should be checked. Exhausting of conveyorized units is generally by means of an indraft into the work openings so as to create a movement of air into the hoods. Exhaust rates will vary from 50 to 100 cu ft per min per square foot of work opening and are not based on the area of the vapor level within the unit. Care should be exercised in locating ventilation exhaust stacks to ensure that exhaust gases do not return to the building.

Safety Precautions:

1. Means for cleaning out the degreasing equipment without any one having to enter should be incorporated in the design insofar as possible.
2. Ample sized cleanout door plates strategically located, steam coils on removable cleanout plates, electric heating elements on removable cleanout plates, and removable plates near spray zones, in the case of a spray unit, are essential.
3. A permanent caution sign about conditions under which entry is possible should be affixed to all such openings.
4. Covers should be provided for all open tank units so that when not in use the equipment is covered completely.
5. Safe handling procedures are covered in detail in the section on General Hazards of Perchlorethylene and Trichlorethylene.

LOCATION OF SOLVENT DEGREASING EQUIPMENT

While usually the sequence of work-flow through the plant is the prime factor in determining the location of

This copy for Dr. L. V. Cralley - Pittsburgh Office

G. D. BRUNO

MR. W. E. MATHEWS

WENATCHEE WORKS

WENATCHEE WORKS

CONFIDENTIAL

December 22, 1967

RE: MARINITE SAWING - CARPENTER SHOP

At the request of Mr. Harris, an air test was conducted in the Carpenter Shop on Wednesday, December 13, 1967. The purpose of the test was to determine air loading by Marinite dust after sawing operations.

The results of the test showed that the increase in dust loading caused by Marinite sawing was substantially below the 5 mppcf threshold limit value established by the American Conference of Governmental Industrial Hygienists, 1967. The test results ranged from 0.07 mppcf to 2 mppcf. The test covered a time period of about an hour and a half.

Based on the examination of the work cycle, the materials involved, and the test results, there does not appear to be a significant hazard in the Carpenter Shop which can be associated with Marinite, provided that conditions remain the same as those encountered during the test.

Workmen should, of course, continue to wear adequate personal protection [dust masks] during the actual sawing of Marinite.

If you have any questions, please call me.

G. D. BRUNO

GDB:asm

cc: J. E. Harris
H. C. Doerschuk/R. W. Stephens
Dr. L. V. Cralley - Pittsburgh Office

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