PLAINTIFF'S EXHIBIT

UC-1801

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME Insulation Shop * BLDG. NUMBER 164

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Vacuum Canister

HOOD LOCATION Insulation Band Saw MATERIAL EXHAUSTED Dust Collection

OVERALL HOOD DIMENSIONS (INCHES): LENGTH _____ HEIGHT _____ WIDTH _____ DEPTH _____

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS _____FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT _____ WIDTH _____

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM _____

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM _____

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM _____ HEIGHT _____ WIDTH _____

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION _____

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION _____

AREA _____ SQUARE FEET VELOCITY _____FPM VOLUME _____CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____

* This shop is being relocated



REMARKS: This is used in conjunction with an air ejector and between the two they collect most of the dust generated by the saw, but the finer dust particles go right through the bag and back into the room air

BRE 0094

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME Control Room BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Recovery HOOD TYPE Compensating

HOOD LOCATION Recovery Lab MATERIAL EXHAUSTED AcOH, Ac_2O, MEK, EtOAc, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 26 WIDTH 38.5 DEPTH 23

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 125 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 26 WIDTH * 38.5

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 125 * HEIGHT 26 WIDTH 38.5

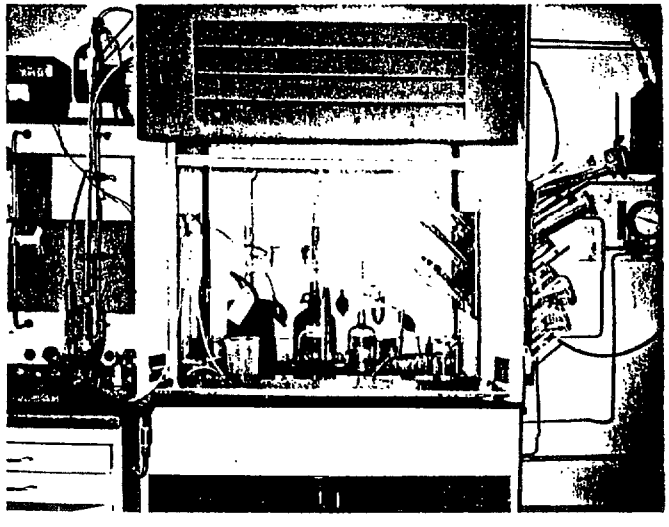
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 15"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 6.951 SQUARE FEET VELOCITY 125 FPM VOLUME 869 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * Good flow

BRE 0095

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME Control Room BLDG. NUMBER 731

UNIT IN WHICH BLDG. LOCATED Reaction #1 HOOD TYPE Slot/Booth

HOOD LOCATION Reaction #1 Lab MATERIAL EXHAUSTED AcOH, Butane, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 29 HEIGHT 18 WIDTH -- DEPTH 11.5

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM Beyond edge of sink

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 2000

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 200 HEIGHT -- WIDTH --

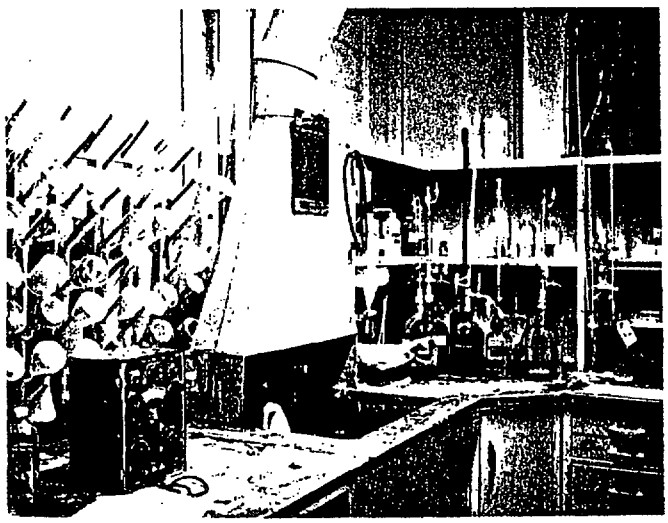
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 17

AREA 2.417 SQUARE FEET VELOCITY 2000 FPM VOLUME 4833 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0096

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME Control Room BLDG. NUMBER 821

UNIT IN WHICH BLDG. LOCATED Reaction #2 HOOD TYPE Slot/Booth

HOOD LOCATION Reaction #2 Lab MATERIAL EXHAUSTED AcOH, Butane, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 33 HEIGHT 18 WIDTH -- DEPTH 10

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM 7

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 250

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 50 * HEIGHT -- WIDTH --

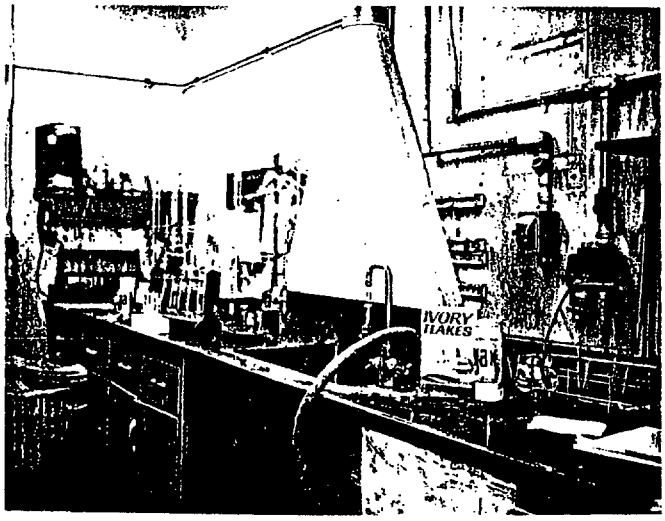
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 14

AREA 3.438 SQUARE FEET VELOCITY 250 FPM VOLUME 945 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: *Very low flow

BRE 0097

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME Carpenter Shop BLDG. NUMBER 164

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Vacuum Canister

HOOD LOCATION Radial Arm Saw MATERIAL EXHAUSTED Dust Collection

OVERALL HOOD DIMENSIONS (INCHES): LENGTH _____ HEIGHT _____ WIDTH _____ DEPTH _____

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS _____ FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT _____ WIDTH _____

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM _____

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM _____

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM _____ HEIGHT _____ WIDTH _____

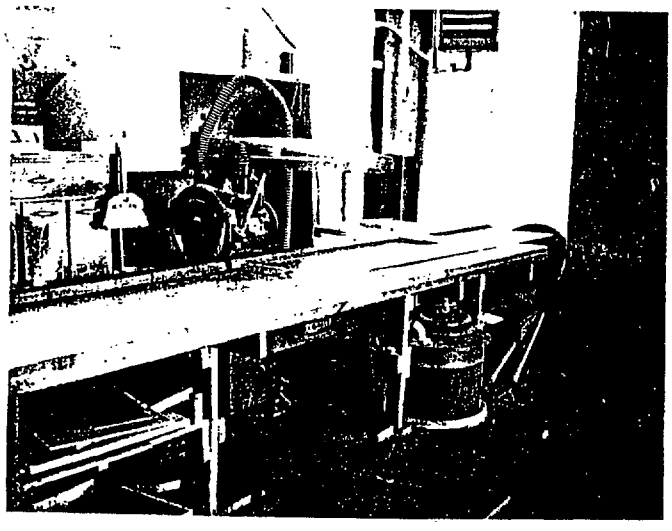
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION _____

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION _____

AREA _____ SQUARE FEET VELOCITY _____ FPM VOLUME _____ CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____



REMARKS: Keeps the fine dust particles away from the workers

BRE 0098

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME Machine Shop BLDG. NUMBER 424

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Vent

HOOD LOCATION DeZurik Valve Room MATERIAL EXHAUSTED Chlorothane

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 18.5 WIDTH 44 DEPTH 24.5

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 18.5 WIDTH 44

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 140 HEIGHT 18.5 WIDTH 44

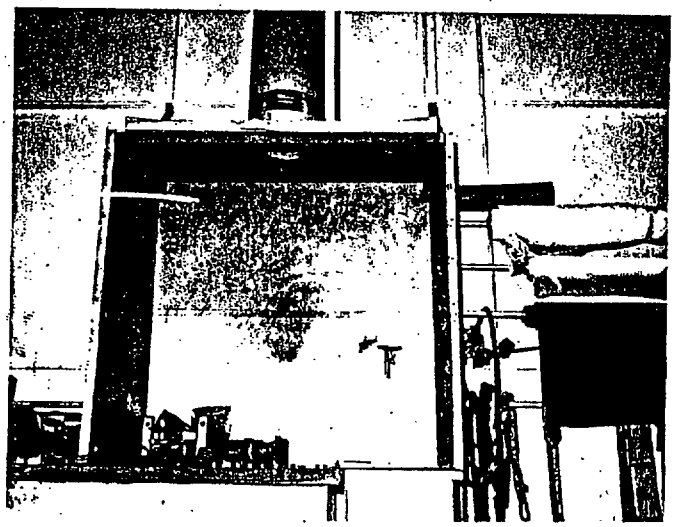
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 5.653 SQUARE FEET VELOCITY 140 FPM VOLUME 791 GFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Disc FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0099

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 2/10/78 BUILDING NAME PRV Room BLDG. NUMBER 424

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Vent/Booth

HOOD LOCATION PRV Room MATERIAL EXHAUSTED Paint Fumes

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 29.5 WIDTH 30 DEPTH 30

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 180 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 29.5 WIDTH 30

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 300 * HEIGHT 22 WIDTH 30

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 4.583 SQUARE FEET VELOCITY 300 FPM VOLUME 1375 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____



REMARKS: * Good flow

BRE 0100

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Welding Shop BLDG. NUMBER 424

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Cone

HOOD LOCATION Northeast of Shop MATERIAL EXHAUSTED Welding Fumes

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 8.5 HEIGHT 8.5 WIDTH 8.5 DEPTH --

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 3000 *

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM -- HEIGHT -- WIDTH --

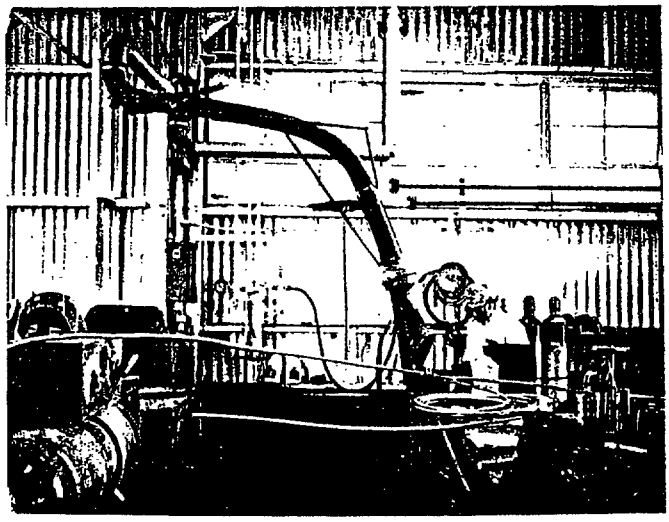
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 6 - 9

AREA 0.394 SQUARE FEET VELOCITY 3000 FPM VOLUME 1182 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * Good flow

BRE 0101

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME welding shop BLDG. NUMBER 424

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Cone

HOOD LOCATION Southeast of shop MATERIAL EXHAUSTED Welding Fumes

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 8.5 HEIGHT 8.5 WIDTH 8.5 DEPTH --

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 3000 *

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM -- HEIGHT -- WIDTH --

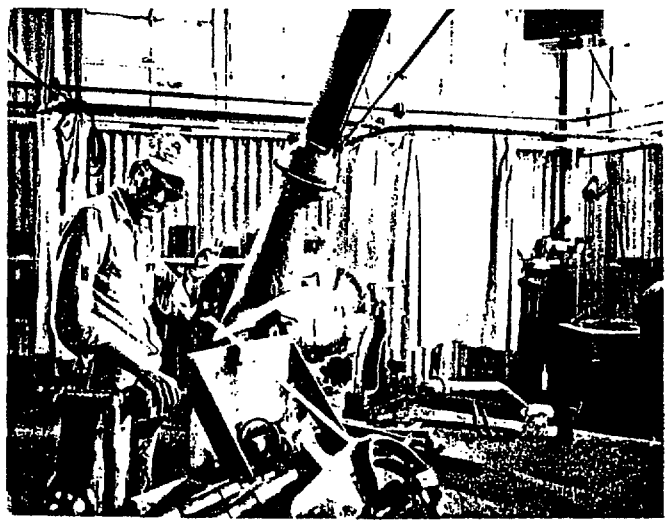
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 6 - 9

AREA 0.394 SQUARE FEET VELOCITY 3000 FPM VOLUME 1182 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * Good flow

BRE 0102

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Welding Shop BLDG. NUMBER 424

UNIT IN WHICH BLDG. LOCATED Maintenance HOOD TYPE Cone

HOOD LOCATION Southwest of Shop MATERIAL EXHAUSTED Welding Fumes

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 8.5 HEIGHT 8.5 WIDTH 8.5 DEPTH --

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 3000 *

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM -- HEIGHT -- WIDTH --

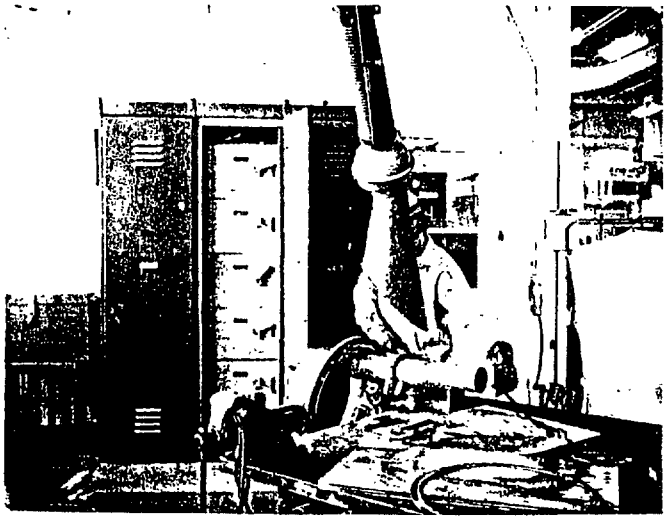
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 6 - 9

AREA 0.394 SQUARE FEET VELOCITY 3000 FPM VOLUME 1182 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * Good flow

BRE 0103

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION Chemicals Bench East Side MATERIAL EXHAUSTED Acids, Esters, Ketones, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 28 WIDTH 42 DEPTH 27

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 60 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 18 WIDTH 42

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 60 * HEIGHT 28 WIDTH 42

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 8.167 SQUARE FEET VELOCITY 60 FPM VOLUME 490 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Low flow

BRE 0104

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION Chemicals Bench West Side MATERIAL EXHAUSTED Acids, Esters, Ketones, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 28 WIDTH 42 DEPTH 27

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 150-200 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 28 WIDTH 42

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 175 * HEIGHT : 28 WIDTH 42

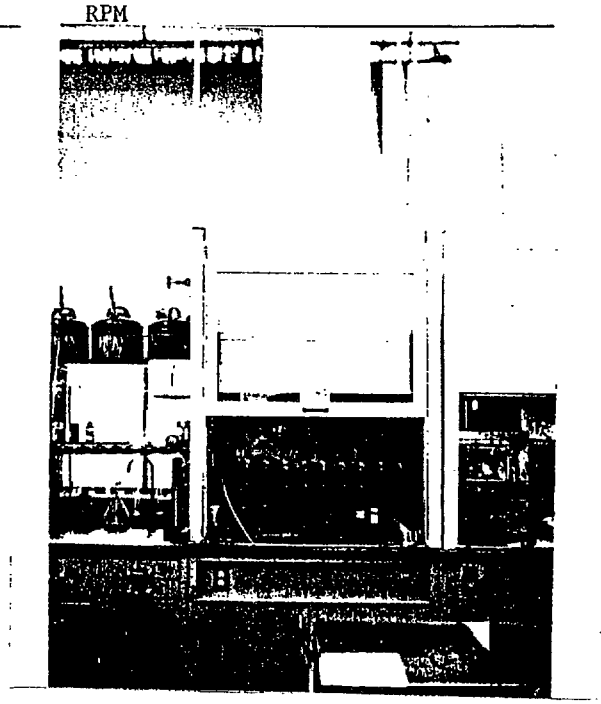
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 14"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 8.167 SQUARE FEET VELOCITY 175 FPM VOLUME 1429 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Disc FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Excellent flow

BRE 0105

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION Southwest side of Lab MATERIAL EXHAUSTED Acids, Ketones, Esters, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 28.5 WIDTH 41.5 DEPTH 26.5

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 50 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 15 WIDTH 41.5

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 90* HEIGHT .18 WIDTH 41.5

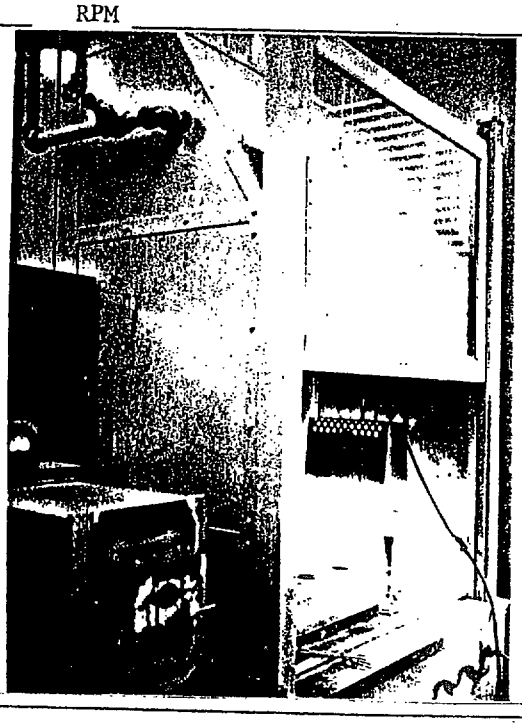
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 5.188 SQUARE FEET VELOCITY 90 FPM VOLUME 467 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Low flow, but no apparent problems

BRE 0106

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION VFA Room MATERIAL EXHAUSTED Acids, Esters, Ketones, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 29 WIDTH 23 DEPTH 21

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 70 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 11 WIDTH 23

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 70 * HEIGHT 29 WIDTH 23

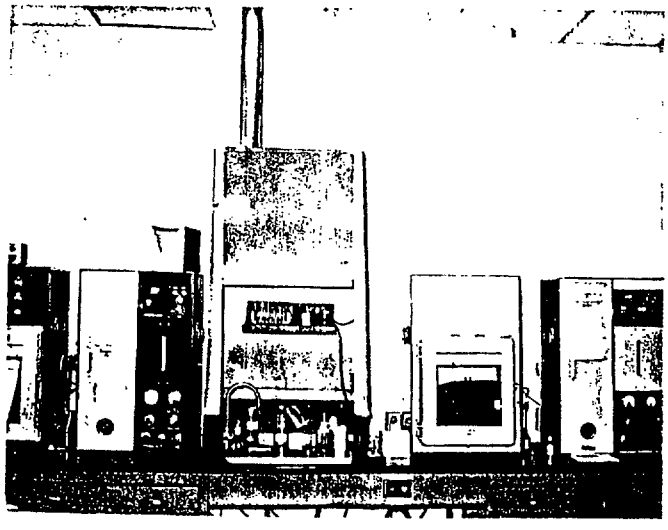
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 4.632 SQUARE FEET VELOCITY 70 FPM VOLUME 324 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * This flow is adequate for the small amounts of chemicals used

BRE 0107

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION Southeast side of Lab MATERIAL EXHAUSTED Acids, Esters, Ketones, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 59 WIDTH 40 DEPTH 28

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 10 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 21 WIDTH 40

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 65 * HEIGHT 29 WIDTH 40

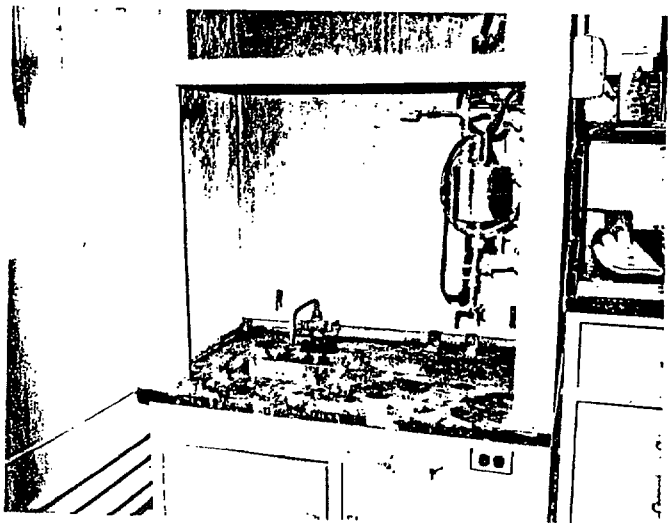
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 8.056 SQUARE FEET VELOCITY 65 FPM VOLUME 524 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: *Low flow, hood seldom used, door needs to be at 21" mark when used

BRE 0108

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION Solutions Room MATERIAL EXHAUSTED SO_2, Pyridene, Acids, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 59 WIDTH 39 DEPTH 28

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 10 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 21 WIDTH 39

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 100 HEIGHT 21 WIDTH 39

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 5.688 SQUARE FEET VELOCITY 100 FPM VOLUME 569 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: Works well at normal working position

BRE 0109

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Canopy

HOOD LOCATION East Bench A.A. Inst. MATERIAL EXHAUSTED Ac_2O, AcOH

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 12 HEIGHT -- WIDTH 12 DEPTH --

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM 6

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 100

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM -- HEIGHT -- WIDTH --

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 13

AREA 1.0 SQUARE FEET VELOCITY 100 FPM VOLUME 100 * CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* This is adequate flow to remove the small amounts of chemicals emitted by the Atomic Absorption instruments

BRE 0110

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Slot/Booth

HOOD LOCATION East Bench, Steam Bath MATERIAL EXHAUSTED Steam, Solvents, Acids

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 22 HEIGHT -- WIDTH 1.5 DEPTH --

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 1000

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM -- HEIGHT -- WIDTH --

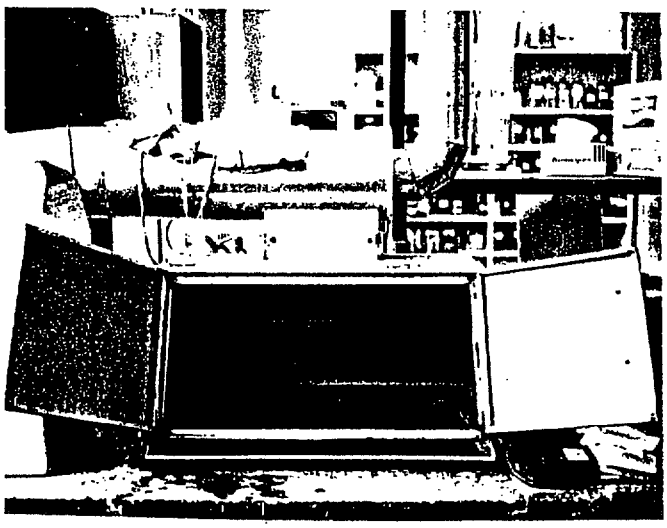
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION Inside Slot

AREA 0.229 SQUARE FEET VELOCITY 1000 FPM VOLUME 229 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: Since source is contained inside, there are no problems with this hood

BRE 0111

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION East Bench MATERIAL EXHAUSTED Acids

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 29 WIDTH 41.5 DEPTH 27

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 55 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 14 WIDTH 41.5

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 55 * HEIGHT 29 WIDTH 41.5

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 8"

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 8.358 SQUARE FEET VELOCITY 55 FPM VOLUME 460 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * Low flow, door needs to be lowered when working with concentrated chemicals

BRE 0112

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Slot

HOOD LOCATION Bottle Wash Room MATERIAL EXHAUSTED Acids,Esters,Ketones, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH 35 HEIGHT -- WIDTH 4.8 DEPTH --

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS -- FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT -- WIDTH --

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM 15

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 600

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 55 * HEIGHT -- WIDTH --

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 25

AREA 1.167 SQUARE FEET VELOCITY 600 FPM VOLUME 700 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Very low flow, does not remove chemical odors when in use

BRE 0113

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE 50% Compensating

HOOD LOCATION E. P. Lab MATERIAL EXHAUSTED Various Dilute Chemicals

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 26 WIDTH 40 DEPTH 28

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 150-400 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 26 WIDTH 40

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 275 * HEIGHT 26 WIDTH 40

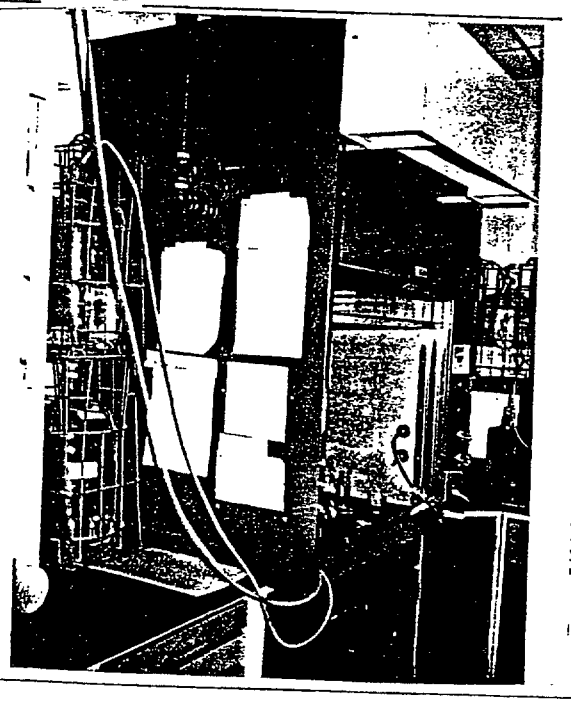
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 13

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 7.222 SQUARE FEET VELOCITY 275 FPM VOLUME 1986 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Excellent Flows

BRE 0114

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 1/26/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE 50% Compensating

HOOD LOCATION A. A. Lab MATERIAL EXHAUSTED Ac_2O, AcOH

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 26 WIDTH 40 DEPTH 28

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 150-400 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 26 WIDTH 40

FOR SLOT HOODS THIS MEASUREMENT WOULD BE THE DISTANCE FROM THE SLOT IN INCHES WHERE CAPTURE VELOCITY IS 100 FPM --

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM --

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 275* HEIGHT 26 WIDTH 40

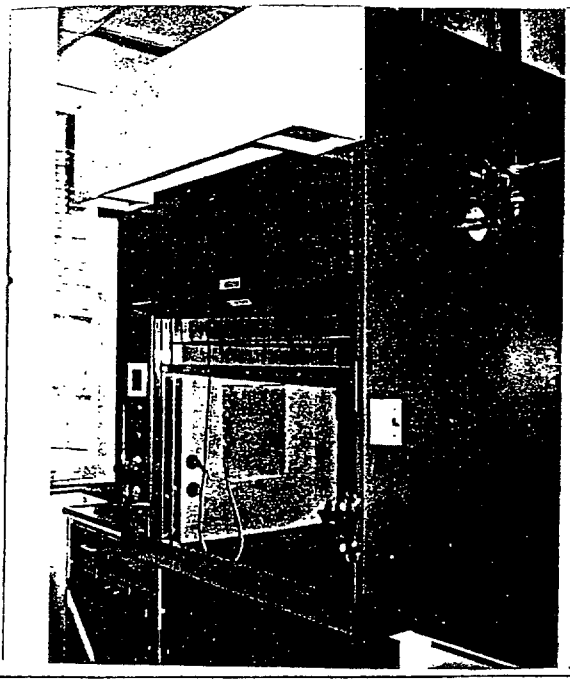
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION 13

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION --

AREA 7.222 SQUARE FEET VELOCITY 275 FPM VOLUME 1986 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Excellent Flows

BRE 0115

UNION CARBIDE

INTERNAL CORRESPONDENCE

UNION CARBIDE CORPORATION

P. O. BOX 3370, BROWNSVILLE, TEXAS 78520

CHEMICALS AND PLASTICS

To (Name) Mr. K. G. Townsend

Company

Location Brownsville Plant

Date February 14, 1978

Originating Dept.

Answering letter date

Subject Ventilation Survey

Copy to

The semi-annual Industrial Hygiene Survey of ventilation equipment at the Brownsville Plant has been completed. Flow measurements and evaluations were performed on 20 fume hoods and two dust collectors. Their locations in the plant are as follows:

Laboratory	- 12	
Welding Shop	- 3	
Machine Shop	- 2	
Carpenter Shop	- 2	(dust collectors)
Recovery Lab	- 1	
Reaction #1 Lab	- 1	
Reaction #2 Lab	- 1	

The following are hoods which do not meet the 100 FPM recommended capture velocity or which merit special mention for other reasons:

1. The laboratory has the same 3 hoods as last year that require attention.

   A. The bottlewashers hood has a capture velocity of 55 FPM, which is highly inadequate for the large amounts of chemicals which are dumped in the sink. The problem was turned over to Engineering last year, however no concrete developments have come about so far.

   B. The E.P. A.A. bench hood also has 55 FPM with the door wide open, the flow is increased to 100 FPM with a 14" door opening, but it is not easy to work with so small an opening. No efforts have been made to correct this hood.

   C. The chemicals bench east side hood has a flow of 60 FPM with the door wide open and it is always operated in this manner. Also the acetic anhydride distillation apparatus prevents the door from closing lower than 18" and if a chemical spill were to occur inside the hood, it could not be isolated by closing the door. No efforts have been made to correct this hood.

   D. The two mini-labs were equipped with compensating type hoods and the air flows are excellent.

BRE 0092