PLAINTIFF'S EXHIBIT

UC-1802

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/27/78 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 -- 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 40

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 2000

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

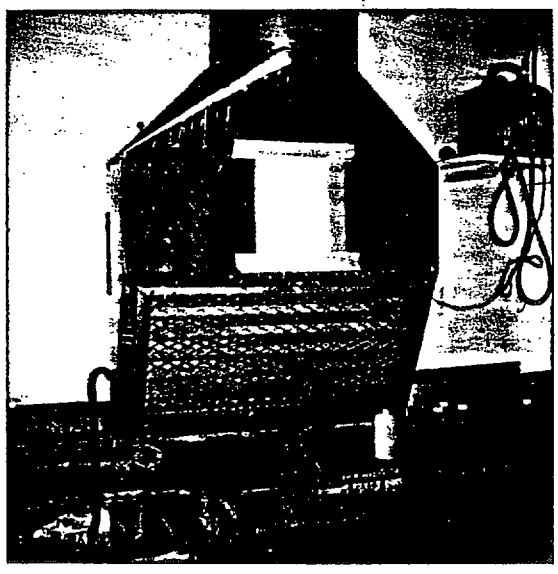
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION --

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 26

AREA 1.25 SQUARE FEET VELOCITY 2000 FPM VOLUME 2500 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Centrifugal FAN SIZE BVF-150

MOTOR HORSEPOWER 1.5 RPM



REMARKS: Excellent capture velocity, solved the problems in the bottle wash room.

BRE 0119

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 25 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 24" 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 24 WIDTH 39

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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

AREA 6.5 SQUARE FEET VELOCITY 100 FPM VOLUME 650 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0120

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 25 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 9" 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 25 HEIGHT 29 WIDTH 23

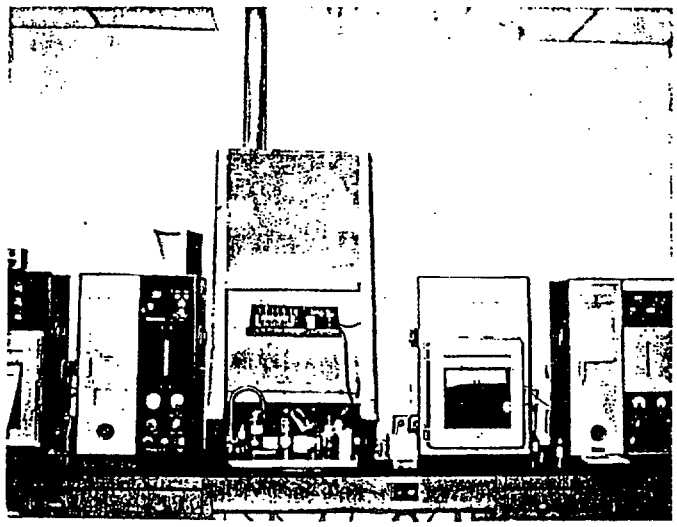
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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 25 FPM VOLUME 116 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: This hood normally handles only small amounts of contaminants.

BRE 0121

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/27/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Canopy

HOOD LOCATION AA Mini-lab MATERIAL EXHAUSTED Combustion Products

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

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 350 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 30 HEIGHT 11" WIDTH --

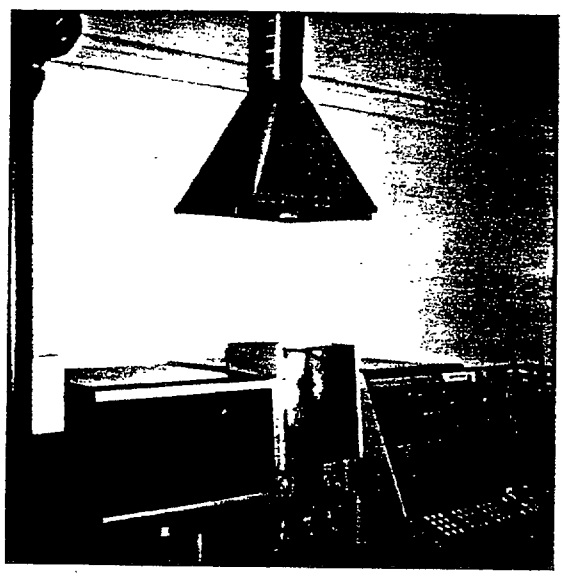
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

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

AREA 1.0 SQUARE FEET VELOCITY 350 FPM VOLUME 350 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Centrifugal FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: Works good but could be improved by installing baffles on back and sides.

BRE 0122

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/27/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent, Compensating

HOOD LOCATION A.A. Mini Lab MATERIAL EXHAUSTED Acids, Esters, Ketones, etc.

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

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 300 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 300 HEIGHT 26 WIDTH 40

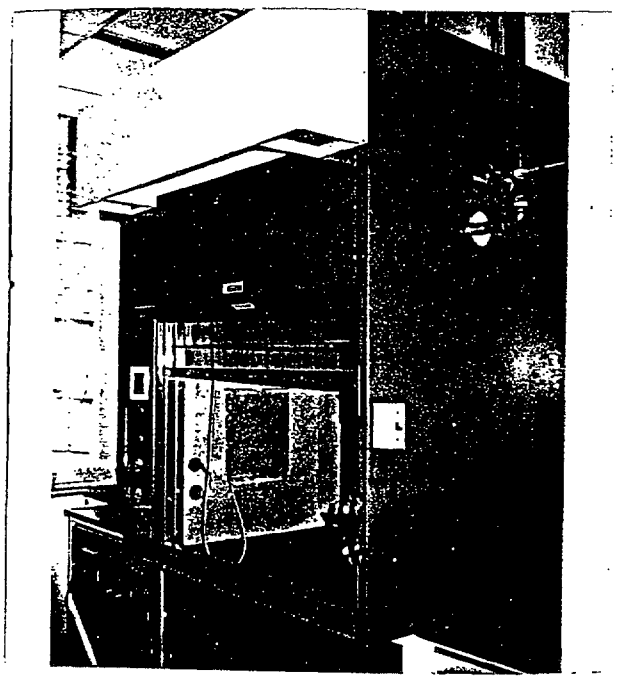
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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

AREA 7.22 SQUARE FEET VELOCITY 300 FPM VOLUME 2166 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Centrifugal FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: Inner door must be in top position for good flows, or air will bypass directly to fan and fumes will back up into worker's breathing zone.

BRE 0123

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/27/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent Compensating

HOOD LOCATION E.P. Mini-lab MATERIAL EXHAUSTED Misc. Reagents

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

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 300 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 300 HEIGHT 26 WIDTH 40

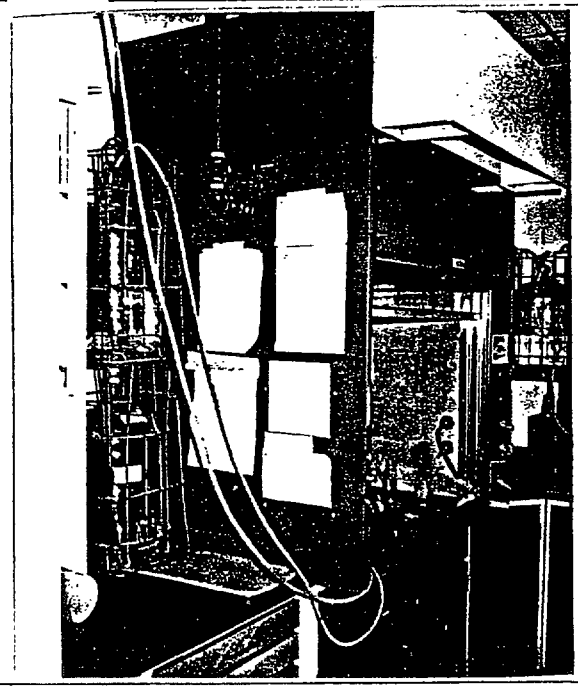
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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

AREA 7.22 SQUARE FEET VELOCITY 300 FPM VOLUME 2166 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Centrifugal FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

Inner door must be in top position for good flows, or air will bypass directly to exhaust fan and fumes will back up into worker's breathing zone.

BRE 0124

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 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 * 200 HEIGHT 28 WIDTH 42

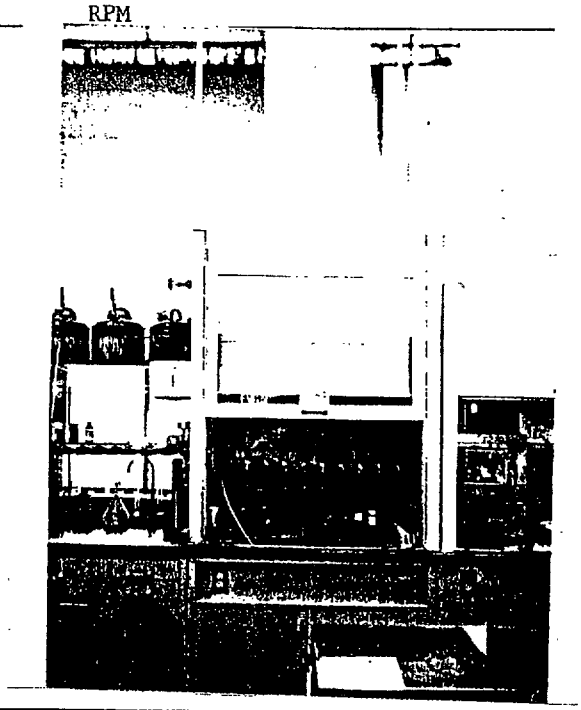
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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 200 FPM VOLUME 1633 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Disc FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Flow is aided by draft from air conditioner vent.

BRE 0125

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 125" 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 * 125 HEIGHT 28 WIDTH 42

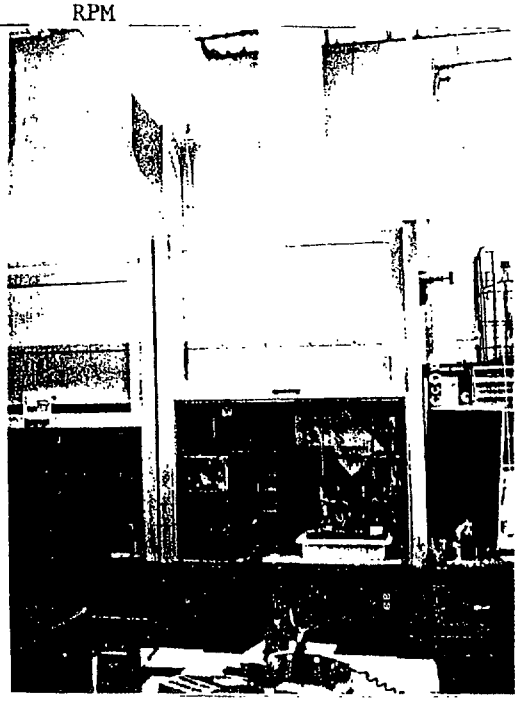
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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 125 FPM VOLUME 1021 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Centrifugal FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

* Flow is aided by draft from air conditioner vent.

BRE 0126

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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, Steam, 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 17" 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 * 100 HEIGHT 17. WIDTH 41.5

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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

AREA 4.9 SQUARE FEET VELOCITY 100 FPM VOLUME 490 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____

* There are 3 hoods in this system. These measurements were made with the other 2 hoods closed.



REMARKS: _____

BRE 0127

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 * 60 FT/MIN.

DOOR OPENING IN INCHES AT WHICH FACE VELOCITY IS 100 FT/MIN: HEIGHT 24" 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 * 100 HEIGHT 24 WIDTH 40

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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

AREA 6.67 SQUARE FEET VELOCITY 100 FPM VOLUME 667 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

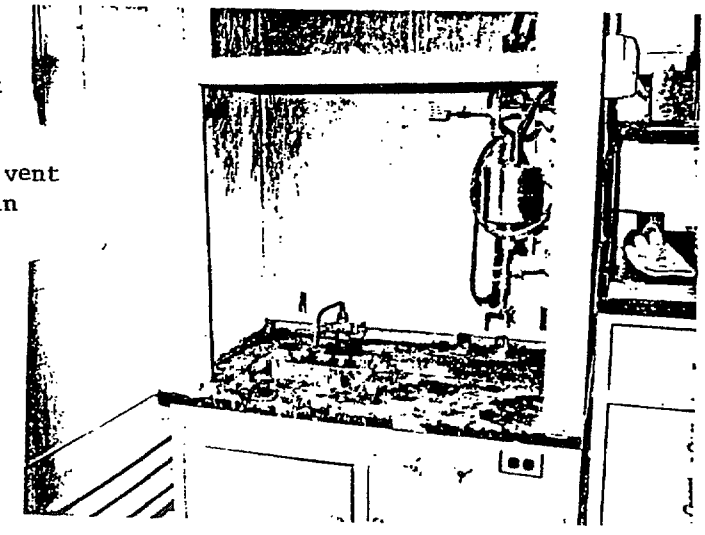
FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____

2 doors + OH vent open =25 ft/min

2 doors open, OH vent closed = 50 ft/min

* 1 door open = 60 ft/min



REMARKS: * There are 3 hoods in this system. These measurements were made with the other 2 hoods closed.

BRE 0128

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION Distillation Bench MATERIAL EXHAUSTED Acids, Ketones, Esters, etc.

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 90 WIDTH 47.5 DEPTH 24

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 * 100 ~~HEIGHT~~ DEPTH 24 WIDTH 47.5

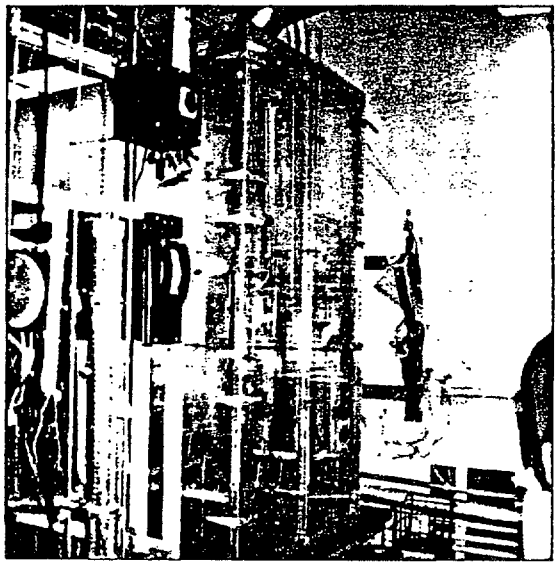
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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

AREA 7.917 SQUARE FEET VELOCITY 100 FPM VOLUME 792 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____



REMARKS: * Doors are all closed in normal operating condition. Flow measurement was made in a horizontal plane inside the enclosure at about mid height. Doors were closed on the other 2 hoods in this 3-hood system.

BRE 0129

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 BUILDING NAME Main Lab BLDG. NUMBER 422

UNIT IN WHICH BLDG. LOCATED Main Office HOOD TYPE Vent

HOOD LOCATION E.P. Bench Southwest MATERIAL EXHAUSTED Acids

OVERALL HOOD DIMENSIONS (INCHES): LENGTH _____ HEIGHT 29 WIDTH 41.5 DEPTH 2.7

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 100 HEIGHT 15" WIDTH 41.5

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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 50 FPM VOLUME 418 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____



REMARKS: _____

BRE 0130

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 BUILDING NAME Main Lab BLDG. NUMBER 422

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

HOOD LOCATION E.P. Bench Steam Bath MATERIAL EXHAUSTED Steam, Solvents, Ac_2O

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

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 150 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 1000 with doors closed

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

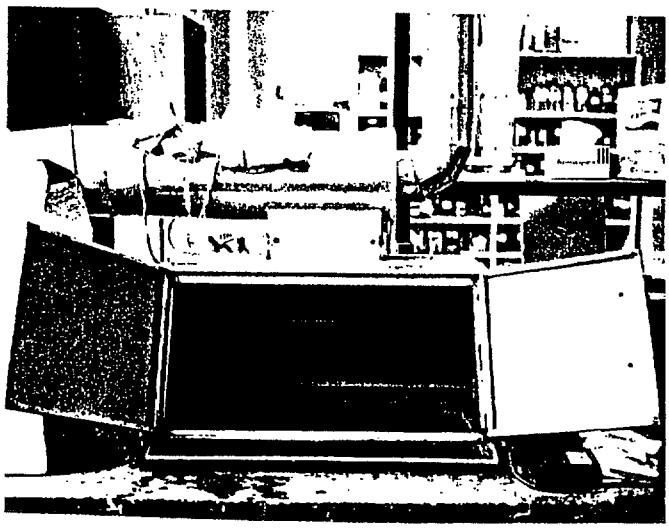
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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:

BRE 0131

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 BUILDING NAME Control Room BLDG. NUMBER 522

UNIT IN WHICH BLDG. LOCATED Recovery HOOD TYPE Vent, Compensating

HOOD LOCATION Recovery Lab MATERIAL EXHAUSTED Acids, Esters, Ketones, etc.

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

FACE VELOCITY WITH DOOR(S) WIDE OPEN AT ABOVE DIMENSIONS 150 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 150 HEIGHT 26 WIDTH 38.5

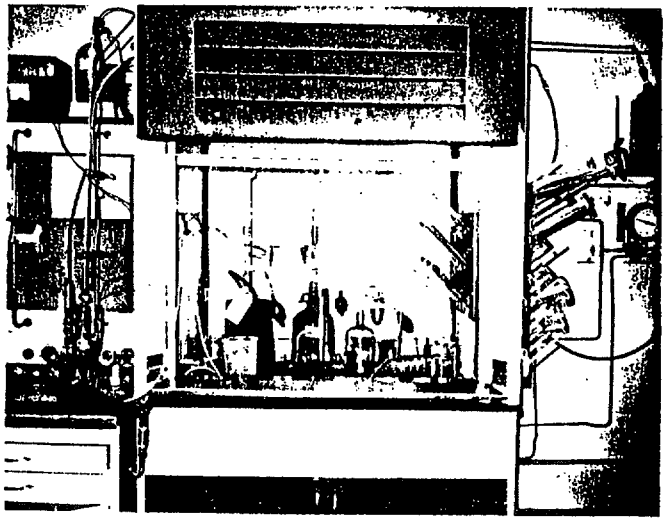
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Average Reading

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 150 FPM VOLUME 1043 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Centrifugal FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: This hood has two blowers, but it seems that only one is working; it should be inspected by electricians.

BRE 0132

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 Acids, 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 Edge of Sink

AVERAGE SLOT VELOCITY AT THE SLOT OPENING IN FPM 900

FACE VELOCITY AT NORMAL WORKING POSITION IN FPM 170 HEIGHT -- WIDTH --

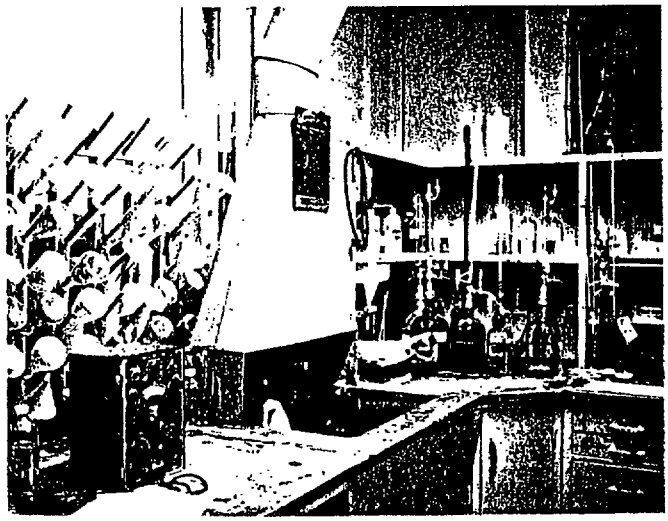
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

FOR SLOT HOODS THIS IS THE DISTANCE IN INCHES FROM THE SLOT TO EDGE OF THE SOURCE FOR NORMAL WORKING POSITION 18

AREA 2.417 SQUARE FEET VELOCITY 170 FPM VOLUME 411 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0133

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 60 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 250

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

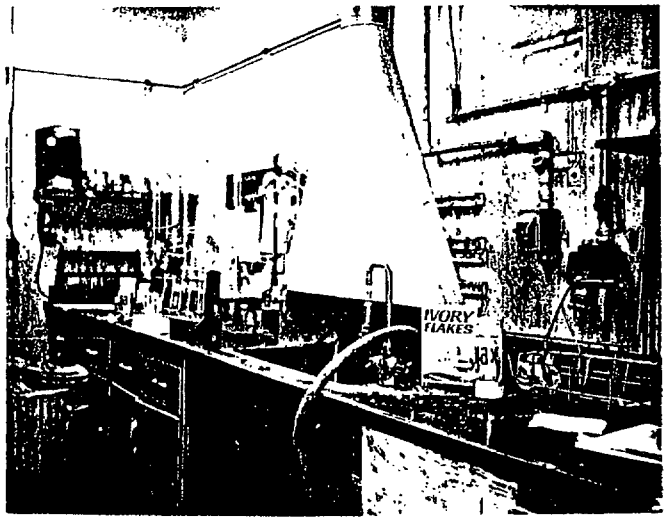
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

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 860 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 0134

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INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 _____

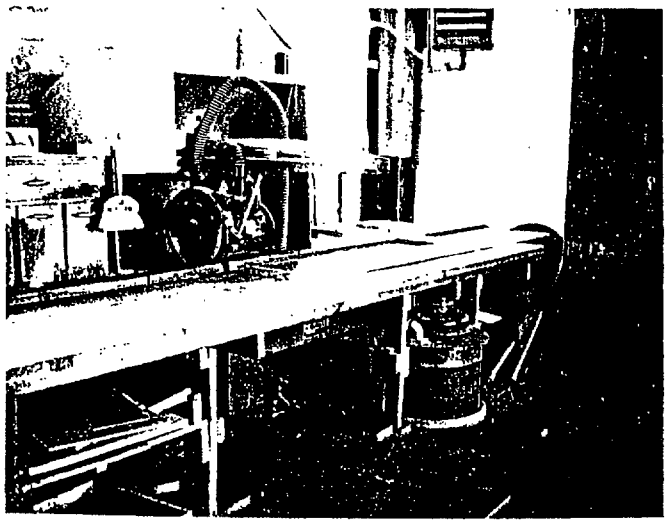
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION _____

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 0135

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 150 HEIGHT 18.5 WIDTH 44

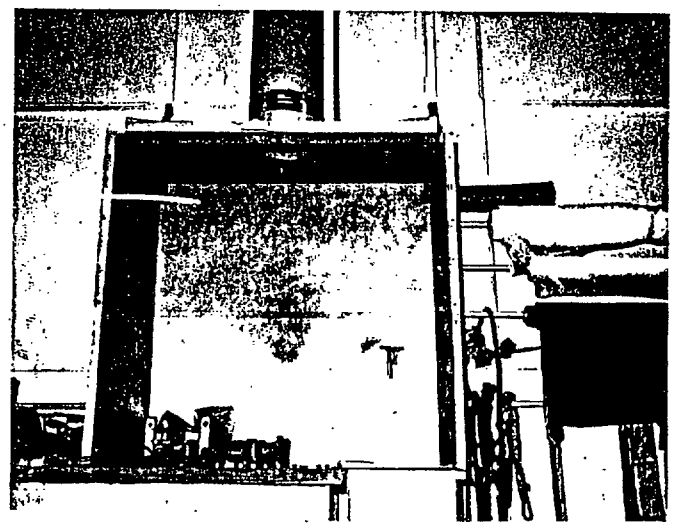
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

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 150 FPM VOLUME 850 GFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Disc FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0136

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 -- 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 * 180 HEIGHT 29.5 WIDTH 30

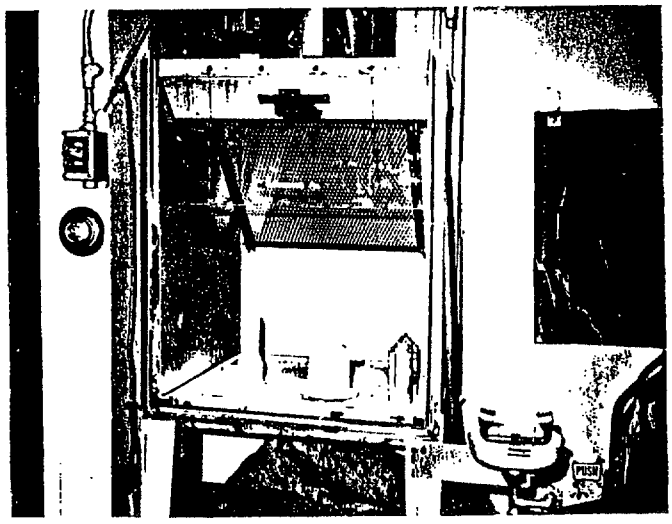
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

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

AREA 6.15 SQUARE FEET VELOCITY 180 FPM VOLUME 1107 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS: * Very Good Flow

BRE 0137

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 1000

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

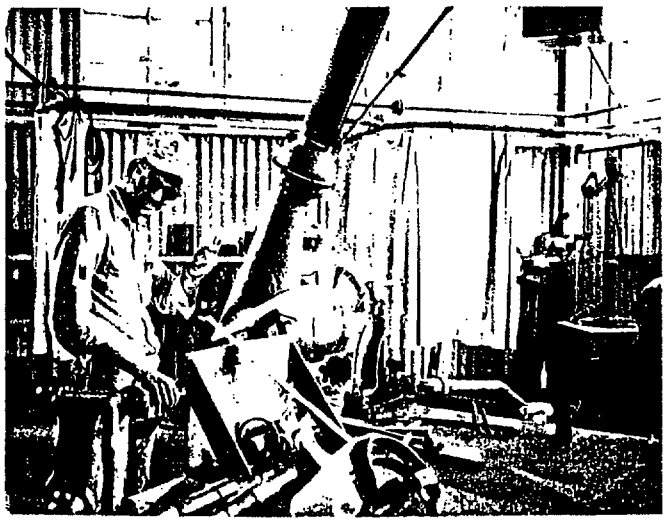
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading at Opening

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 1000 FPM VOLUME 394 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____



REMARKS: _____

BRE 0138

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 1500

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

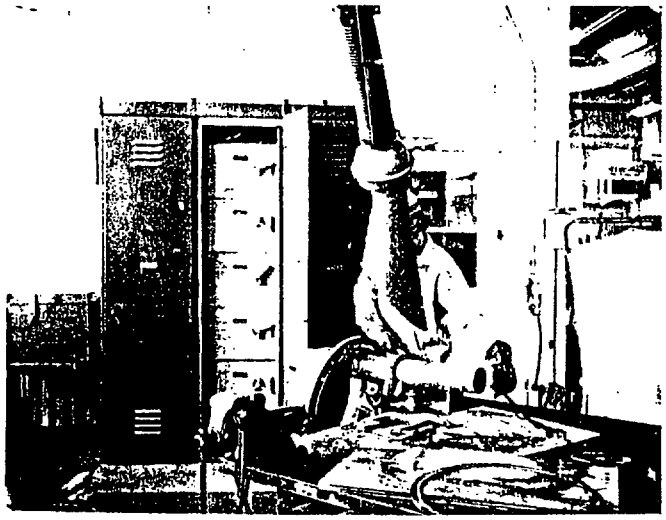
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading at Opening

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 1500 FPM VOLUME 591 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0139

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 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 1000

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

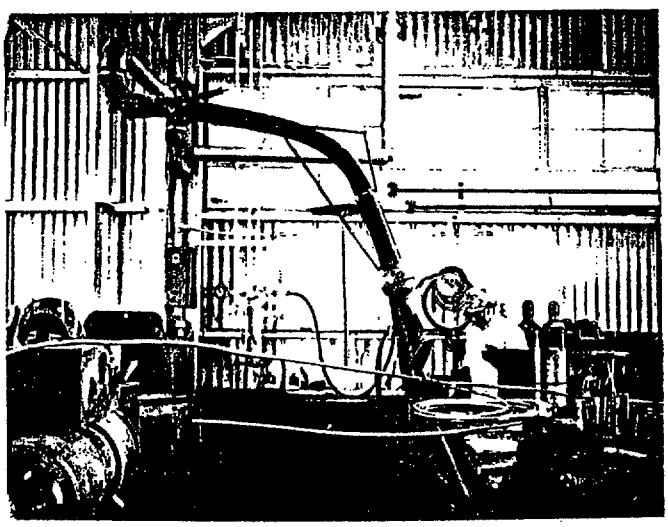
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading at Opening

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 1000 FPM VOLUME 394 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE Squirrel Cage FAN SIZE

MOTOR HORSEPOWER RPM



REMARKS:

BRE 0140

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 BUILDING NAME Insulation Shop BLDG. NUMBER 625

UNIT IN WHICH BLDG. LOCATED _____ HOOD TYPE Slot

HOOD LOCATION Band Saw MATERIAL EXHAUSTED Insulation Dust

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 * 5000

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

PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

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

AREA 0.087 SQUARE FEET VELOCITY 5000 FPM VOLUME 434 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____

1200 Avg. both bench vents on; 2500 Avg. one on; 5000+ both off



** 2 slots

2" X 1" Top and
3" X 3.5" Bottom

REMARKS: * This is a 3-hood system. Measurements were made with only one open. Opening another cuts flow in half.

BRE 0141

INDUSTRIAL HYGIENE EVALUATION AND SURVEY - VENTILATION

DATE 10/30/78 BUILDING NAME Insulation Shop BLDG. NUMBER 625

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

HOOD LOCATION North Side MATERIAL EXHAUSTED Insulation Dust

OVERALL HOOD DIMENSIONS (INCHES): LENGTH -- HEIGHT 5.5 WIDTH 11 OPENINGS DEPTH 8

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 --

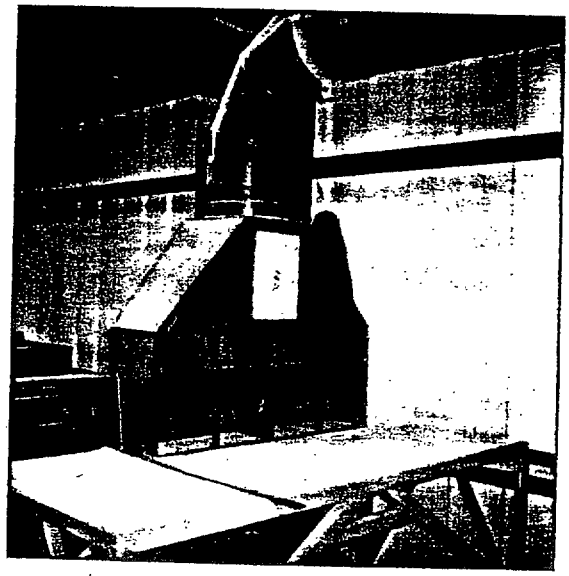
PROBE HEIGHT FROM HOOD BASE FOR NORMAL WORKING POSITION Avg. Reading

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

AREA 5.361 SQUARE FEET VELOCITY 1000 FPM VOLUME 3361 CFM
CUBIC FEET PER MIN (Q VA) Q VOLUME V VELOCITY A AREA

FAN TYPE _____ FAN SIZE _____

MOTOR HORSEPOWER _____ RPM _____



REMARKS:

* This is a 3-hood system. Measurements were made with only one open. Opening 2 cuts flow in half.

BRE 0142

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UNION CARBIDE CORPORATION

P. O. BOX 3370, BROWNSVILLE, TEXAS 78520

CHEMICALS AND PLASTICS

To (Name) Mr. K. G. Townsend

Company

Location Brownsville Plant

Date November 2, 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 21 fume hoods and two dust collectors. Their locations in the plant are as follows:

Laboratory	13	
Recovery Lab	1	
Reaction #1 Lab	1	
Reaction #2 Lab	1	
Carpenter Shop	1	(Dust Collector)
Machine Shop	2	
Welding Shop	3	
Insulation Shop	1	(Dust Collector)

Several points of interest were noted during the survey:

1. The laboratory made several improvements since the last survey.

   A. A new hood was installed over the bottlewashers sink. It has excellent flows, 150 FPM at edge of sink and 100 FPM out to 40 inches, and 2000 FPM at each of the six slots for a total of 2500 CFM of flow. The only minor problem found is that when chemicals are poured into sink, some fumes back up through the drain of the next sink, but this could be remedied by installing a trap under the sink.

   B. The old E.P., A.A. bench hood (now E.P.,I.H.) was relieved of most of its use, since the A.A. instrument was moved to the mini-lab, and its infrequent use and small amounts of chemicals required does not create a significant problem.

   C. The chemicals bench east side hood was improved by the simple expedient of turning the air conditioning vent to blow directly at its door and it now has 125 FPM with the door wide open. However the old problem of not being able to close the door, in case of major spill, still exists and should be corrected.

BRE 0117

D. The steam bath hood no longer has a branch leading to the A.A. instrument, but the branch was left open and should be capped.

2. Recovery Lab - This hood is of the compensating type, but no air was detected coming in between the door and front baffle. It is possible that the outside air intake is closed, or if equipped with inblowing motor, that it is not operating. The exhaust flows are still good (150 FPM) but it probably puts a strain on the air conditioning system and could even create a negative pressure inside the lab.

3. Reaction #1 Lab - No problems.

4. Reaction #2 Lab - Low flows and poor ventilation, engineering is working on improvements.

5. Carpenter Shop - Same problem as before, the poor location of the radial arm saw (in front of I-beam) makes it difficult for the sawdust to fall down into the box and it blows back to the operator instead.

6. Machine Shop - No problems.

7. Welding Shop - No problems.

8. Insulation Shop - This dust collector has three branches, two on workbenches and one for the band saw, and the flows are very good even with all branches open, but the noise problem it creates ($>$ 90 dB(A))may induce some workers not to turn it on when needed.

Please see the individual hood evaluation sheets for further details.

M. Gutierrez

MG:mfw

Union Carbide trial exhibit UC-1802: M. Gutierrez to K. G. Townsend on the Brownsville Plant Ventilation Survey... Published by AsbestosClaims.Law
ACL Doc 16869 · Page 26 of 26 asbestosclaims.law/library/16869/26