Port Townsend Paper

Old Corrugated Container Pulper Replacement Project

Notice of Construction Order 16293

Support documents

Emails between the Department of Ecology and Port Townsend Paper Corporation

From: Wilson, Darren
To: Yamazaki, Shingo (ECY)
Cc: Jones, Samuel B. (Sam); Turner, Kaila M.
Subject: RE: OCC Project Application
Date: Tuesday, April 09, 2019 1:37:31 PM

Shingo,
I was able to get some additional information on the two sources. Here is a more detailed description of each:

- Mill CC
  - Paper machine furnish: 100% recycled paperboard
  - Pulp fiber source: Mixed recycle. This includes 1) printer paper/envelopes, 2) OCC, 3) box clippings and broke, 4) old newspaper
- Mill KK
  - Paper machine furnish: 100% recycled linerboard
  - Pulp fiber source: OCC

Neither source is part of a Kraft mill or a bleaching mill. Two of the four fiber sources used at Mill CC are recycled products that were bleached. I'm assuming this could be the source of chloroform.
Also do know what we can expect for a timeline for the next steps in the permitting process?
Darren

From: Yamazaki, Shingo (ECY) [mailto:syam461@ECY.WA.GOV]
Sent: Tuesday, April 09, 2019 9:46 AM
To: Wilson, Darren
Cc: Jones, Samuel B. (Sam); Turner, Kaila M.
Subject: RE: OCC Project Application

If it is not too much trouble I would appreciate if you could ask if Mill CC had some sort of bleaching operations. Or if they accepted bleached kraft pulp as part of their furnish for other parts of the mill. If so, I don't think it would even make sense to include chloroform as a pollutant with emissions from the OCC plant, especially considering that Mill KK was an ND.
It doesn't really make sense to me why you would see chloroform from an OCC plant.
Shingo

From: Wilson, Darren [mailto:darren.wilson@ptpc.com]
Sent: Tuesday, April 09, 2019 8:27 AM
To: Yamazaki, Shingo (ECY)
Cc: Jones, Samuel B. (Sam) ; Turner, Kaila M.
Subject: RE: OCC Project Application

All of the info I have on the source facilities is provided in the documents I sent. I'll need to reach out to NCASI to see if they can provide this?
Darren

From: Yamazaki, Shingo (ECY) [mailto:syam461@ECY.WA.GOV]
Sent: Tuesday, April 09, 2019 8:02 AM
To: Wilson, Darren
Cc: Jones, Samuel B. (Sam); Turner, Kaila M.
Subject: RE: OCC Project Application

Good morning Darren,
Could you look into Mill CC and Mill KK and see if those mills also produce/process bleached kraft

pulp/paper?
I am wondering if the chloroform emission factor may be artificially high when compared to the actual emission and PTPC, since PTPC does not use bleached pulp and would therefore have lower levels of organochlorides in the whitewater used for OCC pulping.
If so, I would like to make a note in the order explaining that.
Shingo

From: Wilson, Darren [mailto:darren.wilson@ptpc.com]
Sent: Friday, April 05, 2019 8:59 AM
To: Yamazaki, Shingo (ECY) <syam461@ECY.WA.GOV>
Cc: Jones, Samuel B. (Sam) <sam.jones@ptpc.com>; Turner, Kaila M. <kaila.turner@ptpc.com>
Subject: RE: OCC Project Application

Shingo,
After reviewing the info we provided and the source data from NCASI, we feel the emission estimates in the NOC we submitted present the most defensible high end estimation. The attached documents explain this in more detail.
As you know this is a time sensitive project, so I want to make sure we are continuing to move forward with the permitting process. Let me know if you have any further questions or comments.
Thanks,

Darren Wilson
Environmental Manager
Port Townsend Paper Corporation
Direct: 360-379-2079 Mobile: 425-387-9098
darren.wilson@ptpc.com

From: Yamazaki, Shingo (ECY) [mailto:syam461@ECY.WA.GOV]
Sent: Tuesday, March 19, 2019 9:24 AM
To: Wilson, Darren
Cc: Jones, Samuel B. (Sam); Turner, Kaila M.
Subject: RE: OCC Project Application

Thank you Darren. I have given the application another review and I have a couple of comments. I know we had a pre-application meeting/call to hopefully prevent a lengthy back-and-forth process but each time I review the application something else seems to stick out. Part of this is me thinking out loud so I would be interested in hearing PTPC thoughts/response.

<u>Emission Factors:</u>

My main concern is with the use of the median/mean emission factors for the TAPs analysis. The NCASI emission factors are based on only two data points which leads to a decent amount of uncertainty. Using the maximum value in the emissions calculations/modeling analysis would be the most defensible approach for ensuring that the emission estimates are either representative or conservative for this project. However, I understand that if you use the max value, acetaldehyde would exceed the ASIL based on the AERSCREEN modeling.
The paths forward as I see them:

1) Use the maximum NCASI emission factors and a more precise/accurate model (not AERSCREEN)… failure of the ASIL would lead to a second tier analysis;
2) Use the maximum NCASI emission factors, keep using the screening model, and PTPC accepts an OCC production cap in the approval order to limit TAPs below the ASIL;
3) Use the median/mean emission factors and the approval order requires additional source testing for acetaldehyde, chloroform(?), and formaldehyde to confirm emission factors used

in the analysis are accurate. I am not sure if chloroform would need to be tested for. If the chloroform was there only because the white water used for pulping was from a bleached kraft mill… then it may not be a pollutant that would be expected from the PTPC OCC plant. The source test results would potentially require reopening and modifying the approval order.

4) Use median/mean emission factors and the approval order requires some sampling of the OCC pulper effluent and comparison to values in the NCASI studies could (maybe) help verify emission factors. My understanding is that water samples were taken as part of the emission factor development. I am not knowledgeable enough to know if the water samples are in any way correlate-able to the air emissions.

Project Scope:

PTPC previously provided Ecology with a "Project Summary" for #2 Paper Machine Upgrades (email received by Ecology November 14, 2017). This project summary described a three-phase project which included the I-table upgrade and OCC pulper project. Realistically the OCC project is part of a larger project that has been split up into phases. I think that it is important that this interrelationship be captured. Either a discussion of the emissions and modification at PM2 or an explanation provided as to why the projects were not considered to be one project in the context of minor new source review.

Shingo

From: Wilson, Darren [mailto:darren.wilson@ptpc.com]
Sent: Friday, February 15, 2019 7:35 AM
To: Yamazaki, Shingo (ECY) <syam461@ECY.WA.GOV>; Inloes, Scott (ECY) <SINL461@ECY.WA.GOV>
Cc: Jones, Samuel B. (Sam) <sam.jones@ptpc.com>; Turner, Kaila M. <kaila.turner@ptpc.com>
Subject: OCC Project Application

Shingo, Scott,

We have submitted the final updates for the OCC project application. Each of you will be getting a copy in the mail early next week. I'm also attaching the electronic version of the NOC. Let me know if you have any questions or comments.

Thanks,

Darren Wilson
Environmental Manager
Port Townsend Paper Corporation
Direct: 360-379-2079 Mobile: 425-387-9098
darren.wilson@ptpc.com

Project Air Pollution Emission Estimations

Port Townsend Paper Corporation
100 Mill Road, Port Townsend, WA 98368
www.PTPC.com

April 5, 2019

Shingo Yamazaki, PE
Industrial Section
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

Subject: OCC Pulper Project Emission Estimations

Dear Mr. Yamazaki:

We received your email on March 19, 2019 with comments on the use of emission factors in the OCC Notice of Construction (NOC) permit application. The factors provided are the mean emission rates presented in NCASI technical bulletin (TB) 973 (2010), table 10.4 "Air Toxic Emissions from OCC and Recycled Paperboard Stock Preparation".

TB 973 summarizes the rates from two tested sources as emission for recycled stock preparation. The first source is identified as "Mill CC" in the database and produces recycled paperboard from miscellaneous recovered fibers. The second source is identified as "Mill KK" in the database and produces linerboard from old corrugated container (OCC) furnish. Since these processes use different fiber sources, they are expected to produce different emission rates. Mill KK in this case would be more similar to the PTPC OCC plant. In the study, Mill KK had a lower emission rate for acetaldehyde than Mill CC (0.0007 lb/ADTP vs. 0.0016 lb/ADTP). By using the average of the two tests, we are already accounting for higher emissions from a facility with a different fiber source. This is a conservative "worst-case" estimation for acetaldehyde, which is higher than the emission rate tested at the more comparable facility.

In June 2015 the Nippon Paper Industries mill in Port Angeles, WA submitted a similar NOC application to Olympic Region Clean Air Agency (ORCAA) for an OCC pulper conversion. Emission estimations in this application only looked at the rates from Mill KK in NCASI TB 973. This was done because the other tested source (Mill CC) was not an OCC pulper. ORCAA accepted this approach and approved the project under Order of Approval 15NOC1115 in August 2015. Since the Port Angeles mill (currently McKinley Paper) competes with PTPC for OCC fiber, permitting standards for each facility should be the same.

A comparison of the emissions presented in the NOC application and emissions using the Mill KK rate are attached with this letter. In both cases only acetaldehyde is above the SQER. Acetaldehyde emissions with the Mill KK rate are lower than what was modeled in the NOC application using the mean of the two sites. A copy of the database file referenced in TB 973 is also attached.

Your March 19th email also mentioned the project scope in regards to a 2017 project summary document which had previously been provided to Ecology. At the time the document was prepared, PTPC was planning to upgrade the dryer system on paper machine 2 (PM2) which would allow for an

increase in PM2 production. The dryer project is no longer scheduled, so there will not be an increase in short term hourly emissions resulting from the OCC project. If the dryer upgrade project is re-activated, it will be permitted as a separate project. As stated in the NOC application, PM2 does not meet the regulatory permitting definition of "modification" because there is no change in the hourly emission rate.

Based on the information I have described, I believe the estimation method presented in the NOC application provides the most defensible worst-case emission scenario. If you have any additional questions or comments about TAP emission estimations and scope of work for the OCC project, please contact me at darren.wilson@ptpc.com or 360-379-2079.

Sincerely,

Darren Wilson
Environmental Manager – Port Townsend Paper Corporation

Attachments:

- NCASI Table B5 - 'Air Toxic' Emissions from OCC & Recycled Paperboard Stock Preparation (TB 973 table 10.4 detail data)
- OCC TAP Emission Factor Comparison

Air Quality Modeling Based on Terrain

From:	Palcisko, Gary (ECY)
To:	Yamazaki, Shingo (ECY)
Subject:	with and without terrain
Date:	Wednesday, April 17, 2019 5:08:54 PM
Attachments:	PTP_OCC.OUT_withterrain.txt PTP_OCC_noterrain.OUT

Slightly higher with terrain, but not too much higher.

Gary Palcisko
Air Quality Program
WA Dept. of Ecology
300 Desmond Drive
PO Box 47600
Lacey WA 98504-7600
Phone: 360-407-7338

AERSCREEN 16216 / AERMOD 16216r 04/17/19
17:01:50

TITLE: VOLUME

********** VOLUME PARAMETERS **********

SOURCE EMISSION RATE: 1.0000 g/s 7.937 lb/hr
VOLUME HEIGHT: 10.67 meters 35.01 feet
INITIAL LATERAL DIMENSION: 5.10 meters 16.73 feet
INITIAL VERTICAL DIMENSION: 9.92 meters 32.55 feet
STACK BASE LONGITUDE: -122.7969 deg 515122. Easting
STACK BASE LATITUDE: 48.0949 deg 5326873. Northing
STACK BASE UTM ZONE: 10
REFERENCE DATUM (NADA): 4
STACK BASE ELEVATION: 2.44 meters 8.01 feet
RURAL OR URBAN: RURAL

FLAGPOLE RECEPTOR HEIGHT: 1.50 meters 4.92 feet

DIGITAL ELEVATION MAP(S) "y:\4_Ranil\PTPC_terrain\TerrainMaps\tmpdm1_1.dem"
"y:\4_Ranil\PTPC_terrain\TerrainMaps\tmpdm1_2.dem"
"y:\4_Ranil\PTPC_terrain\TerrainMaps\tmpdm2_1.dem"
"y:\4_Ranil\PTPC_terrain\TerrainMaps\tmpdm2_2.dem"
"y:\4_Ranil\PTPC_terrain\TerrainMaps\tmpdm3_1.dem"
"y:\4_Ranil\PTPC_terrain\TerrainMaps\tmpdm3_2.dem"

INITIAL PROBE DISTANCE = 1000. meters 3281. feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

********** FLOW SECTOR ANALYSIS **********
25 meter receptor spacing: 100. meters - 1000. meters

MAXIMUM IMPACT RECEPTOR
FLOW 1-HR CONC DIST HEIGHT TEMPORAL
SECTOR (ug/m3) (m) (m) PERIOD
---
10 2139. 100.0 4.77 WIN

20	2136.	100.0	4.20	WIN
30	2137.	100.0	4.41	WIN
40	2137.	100.0	4.42	WIN
50	2135.	100.0	3.97	WIN
60	2133.	100.0	3.60	WIN
70	2133.	100.0	3.56	WIN
80	2133.	100.0	3.59	WIN
90	2139.	100.0	4.86	WIN
100	2144.	100.0	5.75	WIN
110	2145.	100.0	6.13	WIN
120	2147.	100.0	6.50	WIN
130	2149.	100.0	7.06	WIN
140	2152.	100.0	8.09	WIN
150*	2157.	100.0	10.34	SPR
160	1700.	100.0	12.75	WIN
170	1662.	100.0	13.66	WIN
180	1671.	100.0	13.45	WIN
190	1974.	100.0	12.09	SPR
200	2154.	100.0	8.98	WIN
210	2144.	100.0	5.76	WIN
220	2135.	100.0	3.93	WIN
230	2129.	100.0	2.87	WIN
240	2128.	100.0	2.56	WIN
250	2128.	100.0	2.56	WIN
260	2128.	100.0	2.56	WIN
270	2129.	100.0	2.82	WIN
280	2131.	100.0	3.11	WIN
290	2132.	100.0	3.30	WIN
300	2133.	100.0	3.66	WIN
310	2136.	100.0	4.24	WIN
320	2141.	100.0	5.13	WIN
330	2144.	100.0	5.81	WIN
340	2143.	100.0	5.53	WIN
350	2141.	100.0	5.23	WIN
360	2141.	100.0	5.16	WIN

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 261.0 / 307.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Water
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Spring

ALBEDO: 0.12
BOWEN RATIO: 0.10
ROUGHNESS LENGTH: 0.001 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR MO DY JDY HR
10 01 08 8 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
4.64	0.032	0.100	0.020	12.	13.	-1.0	0.001	0.10	0.12	0.50

HT	REF TA	HT
10.0	261.0	2.0

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR MO DY JDY HR
10 01 08 8 12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
4.64	0.032	0.100	0.020	12.	13.	-1.0	0.001	0.10	0.12	0.50

HT	REF TA	HT
10.0	261.0	2.0

********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	RECEPTOR HEIGHT (m)	DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	RECEPTOR HEIGHT (m)
100.00	2157.	10.34	575.00	623.2	10.80
125.00	1845.	9.86	600.00	598.8	5.34
150.00	1626.	11.21	625.00	586.3	10.02
175.00	1468.	5.00	650.00	567.3	6.75

200.00	1327.	11.38	675.00	553.2	8.01
225.00	1216.	8.53	700.00	539.5	8.90
250.00	1132.	11.33	725.00	526.3	9.43
275.00	1057.	10.38	750.00	513.6	9.38
300.00	991.4	8.88	775.00	502.5	11.18
325.00	938.6	11.06	800.00	490.8	10.66
350.00	886.3	7.46	825.00	479.9	10.53
375.00	845.3	8.99	850.00	469.6	10.53
400.00	808.6	10.67	875.00	459.2	9.38
425.00	765.7	4.54	900.00	450.0	9.48
450.00	735.9	5.01	925.00	441.4	10.00
475.00	707.0	4.59	950.00	433.4	11.00
500.00	682.3	5.08	975.00	393.5	-2.44
525.00	660.8	6.23	1000.00	386.3	-2.44
550.00	643.6	10.96			

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
ELEVATED TERRAIN	2157.	2157.	1941.	1294.	215.7

DISTANCE FROM SOURCE 100.00 meters directed toward 150 degrees
RECEPTOR HEIGHT 10.34 meters

IMPACT AT THE AMBIENT BOUNDARY	2157.	2157.	1941.	1294.	215.7

DISTANCE FROM SOURCE 100.00 meters directed toward 150 degrees
RECEPTOR HEIGHT 10.34 meters

AERSCREEN 16216 / AERMOD 16216r 04/17/19
16:14:49

TITLE: VOLUME

********** VOLUME PARAMETERS **********

SOURCE EMISSION RATE: 1.0000 g/s 7.937 lb/hr
VOLUME HEIGHT: 10.67 meters 35.01 feet
INITIAL LATERAL DIMENSION: 5.10 meters 16.73 feet
INITIAL VERTICAL DIMENSION: 9.92 meters 32.55 feet
RURAL OR URBAN: RURAL

FLAGPOLE RECEPTOR HEIGHT: 1.50 meters 4.92 feet

INITIAL PROBE DISTANCE = 1000. meters 3281. feet

********** BUILDING DOWNWASH PARAMETERS **********

BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES

********** PROBE ANALYSIS **********
25 meter receptor spacing: 100. meters - 1000. meters

Zo SECTOR	ROUGHNESS LENGTH	1-HR CONC (ug/m3)	DIST (m)	TEMPORAL PERIOD
1*	0.001	2103.	100.0	WIN

* = worst case flow sector

********** MAKEMET METEOROLOGY PARAMETERS **********

MIN/MAX TEMPERATURE: 261.0 / 307.0 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Water
DOMINANT CLIMATE TYPE: Average Moisture
DOMINANT SEASON: Winter

ALBEDO: 0.20
BOWEN RATIO: 1.50
ROUGHNESS LENGTH: 0.001 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

YR	MO	DY	JDY	HR
10	01	02	2	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
3.70	0.031	0.100	0.020	13.	13.	-1.0	0.001	1.50	0.20	0.50

HT	REF TA	HT
10.0	284.0	2.0

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

YR	MO	DY	JDY	HR
10	01	02	2	12

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
3.70	0.031	0.100	0.020	13.	13.	-1.0	0.001	1.50	0.20	0.50

HT	REF TA	HT
10.0	284.0	2.0

********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

MAXIMUM DIST (m)	MAXIMUM 1-HR CONC (ug/m3)	MAXIMUM DIST (m)	MAXIMUM 1-HR CONC (ug/m3)

100.00	2103.	575.00	604.5
125.00	1798.	600.00	586.2
150.00	1581.	625.00	569.2
175.00	1417.	650.00	553.3
200.00	1289.	675.00	538.4
225.00	1185.	700.00	524.4
250.00	1099.	725.00	511.2
275.00	1027.	750.00	498.8
300.00	964.9	775.00	487.0
325.00	911.2	800.00	475.9
350.00	864.0	825.00	465.4
375.00	822.3	850.00	455.4
400.00	785.1	875.00	445.9
425.00	751.6	900.00	436.8
450.00	721.3	925.00	428.2
475.00	693.8	950.00	419.9
500.00	668.6	975.00	412.1
525.00	645.5	1000.00	404.5
550.00	624.2		

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	2103.	2103.	1893.	1262.	210.3

DISTANCE FROM SOURCE 100.00 meters

IMPACT AT THE
AMBIENT BOUNDARY 2103. 2103. 1893. 1262. 210.3

DISTANCE FROM SOURCE 100.00 meters

Prevention of Signification Deterioration Air Quality Permit Determination

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

May 1, 2019

Darren Wilson, Environmental Manager
Port Townsend Paper Company
100 Mill Road
Port Townsend, WA 98368

Re: Replacement OCC Pulper – Prevention of Significant Deterioration (PSD) Applicability Determination

Dear Darren Wilson:

The Washington Department of Ecology's Air Quality Program (Ecology) reviewed Port Townsend Paper Company's PSD applicability determination request regarding your proposed OCC Pulper Project. The request was received by Ecology on January 23, 2019, with suplemental information on February 14, 2019, and March 7, 2019. Your PSD applicability determination fee of $500.00 was processed by Ecology on October 9, 2018. The number of hours required to make this determination exceeded the base number of hours included in the base fee. Port Townsend Paper Company has paid for the extra time Ecology used to prepare this determination.

We find this project does not trigger PSD permitting based on the information submitted by Port Townsend Paper Company. Our determination is enclosed.

If you have any questions, please contact Scott Inloes at 360-407-6896 or scott.inloes@ecy.wa.gov.

Sincerely,

Chris Hanlon-Meyer
Science and Engineering Section Manager
Air Quality Program

Enclosure

cc: Scott Inloes, Ecology
Shingo Yamazaki, Ecology

Toxic Air Pollutant Emission Factor Comparison

Evaluation of Emission Factors from NCASI Technical Bulletin No. 973

Compound*	Mill CC Factor (lb/ADTP)	Mill KK Factor (lb/ADTP)	% Diff	Factor in NOC Application (lb/ADTP)	SQER (lbs/yr)	Emissions Increase NOC Application (lbs/yr)	Emissions Increase w/ mill KK Factor (lbs/yr)
Acetaldehyde	1.61E-03	7.04E-04	-56%	1.16E-03	71	111.78	67.84
Chloroform	4.98E-05	ND	-	4.98E-05	8.35	4.80	0
Formaldehyde	1.22E-04	1.53E-04	25%	1.38E-04	32	13.30	14.72
Methylene Chloride	2.05E-04	2.33E-04	14%	1.68E-04	192	16.19	22.42

** Listed compounds were above WAC 173-460-150 de minimis*

ND - non detect. Rejected in NCASI technical bulletin no. 737 because 1/2 of DL is greater than the highest detection observation

Above SQER

Table B5

Old Corrugated Cardboard and Reycled Paperboard Stock Preparation

Date of Last Update - December 2009

Table B5. 'Air Toxic' Emissions from OCC & Recycled Paperboard Stock Preparation

Volatile Organic Compound	Mill Code	Emissions, lb/ADTP Avg*	Test Method
Acetaldehyde	KK	7.0E-04	D-P/ATC
Acetaldehyde	CC	1.6E-03	D-P/ATC

all non-detects are shown italicized at the detection limit

% of non-detects =	0%					
compound	Sources	Detects	Min	Max	Median	Mean
Acetaldehyde	2	2	7.04E-04	1.61E-03	1.16E-03	1.16E-03

Biphenyl	KK		3.8E-04	D-P/ATC		
Biphenyl	CC		*5.5E-04*	D-P/ATC		
% of non-detects =	50%					
compound	Sources	Detects	Min	Max	Median	Mean
Biphenyl	2	1	<5.5E-04	3.77E-04	3.26E-04	3.26E-04

Carbon Disulfide	KK		*4.3E-04*	D-P/ATC		
Carbon Disulfide	CC		2.9E-03	D-P/ATC		
% of non-detects =	50%					
compound	Sources	Detects	Min	Max	Median	Mean
Carbon Disulfide	2	1	<4.3E-04	2.94E-03	1.58E-03	1.58E-03

3-Carene	KK		*6.9E-04*	D-P/ATC		
3-Carene	CC		*3.5E-04*	D-P/ATC		
% of non-detects =	100%					
compound	Sources	Detects	Min	Max		
3-Carene	2	0	<3.5E-04	<7.7E-04		

Chloroform**	KK	ND	*4.8E-04*	D-P/ATC		
Chloroform	CC		5.0E-05	D-P/ATC		
% of non-detects =	0%					
compound	Sources	Detects			Median	Mean
Chloroform	1	1			4.98E-05	4.98E-05

**** these ND observations are rejected since 1/2 their DL is > the highest detected observation**

Cumene	KK		*5.8E-04*	D-P/ATC
Cumene	CC		*3.3E-04*	D-P/ATC
% of non-detects =	100%			
compound	Sources	Detects	Min	Max
Cumene	2	0	<3.3E-04	<5.8E-04

p-Cymene	KK		*6.2E-04*	D-P/ATC
p-Cymene	CC		*3.8E-04*	D-P/ATC
% of non-detects =	100%			
compound	Sources	Detects	Min	Max
p-Cymene	2	0	<3.8E-04	<6.2E-04

1,2-Dimethoxyethane**	KK		*4.0E-04*	D-P/ATC		
1,2-Dimethoxyethane	CC		3.9E-05	D-P/ATC		
% of non-detects =	0%					
compound	Sources	Detects			Median	Mean

Compound	Code		Avg*	Test Method		
1,2-Dimethoxyethane	1	1			3.93E-05	3.93E-05

** these ND observations are rejected since 1/2 their DL is > the highest detected observation

Formaldehyde	KK		1.5E-04	D-P/ATC		
Formaldehyde	CC		1.2E-04	D-P/ATC		
% of non-detects =	*0%*					
compound	Sources	Detects	Min	Max	Median	Mean
Formaldehyde	2	2	1.22E-04	1.53E-04	1.38E-04	1.38E-04

Methanol	KK		1.5E-03	D-P/ATC		
Methanol	CC		3.5E-03	D-P/ATC		
% of non-detects =	*0%*					
compound	Sources	Detects	Min	Max	Median	Mean
Methanol	2	2	1.54E-03	3.52E-03	2.53E-03	2.53E-03

Methyl Ethyl Ketone (MEK)	KK		*2.5E-04*	D-P/ATC		
Methyl Ethyl Ketone (MEK)	CC		*2.5E-04*	D-P/ATC		
% of non-detects =	*100%*					
compound	Sources	Detects	Min	Max		
Methyl Ethyl Ketone (MEK)	2	0	<2.5E-04	<2.5E-04		

Methylene Chloride	KK		2.3E-04	D-P/ATC		
Methylene Chloride	CC	ND	*2.0E-04*	D-P/ATC		
% of non-detects =	*50%*					
compound	Sources	Detects	Min	Max	Median	Mean
Methylene Chloride	2	1	<2.0E-04	2.33E-04	1.68E-04	1.68E-04

Naphthalene	KK	ND	*7.4E-04*	D-P/ATC		
Naphthalene	CC	ND	*4.0E-04*	D-P/ATC		
% of non-detects =	*100%*					
compound	Sources	Detects	Min	Max		
Naphthalene	2	0	<4.0E-04	<7.4E-04		

Phenol	KK		3.1E-04	D-P/ATC		
Phenol**	CC	ND	*5.3E-03*	D-P/ATC		
% of non-detects =	*0%*					
compound	Sources	Detects			Median	Mean
6.0E+00	1	1			3.07E-04	3.07E-04

** these ND observations are rejected since 1/2 their DL is > the highest detected observation

alpha-Pinene	KK	ND	*5.6E-04*	D-P/ATC		
alpha-Pinene	CC	ND	*5.2E-04*	D-P/ATC		
% of non-detects =	*100%*					
compound	Sources	Detects	Min	Max		
alpha-Pinene	2	0	<5.2E-04	<5.7E-04		

beta-Pinene	KK	ND	*6.7E-04*	D-P/ATC		
beta-Pinene	CC	ND	*4.1E-04*	D-P/ATC		
% of non-detects =	*100%*					
compound	Sources	Detects	Min	Max		
beta-Pinene	2	0	<4.1E-04	<6.7E-04		

Compound	Code		Avg*	Test Method		
Propionaldehyde	KK		1.7E-04	D-P/ATC		
Propionaldehyde	CC		1.1E-04	D-P/ATC		
% of non-detects =	*0%*					
compound	**Sources**	**Detects**	**Min**	**Max**	**Median**	**Mean**
Propionaldehyde	**2**	**2**	**1.11E-04**	**1.75E-04**	**1.43E-04**	**1.43E-04**

Toluene	KK		3.3E-04	D-P/ATC		
Toluene	CC		2.9E-03	D-P/ATC		
% of non-detects =	*0%*					
compound	**Sources**	**Detects**	**Min**	**Max**	**Median**	**Mean**
Toluene	**2**	**2**	**3.29E-04**	**2.87E-03**	**1.60E-03**	**1.60E-03**

D-P/ATC – NCASI Dilution Probe/Ambient Temperature Canister Method

VOCs as C	KK		9.2E-03	D-P/ATC		
VOCs as C	CC		1.0E-02	D-P/ATC		
% of non-detects =	*0%*					
compound	**Sources**	**Detects**	**Min**	**Max**	**Median**	**Mean**
VOCs as C	**2**	**2**	**9.18E-03**	**1.05E-02**	**9.83E-03**	**9.83E-03**

Table B5. 'Air Toxic' Emissions from OCC & Recycled Paperboard Stock Preparation

Mill Code	Product	Areas Tested	Vents Tested	ADTP/ day	Furnish	Test Date	Ref.
KK	Linerboard	pulping, stock washing, screening, building vents	3	1,039	OCC	1996	1
CC	Recycled Paperboard	building vents (pulping, stock washing, screening)	7	733	misc. recov. fiber	1996	1

References

1. Volatile Organic Emissions from Non-Chemical Pulp and Paper Mill Sources - Part II - Recycled paperboard and old corrugated container stock preparation, NCASI Technical Bulletin No. 737, July 1997.