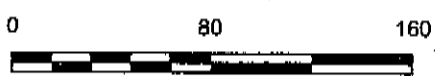
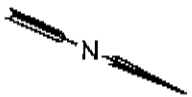
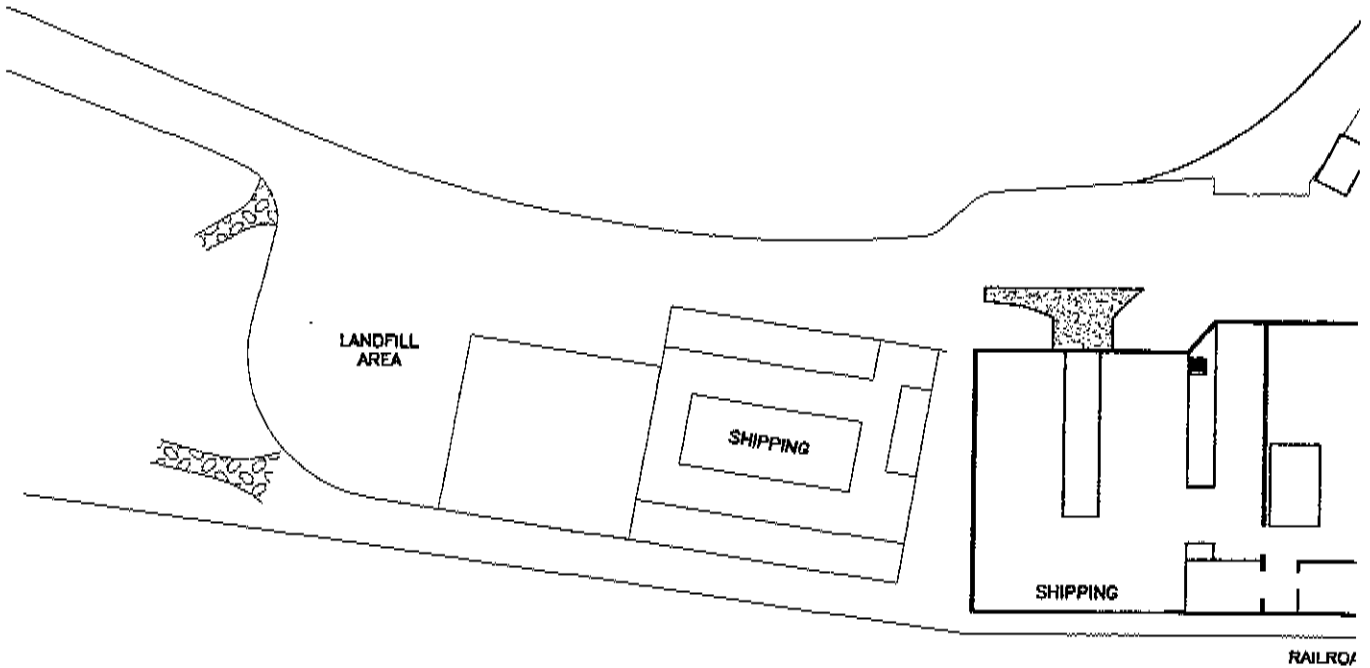


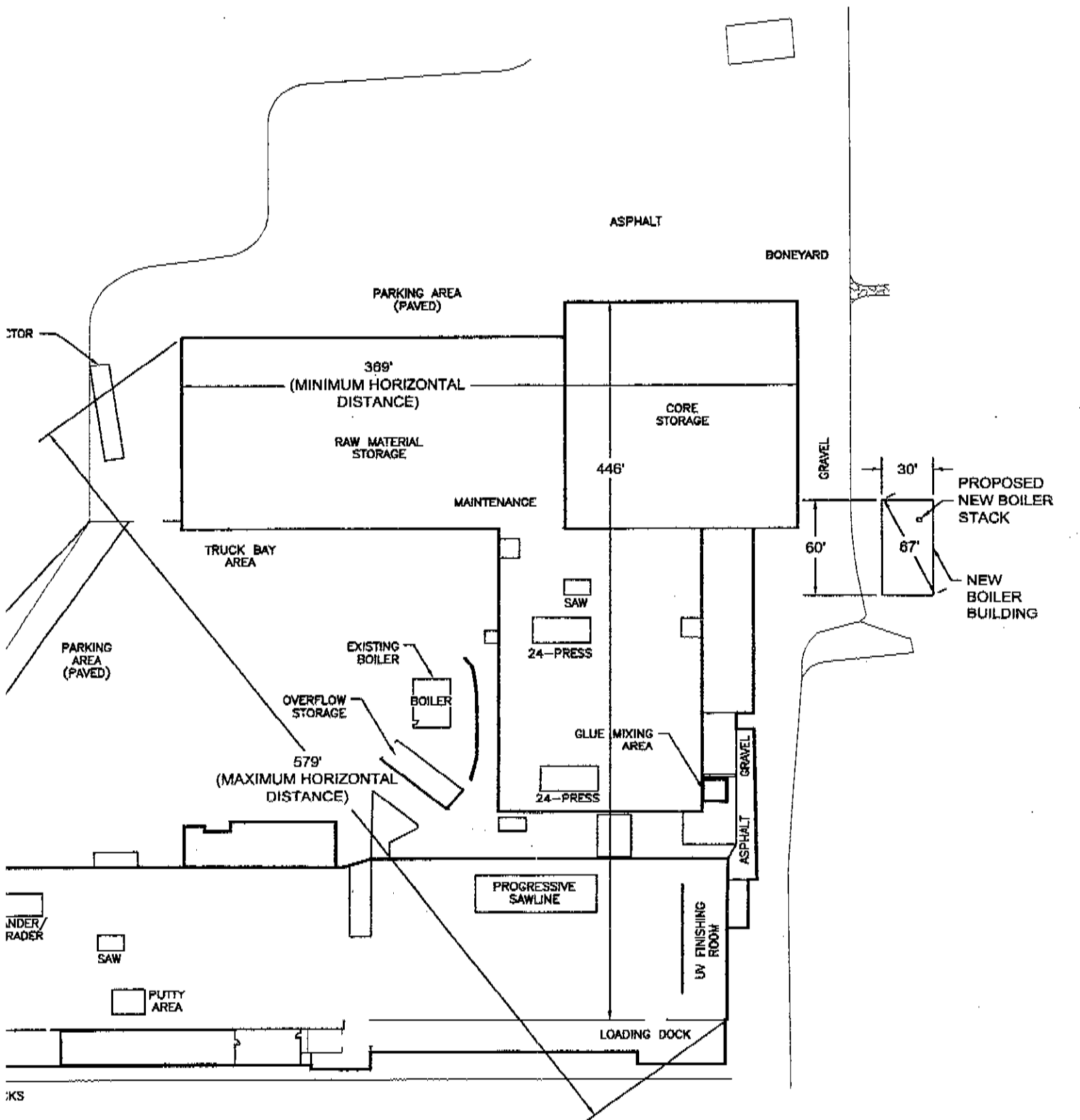
APPENDIX D
SCREEN3 MODEL

Modification to Stationary Source Permit to Operate
Columbia Forest Products
100 Paul Road, SW
Chatham, Virginia 24531
Registration No. 30120
SECOR PN: B2OT.CFP01.VA
May 27, 2005


TRASH



SCALE IN FEET



KS

 SECOR 7730 SW MOHAWK STREET TUALATIN, OREGON PHONE: (503) 691-2030/692-7074 (FAX)	FOR: COLUMBIA FOREST PRODUCTS 100 PAUL ROAD CHATHAM, VIRGINIA		SITE PLAN		FIGURE: 2
	JOB NUMBER: B2OT.CFPD1.VA	DRAWN BY: KAM	CHECKED BY: <i>[Signature]</i>	APPROVED BY: <i>[Signature]</i>	DATE: 05/26/05

**Columbia Forest Products, Chatham, Virginia
Proposed New Boiler
SCREEN3 Input Data**

Acrolein Emission Rate	1.2 lb/day	0.00630 gram/sec
Formaldehyde Emission Rate	1.32 lb/day	0.00693 gram/sec
Stack Height	40 feet	12.19 meters
Stack Diameter	1.625 feet (19.5")	0.50 meters
Gas Flow Rate	6,797 acfm	
Gas Exit Temperature	450 degrees F	505.2 degrees K
Urban/Rural Option:	Rural	

Boiler Stack Building Dimensions

Height	25.25 feet	7.70 meters
Min Horizontal Dimension	30 feet	9.14 meters
Max Horizontal Dimension	67 feet (diagonal)	20.42 meters

Adjacent Building Dimensions

Height	25 feet	7.62 meters
Min Horizontal Dimension	369 feet	112.47 meters
Max Horizontal Dimension	579 feet (diagonal)	176.4792 meters
Distance From Boiler Stack:	65 feet	19.81 meters

05/13/05
11:38:57

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Columbia Chatham New Boiler - Acrolein (Boiler Bldg)

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .630000E-02
STACK HEIGHT (M) = 12.1900
STK INSIDE DIAM (M) = .5000
STK EXIT VELOCITY (M/S) = 16.3373
STK GAS EXIT TEMP (K) = 505.2000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = .0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.7000
MIN HORIZ BLDG DIM (M) = 9.1400
MAX HORIZ BLDG DIM (M) = 20.4200

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 6797.0000 (ACFM)

BUOY. FLUX = 4.206 M**4/S**3; MOM. FLUX = 9.675 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	320.0	74.25	1.67	1.62	NO
100.	.5160	4	10.0	10.3	3200.0	17.59	8.34	10.19	HS
200.	.3904	4	8.0	8.2	2560.0	19.83	15.72	13.51	HS
300.	.3528	4	5.0	5.2	1600.0	24.41	22.88	16.81	HS
400.	.3171	4	4.0	4.1	1280.0	27.46	29.78	19.91	HS
500.	.2876	4	3.5	3.6	1120.0	29.64	36.49	22.85	HS
600.	.2630	4	3.0	3.1	960.0	32.55	43.11	25.76	HS
700.	.2418	4	2.5	2.6	800.0	36.62	49.68	28.68	HS
800.	.2239	4	2.5	2.6	800.0	36.62	56.01	31.27	HS
900.	.2030	4	2.5	2.6	800.0	36.62	62.28	32.02	HS
1000.	.1874	4	2.5	2.6	800.0	36.62	68.48	34.20	HS
1100.	.1769	4	2.0	2.1	640.0	42.73	74.82	35.22	NO
1200.	.1671	4	2.0	2.1	640.0	42.73	80.91	37.13	NO
1300.	.1575	4	2.0	2.1	640.0	42.73	86.96	38.99	NO
1400.	.1488	4	1.5	1.5	480.0	52.91	93.28	41.52	NO
1500.	.1431	4	1.5	1.5	480.0	52.91	99.23	43.26	NO
1600.	.1374	4	1.5	1.5	480.0	52.91	105.14	44.97	NO

1700.	.1371	5	1.0	1.1	10000.0	59.07	83.65	33.06	NO
1800.	.1389	5	1.0	1.1	10000.0	59.07	88.00	34.08	NO
1900.	.1400	5	1.0	1.1	10000.0	59.07	92.32	35.08	NO
2000.	.1404	5	1.0	1.1	10000.0	59.07	96.63	36.07	NO
2100.	.1398	5	1.0	1.1	10000.0	59.07	100.92	36.95	NO
2200.	.1389	5	1.0	1.1	10000.0	59.07	105.19	37.81	NO
2300.	.1393	6	1.0	1.1	10000.0	50.58	73.11	25.79	NO
2400.	.1415	6	1.0	1.1	10000.0	50.58	75.92	26.29	NO
2500.	.1432	6	1.0	1.1	10000.0	50.58	78.72	26.77	NO
2600.	.1447	6	1.0	1.1	10000.0	50.58	81.51	27.26	NO
2700.	.1458	6	1.0	1.1	10000.0	50.58	84.29	27.73	NO
2800.	.1466	6	1.0	1.1	10000.0	50.58	87.06	28.20	NO
2900.	.1472	6	1.0	1.1	10000.0	50.58	89.82	28.66	NO
3000.	.1476	6	1.0	1.1	10000.0	50.58	92.58	29.12	NO
3500.	.1442	6	1.0	1.1	10000.0	50.58	106.22	30.99	NO
4000.	.1391	6	1.0	1.1	10000.0	50.58	119.67	32.73	NO
4500.	.1332	6	1.0	1.1	10000.0	50.58	132.96	34.37	NO
5000.	.1272	6	1.0	1.1	10000.0	50.58	146.08	35.92	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 77. .6940 6 4.0 4.5 10000.0 22.76 4.42 9.73 HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 10.33	CAVITY HT (M) = 8.09
CAVITY LENGTH (M) = 22.34	CAVITY LENGTH (M) = 12.33
ALONGWIND DIM (M) = 9.14	ALONGWIND DIM (M) = 20.42

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

 END OF CAVITY CALCULATIONS

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION MAX CONC DIST TO TERRAIN

PROCEDURE	(UG/M**3)	MAX (M)	HT (M)
SIMPLE TERRAIN	.6940	77.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

05/13/05
11:42:00

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Columbia Chatham New Boiler Acrolein (Adjacent Bldgs)

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .630000E-02
STACK HEIGHT (M) = 12.1900
STK INSIDE DIAM (M) = .5000
STK EXIT VELOCITY (M/S) = 16.3373
STK GAS EXIT TEMP (K) = 505.2000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = .0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 112.5000
MAX HORIZ BLDG DIM (M) = 176.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 6797.0000 (ACFM)

BUOY. FLUX = 4.206 M**4/S**3; MOM. FLUX = 9.675 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	320.0	74.25	1.67	1.62	NO
100.	.5095	4	10.0	10.3	3200.0	17.59	8.34	10.13	HS
200.	.3883	4	8.0	8.2	2560.0	19.83	15.72	13.44	HS
300.	.3515	4	5.0	5.2	1600.0	24.41	22.88	16.75	HS
400.	.3163	4	4.0	4.1	1280.0	27.46	29.78	19.85	HS
500.	.2871	4	3.5	3.6	1120.0	29.64	36.49	22.80	HS
600.	.2627	4	3.0	3.1	960.0	32.55	43.11	25.71	HS
700.	.2416	4	2.5	2.6	800.0	36.62	49.68	28.63	HS
800.	.2238	4	2.5	2.6	800.0	36.62	56.01	31.22	HS
900.	.2030	4	2.5	2.6	800.0	36.62	62.28	31.98	HS
1000.	.1874	4	2.5	2.6	800.0	36.62	68.48	34.17	HS
1100.	.1769	4	2.0	2.1	640.0	42.73	74.82	35.22	NO
1200.	.1671	4	2.0	2.1	640.0	42.73	80.91	37.13	NO
1300.	.1575	4	2.0	2.1	640.0	42.73	86.96	38.99	NO
1400.	.1488	4	1.5	1.5	480.0	52.91	93.28	41.52	NO
1500.	.1431	4	1.5	1.5	480.0	52.91	99.23	43.26	NO
1600.	.1374	4	1.5	1.5	480.0	52.91	105.14	44.97	NO

1700.	.1371	5	1.0	1.1	10000.0	59.07	83.65	33.06	NO
1800.	.1389	5	1.0	1.1	10000.0	59.07	88.00	34.08	NO
1900.	.1400	5	1.0	1.1	10000.0	59.07	92.32	35.08	NO
2000.	.1404	5	1.0	1.1	10000.0	59.07	96.63	36.07	NO
2100.	.1398	5	1.0	1.1	10000.0	59.07	100.92	36.95	NO
2200.	.1389	5	1.0	1.1	10000.0	59.07	105.19	37.81	NO
2300.	.1393	6	1.0	1.1	10000.0	50.58	73.11	25.79	NO
2400.	.1415	6	1.0	1.1	10000.0	50.58	75.92	26.29	NO
2500.	.1432	6	1.0	1.1	10000.0	50.58	78.72	26.77	NO
2600.	.1447	6	1.0	1.1	10000.0	50.58	81.51	27.26	NO
2700.	.1458	6	1.0	1.1	10000.0	50.58	84.29	27.73	NO
2800.	.1466	6	1.0	1.1	10000.0	50.58	87.06	28.20	NO
2900.	.1472	6	1.0	1.1	10000.0	50.58	89.82	28.66	NO
3000.	.1476	6	1.0	1.1	10000.0	50.58	92.58	29.12	NO
3500.	.1442	6	1.0	1.1	10000.0	50.58	106.22	30.99	NO
4000.	.1391	6	1.0	1.1	10000.0	50.58	119.67	32.73	NO
4500.	.1332	6	1.0	1.1	10000.0	50.58	132.96	34.37	NO
5000.	.1272	6	1.0	1.1	10000.0	50.58	146.08	35.92	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
77. .6682 6 4.0 4.5 10000.0 22.76 4.42 9.65 HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62	CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 45.49	CAVITY LENGTH (M) = 41.97
ALONGWIND DIM (M) = 112.50	ALONGWIND DIM (M) = 176.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION MAX CONC DIST TO TERRAIN

PROCEDURE	(UG/M**3)	MAX (M)	HT (M)
SIMPLE TERRAIN	.6682	77.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

05/13/05
11:44:41

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Columbia Chatham New Boiler Formaldehyde (Boiler Bldg)

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .693000E-02
STACK HEIGHT (M) = 12.1900
STK INSIDE DIAM (M) = .5000
STK EXIT VELOCITY (M/S) = 16.3373
STK GAS EXIT TEMP (K) = 505.2000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = .0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.7000
MIN HORIZ BLDG DIM (M) = 9.1400
MAX HORIZ BLDG DIM (M) = 20.4200

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 6797.0000 (ACFM)

BUOY. FLUX = 4.206 M**4/S**3; MOM. FLUX = 9.675 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	320.0	74.25	1.67	1.62	NO
100.	.5676	4	10.0	10.3	3200.0	17.59	8.34	10.19	HS
200.	.4294	4	8.0	8.2	2560.0	19.83	15.72	13.51	HS
300.	.3881	4	5.0	5.2	1600.0	24.41	22.88	16.81	HS
400.	.3488	4	4.0	4.1	1280.0	27.46	29.78	19.91	HS
500.	.3164	4	3.5	3.6	1120.0	29.64	36.49	22.85	HS
600.	.2893	4	3.0	3.1	960.0	32.55	43.11	25.76	HS
700.	.2660	4	2.5	2.6	800.0	36.62	49.68	28.68	HS
800.	.2463	4	2.5	2.6	800.0	36.62	56.01	31.27	HS
900.	.2233	4	2.5	2.6	800.0	36.62	62.28	32.02	HS
1000.	.2061	4	2.5	2.6	800.0	36.62	68.48	34.20	HS
1100.	.1946	4	2.0	2.1	640.0	42.73	74.82	35.22	NO
1200.	.1838	4	2.0	2.1	640.0	42.73	80.91	37.13	NO
1300.	.1732	4	2.0	2.1	640.0	42.73	86.96	38.99	NO
1400.	.1637	4	1.5	1.5	480.0	52.91	93.28	41.52	NO
1500.	.1574	4	1.5	1.5	480.0	52.91	99.23	43.26	NO
1600.	.1511	4	1.5	1.5	480.0	52.91	105.14	44.97	NO

1700.	.1508	5	1.0	1.1	10000.0	59.07	83.65	33.06	NO
1800.	.1528	5	1.0	1.1	10000.0	59.07	88.00	34.08	NO
1900.	.1540	5	1.0	1.1	10000.0	59.07	92.32	35.08	NO
2000.	.1544	5	1.0	1.1	10000.0	59.07	96.63	36.07	NO
2100.	.1538	5	1.0	1.1	10000.0	59.07	100.92	36.95	NO
2200.	.1527	5	1.0	1.1	10000.0	59.07	105.19	37.81	NO
2300.	.1533	6	1.0	1.1	10000.0	50.58	73.11	25.79	NO
2400.	.1556	6	1.0	1.1	10000.0	50.58	75.92	26.29	NO
2500.	.1576	6	1.0	1.1	10000.0	50.58	78.72	26.77	NO
2600.	.1591	6	1.0	1.1	10000.0	50.58	81.51	27.26	NO
2700.	.1604	6	1.0	1.1	10000.0	50.58	84.29	27.73	NO
2800.	.1613	6	1.0	1.1	10000.0	50.58	87.06	28.20	NO
2900.	.1619	6	1.0	1.1	10000.0	50.58	89.82	28.66	NO
3000.	.1623	6	1.0	1.1	10000.0	50.58	92.58	29.12	NO
3500.	.1586	6	1.0	1.1	10000.0	50.58	106.22	30.99	NO
4000.	.1530	6	1.0	1.1	10000.0	50.58	119.67	32.73	NO
4500.	.1466	6	1.0	1.1	10000.0	50.58	132.96	34.37	NO
5000.	.1399	6	1.0	1.1	10000.0	50.58	146.08	35.92	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 77. .7634 6 4.0 4.5 10000.0 22.76 4.42 9.73 HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 10.33	CAVITY HT (M) = 8.09
CAVITY LENGTH (M) = 22.34	CAVITY LENGTH (M) = 12.33
ALONGWIND DIM (M) = 9.14	ALONGWIND DIM (M) = 20.42

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

 END OF CAVITY CALCULATIONS

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION MAX CONC DIST TO TERRAIN

1700.	.1508	5	1.0	1.1	10000.0	59.07	83.65	33.06	NO
1800.	.1528	5	1.0	1.1	10000.0	59.07	88.00	34.08	NO
1900.	.1540	5	1.0	1.1	10000.0	59.07	92.32	35.08	NO
2000.	.1544	5	1.0	1.1	10000.0	59.07	96.63	36.07	NO
2100.	.1538	5	1.0	1.1	10000.0	59.07	100.92	36.95	NO
2200.	.1527	5	1.0	1.1	10000.0	59.07	105.19	37.81	NO
2300.	.1533	6	1.0	1.1	10000.0	50.58	73.11	25.79	NO
2400.	.1556	6	1.0	1.1	10000.0	50.58	75.92	26.29	NO
2500.	.1576	6	1.0	1.1	10000.0	50.58	78.72	26.77	NO
2600.	.1591	6	1.0	1.1	10000.0	50.58	81.51	27.26	NO
2700.	.1604	6	1.0	1.1	10000.0	50.58	84.29	27.73	NO
2800.	.1613	6	1.0	1.1	10000.0	50.58	87.06	28.20	NO
2900.	.1619	6	1.0	1.1	10000.0	50.58	89.82	28.66	NO
3000.	.1623	6	1.0	1.1	10000.0	50.58	92.58	29.12	NO
3500.	.1586	6	1.0	1.1	10000.0	50.58	106.22	30.99	NO
4000.	.1530	6	1.0	1.1	10000.0	50.58	119.67	32.73	NO
4500.	.1466	6	1.0	1.1	10000.0	50.58	132.96	34.37	NO
5000.	.1399	6	1.0	1.1	10000.0	50.58	146.08	35.92	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
 77. .7634 6 4.0 4.5 10000.0 22.76 4.42 9.73 HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

 *** REGULATORY (Default) ***
 PERFORMING CAVITY CALCULATIONS
 WITH ORIGINAL SCREEN CAVITY MODEL
 (BRODE, 1988)

*** CAVITY CALCULATION - 1 ***	*** CAVITY CALCULATION - 2 ***
CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 10.33	CAVITY HT (M) = 8.09
CAVITY LENGTH (M) = 22.34	CAVITY LENGTH (M) = 12.33
ALONGWIND DIM (M) = 9.14	ALONGWIND DIM (M) = 20.42

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

 END OF CAVITY CALCULATIONS

 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION	MAX CONC	DIST TO	TERRAIN
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PROCEDURE	(UG/M**3)	MAX (M)	HT (M)
SIMPLE TERRAIN	.7634	77.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

05/13/05
11:46:45

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Columbia Chatham New Boiler Formaldehyde (Adjacent Bldgs)

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .693000E-02
STACK HEIGHT (M) = 12.1900
STK INSIDE DIAM (M) = .5000
STK EXIT VELOCITY (M/S) = 16.3373
STK GAS EXIT TEMP (K) = 505.2000
AMBIENT AIR TEMP (K) = 293.0000
RECEPTOR HEIGHT (M) = .0000
URBAN/RURAL OPTION = RURAL
BUILDING HEIGHT (M) = 7.6200
MIN HORIZ BLDG DIM (M) = 112.5000
MAX HORIZ BLDG DIM (M) = 176.5000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 6797.0000 (ACFM)

BUOY. FLUX = 4.206 M**4/S**3; MOM. FLUX = 9.675 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.0	320.0	74.25	1.67	1.62	NO
100.	.5604	4	10.0	10.3	3200.0	17.59	8.34	10.13	HS
200.	.4271	4	8.0	8.2	2560.0	19.83	15.72	13.44	HS
300.	.3866	4	5.0	5.2	1600.0	24.41	22.88	16.75	HS
400.	.3479	4	4.0	4.1	1280.0	27.46	29.78	19.85	HS
500.	.3158	4	3.5	3.6	1120.0	29.64	36.49	22.80	HS
600.	.2889	4	3.0	3.1	960.0	32.55	43.11	25.71	HS
700.	.2657	4	2.5	2.6	800.0	36.62	49.68	28.63	HS
800.	.2462	4	2.5	2.6	800.0	36.62	56.01	31.22	HS
900.	.2232	4	2.5	2.6	800.0	36.62	62.28	31.98	HS
1000.	.2061	4	2.5	2.6	800.0	36.62	68.48	34.17	HS
1100.	.1946	4	2.0	2.1	640.0	42.73	74.82	35.22	NO
1200.	.1838	4	2.0	2.1	640.0	42.73	80.91	37.13	NO
1300.	.1732	4	2.0	2.1	640.0	42.73	86.96	38.99	NO
1400.	.1637	4	1.5	1.5	480.0	52.91	93.28	41.52	NO
1500.	.1574	4	1.5	1.5	480.0	52.91	99.23	43.26	NO
1600.	.1511	4	1.5	1.5	480.0	52.91	105.14	44.97	NO

1700.	.1508	5	1.0	1.1	10000.0	59.07	83.65	33.06	NO
1800.	.1528	5	1.0	1.1	10000.0	59.07	88.00	34.08	NO
1900.	.1540	5	1.0	1.1	10000.0	59.07	92.32	35.08	NO
2000.	.1544	5	1.0	1.1	10000.0	59.07	96.63	36.07	NO
2100.	.1538	5	1.0	1.1	10000.0	59.07	100.92	36.95	NO
2200.	.1527	5	1.0	1.1	10000.0	59.07	105.19	37.81	NO
2300.	.1533	6	1.0	1.1	10000.0	50.58	73.11	25.79	NO
2400.	.1556	6	1.0	1.1	10000.0	50.58	75.92	26.29	NO
2500.	.1576	6	1.0	1.1	10000.0	50.58	78.72	26.77	NO
2600.	.1591	6	1.0	1.1	10000.0	50.58	81.51	27.26	NO
2700.	.1604	6	1.0	1.1	10000.0	50.58	84.29	27.73	NO
2800.	.1613	6	1.0	1.1	10000.0	50.58	87.06	28.20	NO
2900.	.1619	6	1.0	1.1	10000.0	50.58	89.82	28.66	NO
3000.	.1623	6	1.0	1.1	10000.0	50.58	92.58	29.12	NO
3500.	.1586	6	1.0	1.1	10000.0	50.58	106.22	30.99	NO
4000.	.1530	6	1.0	1.1	10000.0	50.58	119.67	32.73	NO
4500.	.1466	6	1.0	1.1	10000.0	50.58	132.96	34.37	NO
5000.	.1399	6	1.0	1.1	10000.0	50.58	146.08	35.92	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:
77. .7350 6 4.0 4.5 10000.0 22.76 4.42 9.65 HS

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** REGULATORY (Default) ***
PERFORMING CAVITY CALCULATIONS
WITH ORIGINAL SCREEN CAVITY MODEL
(BRODE, 1988)

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CONC (UG/M**3) = .0000	CONC (UG/M**3) = .0000
CRIT WS @10M (M/S) = 99.99	CRIT WS @10M (M/S) = 99.99
CRIT WS @ HS (M/S) = 99.99	CRIT WS @ HS (M/S) = 99.99
DILUTION WS (M/S) = 99.99	DILUTION WS (M/S) = 99.99
CAVITY HT (M) = 7.62	CAVITY HT (M) = 7.62
CAVITY LENGTH (M) = 45.49	CAVITY LENGTH (M) = 41.97
ALONGWIND DIM (M) = 112.50	ALONGWIND DIM (M) = 176.50

CAVITY CONC NOT CALCULATED FOR CRIT WS > 20.0 M/S. CONC SET = 0.0

END OF CAVITY CALCULATIONS

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION MAX CONC DIST TO TERRAIN

PROCEDURE	(UG/M**3)	MAX (M)	HT (M)
SIMPLE TERRAIN	.7350	77.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

Engineering Analysis

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY South Central Regional Office

INTRA-AGENCY MEMORANDUM

Permit Writer	David J. Brown			
Memo To	Air Permit File	Date	4/2/03	
Facility Name	Columbia Forest Products			
Registration Number	30120			
County-Plant I.D.	143-00017			
UTM Coordinates (Zone 17)	642163	Easting	4076410	Northing
Elevation (feet)	660			
Distance to Nearest Class I Area (select one)	>10 K	SNP (km)	>10K	JRF (km)
FLM Notification Required if less than 10K (minor), 100K (state major) (Y/N)	N			
NET Classification (A, SM, B)	SM	Before permit action	SM	After permit action
Pollutants for Which the Source is Title V Major	None	Before permit action	None	After permit action
PSD Major Source (Y/N)	N	Before permit action	N	After permit action
Pollutants for Which the Source is PSD Major	N/A	Before permit action	N/A	After permit action

Introduction

Columbia Forest Products (CFP) operates a hardwood panel consolidation plant at 100 Paul Road, 0.5 miles north of Chatham Virginia. The process involves application of glue to components, panel assembly, curing of panels in a hot press, and trimming and sanding of the panels. A sealer is applied to some of the panels on a UV finishing line. A 7 MMbtu/hr input woodwaste-fired boiler provides process heat for the press and space heat. Equipment at this source is covered by a facility-wide State Operating Permit (SOP) issued under Chapter 80, Article 5 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution.

On February 28, 2003, the Department of Environmental Quality (DEQ), South Central Regional Office (SCRO) received a letter from CFP (date February 21, 2003) advising of the planned installation of an additional roll coater on the UV finishing line. The letter further advised that this additional roll coater will be used to divide the amount of coating currently applied by one of the coaters into two applications and will not result in use of additional sealer. The source does not wish to obtain an increase in any permit limit and did not identify any additional changes as a result of the additional coater. Accordingly, the source does not believe that this change is subject to new source review permitting but they are requesting that the SOP be amended to reflect the additional equipment.

Review of information submitted indicated a discrepancy between file information, including the current permit, and the proposal, with respect to the number of coaters currently on the finishing line. The finishing line was originally constructed with one roll coater and one sander under a 1995 new source review (NSR) permit. The original SOP was issued in 1998 and included an additional roll coater and sander on the UV finishing line. The SOP was subsequently amended in 2000 to provide for modifications including a third roll coater for the finishing line. Therefore, as permitted by the March 17, 2000 SOP, the UV finishing line is approved for a total of three roll coaters. However, the schematic submitted with the February 21, 2003 request for an additional roll coater shows only three roll coaters after the requested change. CFR was contacted concerning this inconsistency and DEQ was advised by email on April 1, 2003 that the line after the proposed modification would have a total of three roll coaters. While not expressly stated in CFP's response, the additional coater approved in March 2000 apparently was never installed.

Emission Unit(s) / Process Description(s)

The proposed modification is for the finishing line used to apply UV cured sealer to some of the panels manufactured at the facility. Panels are feed into the line sanded and cleaned and then passed through a set of 2 UV coaters/curing lamps, sanded again and then receive a final coat of sealer. Emissions are generated as a result of VOC and HAP constituents of the sealer and PM from the sanders. The sanders emissions are controlled by a baghouse. VOC and HAP emissions are limited by use of UV cured finishes.

Regulatory Review

VAC 5 Chapter 80, Part II, Article 6 – Minor New Source Review

The regulatory review process for consideration of NSR applicability was taken from the NSR exemption checklist found on DEQNet.

The exemption review procedures are detailed in the following steps:

1. Identify each emission unit.

The emissions unit affected by the action is the UV finishing line.

2. If the emission unit is part of an existing source, determine whether the emission unit is a new emission unit or a modification to an existing emission unit.

The request is to add an additional UV coater to a previously permitted emissions unit (the UV finishing line). The addition of this roll coater was previously reviewed for NSR applicability and documented in engineering memo dated 3/13/2000. The roll coater was not installed at that time.

3. If the request is for an existing emission unit and does not qualify as a modification, check to see if it can be processed as either an administrative (9 VAC 5-80-1270) or minor permit (9 VAC 5-80-1280) amendment.

Because the current permit limits emissions to less than the 5-80-1320 D exemption level and does not involve any increase in HAP emissions, the unit is exempt from permitting as a "modification". The source has requested that the SOP be amended to include the additional UV coater. Because the current SOP already provides for the requested equipment and emissions limits, no permit amendment is needed.

4. Identify the emissions from each emission unit.

Pollutants emitted from operation the UV finishing line are VOC, PM, PM-10, xylene, ethyl benzene, 2-butoxyethanol, and diethanolamine. The PM/PM10 emissions are limited by permit to 3.4 tons/yr. PM emissions are from sanding and will not change as a result of the addition of a new coater. Permitted VOC emissions from this line are 3.5 lbs./hr. and 9.0 tons/yr. Since permitted emissions are less than the 5-80-1320 D exemption levels for modification, actual net emissions increase from the change was not calculated. Potential HAP emissions, as calculated from previous application information (based on maximum coating usage of 15.88 gal/hr and 78,642 gal/yr) are:

Xylene	0.980 lbs./hr	2.43 tons/yr.
Ethyl benzene	0.214 lbs./hr	0.53 tons/yr.
2-Butoxyethanol	0.291 lbs./hr	0.72 tons/yr.
Diethanolamine	0.428 lbs./hr	1.06 tons/yr.

All reported HAP constituents are below their respective state toxic exemption levels.

5. Classify the pollutant emissions as follows: Criteria Pollutants and Toxic (HAP) Pollutants.

Criteria pollutants PM, PM10 and VOC are emitted from this emissions unit. HAP pollutants xylene, ethyl benzene, 2-butoxyethanol and diethanolamine are emitted from this emissions unit.

6. Complete emissions calculations.

Emissions calculations for criteria pollutants are not needed since permitted emissions are less than permit exemption levels of 5-80-1320D. HAP emissions calculations are in the attached spreadsheet. To show worst case sealer, there is one spreadsheet for each sealer.

7. Check each emission unit to determine whether it is subject to a New Source Performance Standard (NSPS). If the emission unit is subject to an NSPS, it is not exempt and a permit is required with the exception of those units which would be subject only to record-keeping or reporting requirements or both under NSPS. Additionally, if the NSPS emission unit is located at an existing source with similar emission units permitted under the same NSPS subpart with no less stringent requirements, a permit may not be required if the emissions are otherwise exempt.

437-5085 UV Sealer (Chemcraft International Inc)

Density (lb/gal) = 9.8
 Volatiles (lb/gal) = 0.23
 Gallons/ hour = 15.88
 Gallons/ year = 78642
 Particulate Control Eff = 0
 Transfer Efficiency = 1
 VOC Control Efficiency = 0

Chemical	Wt %	TVA %MA (mg/m3)	TV C/STEC (mg/m3)	Uncont. Emissions (lb/hr)	Uncont. Emissions (T/yr)	Expected Emissions (lb/hr)	Expected Emissions (T/yr)	SAAC (1-hr) {µg/m3}	SAAC (annual) {µg/m3}	Exempt (lb/hr) ?	Exempt (T/yr) ?
VOC				3.652	15.998	3.652	9.044				
Particulate (& PM-10)				0.000	0.000	0.000	0.000				
Xylene	0.1716	434	651	0.267	1.170	0.2671	0.6613	16275.00	868	Y	Y
2-butoxyethanol	0.1872	121		0.291	1.276	0.2913	0.7214	6050.00	242	Y	Y
Dietanolamine	0.2748	13		0.428	1.873	0.4277	1.0589	650.00	26	Y	Y

R112524 Raycron Sealer/Topcoat (PPG Industries Inc.)

=====
 Density (lb/gal) = 9.64
 Volatiles (lb/gal) = 0.08
 Gallons/hour = 15.88
 Gallons/year = 78642
 Particulate Control Eff = 0
 Transfer Efficiency = 1
 VOC Control Efficiency = 0
 =====

Chemical	WT %	TLV	TLV	Uncont. Emissions (lb/hr)	Uncont. Emissions (T/yr)	Expected Emissions (lb/hr)	Expected Emissions (T/yr)	SAAC (1-hr) (µg/m3)	SAAC (annual) (µg/m3)	Exempt (lb/hr) ?	Exempt (T/yr) ?
		TWA (mg/m3)	C/STEL (mg/m3)								
VOC				1.270	5.564	1.270	3.146				
Particulate (& PM-10)				0.000	0.000	0.000	0.000				
Xylene	0.54	434	651	0.980	4.291	0.9797	2.4259	16275.00	868	Y	Y
Ethyl Benzene	0.14	434	543	0.214	0.939	0.2143	0.5307	13575.00	868	Y	Y