Blue Ridge Environmental Defense League

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Mr. Michael Abraczinskas
Division of Air Quality
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Raleigh, NC 27699-1641
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15A NCAC 2Q .0700

Dear Mr. Abraczinskas:

On behalf of the Blue Ridge Environmental Defense League, I write to submit the following comments. Please consider these in addition to our testimony of October 28th and our report of November 20th.

North Carolina's health-based air toxics rules and the elusive federal MACT are neither duplicative nor equivalent. The Environmental Protection Agency's method of setting maximum achievable control technologies for the reduction of toxins does not and cannot do what North Carolina's health-based standards do. Federal regulation of hazardous air pollutants does not protect public health so well as North Carolina's Toxic Air Pollution program does. The Clean Air Act's technology-based standard is well and good, but a given pollution source 100 yards away from a community will have a vastly greater impact than the same pollution source 200 yards, 500 yards or 1000 yards away. For this reason alone, regulating pollution levels strictly by setting technology standards can never provide the same level of protection as controlling the actual amount of pollution in the air. North Carolina's acceptable ambient levels take into account the distance of smokestacks from property lines and hence from people. In fact, full implementation of the state toxics limits, without exemptions, is the best such protection available to the residents of this state.

We urge the NC Environmental Management Commission to eliminate exemptions for industrial boilers which are part of an air pollution facility which has other smokestacks covered by the state's toxic air pollutant limits. We believe that the intent of the original temporary exemption was not that such multiple-polluting facilities be included. Many of North Carolina's air pollution permits now exempt the boilers at paper mills and asphalt plants among others. These exemptions endanger public health.

Below is a detailed example of the health hazards of the industrial boiler exemption as applied at international Paper's Riegelwood Mill in Columbus County. The analyses show clearly that the inclusion of boilers 1 and 3 in toxic air pollution modeling results in exceedences of several toxics. Protection of public health requires a full accounting of pollution impacts.

IP Riegelwood has six power units listed in its permit.[1] The four main units burn a combination of fossil fuels and wood waste; two units are permitted as temporary power supplies. Power Boilers No.1 and No.3 are permitted by DAQ as multiple fuel units. Power Boiler No.1 has a maximum permitted heat input rate of 259 million BTU per hour (mmBTU/hr) when burning fuel oil and Power Boiler No. 3 has a maximum permitted heat input rate of 249 million BTU per hour when burning fuel oil or coal and 600 mmBTU/hr when burning bark/wood fiber sludge/fossil fuel.

In 2004 and 2007 air toxics analyses were performed by an IP consultant[2] and provided to the NC DAQ. These analyses were required for IP to comply with federal and state requirements. The Final Report of the air toxics analysis[3] states: "Power Boilers No. 1 and No. 3, which are permitted to burn recycled oil, are exempted from the modeling analysis." Further, the analysis posits that the "recycled oil is considered unadulterated. Therefore these boilers were not included in the analysis."[4] **These statements provide evidence to the Environmental Management Commission of the impact of the combustion source exemption for unadulterated fossil fuel and wood waste.** While stating the paper mill operator's requirements to control toxic air pollutants, IP omits two major sources of pollution. As we will demonstrate below, these two sources emit huge amounts of toxic air pollution.

Considered alone, the emissions of arsenic and chromium from Power Boiler No.1 appear to exceed by many times the acceptable ambient levels for these toxic heavy metals outside of the property line of the mill. Further, emissions of these pollutants would be roughly doubled by the operation of Power Boiler No.3 when it burns waste oil fuel, adding to the excess levels and to the negative health impacts. However, we cannot consider these pollution sources in isolation. The combustion of fossil fuel and wood waste in Power Boilers No. 2 and No. 4 which are of similar size and of similar pollution impact. Also, numerous other sources of air toxics—foam tanks (3), recovery boilers (3), smelt tanks (3), lime kilns (2) etc.—add to the total air pollution impact.

Power Boiler No.3 is also permitted to burn waste wood. The emissions of benzene and hexachlorodibenzo-p-dioxin (HxCDD) from this unit alone are high enough to have a significant negative impact on public health. But here again the boiler does not operate in isolation and the EMC must consider the impacts of this exempted source in combination with numerous other sources of toxic pollution. In fact, Power Boiler No.2, which is not an exempted source, is permitted to burn adulterated wood residues which would increase the levels of dioxin, benzene, heavy metals and many other toxic pollutants.

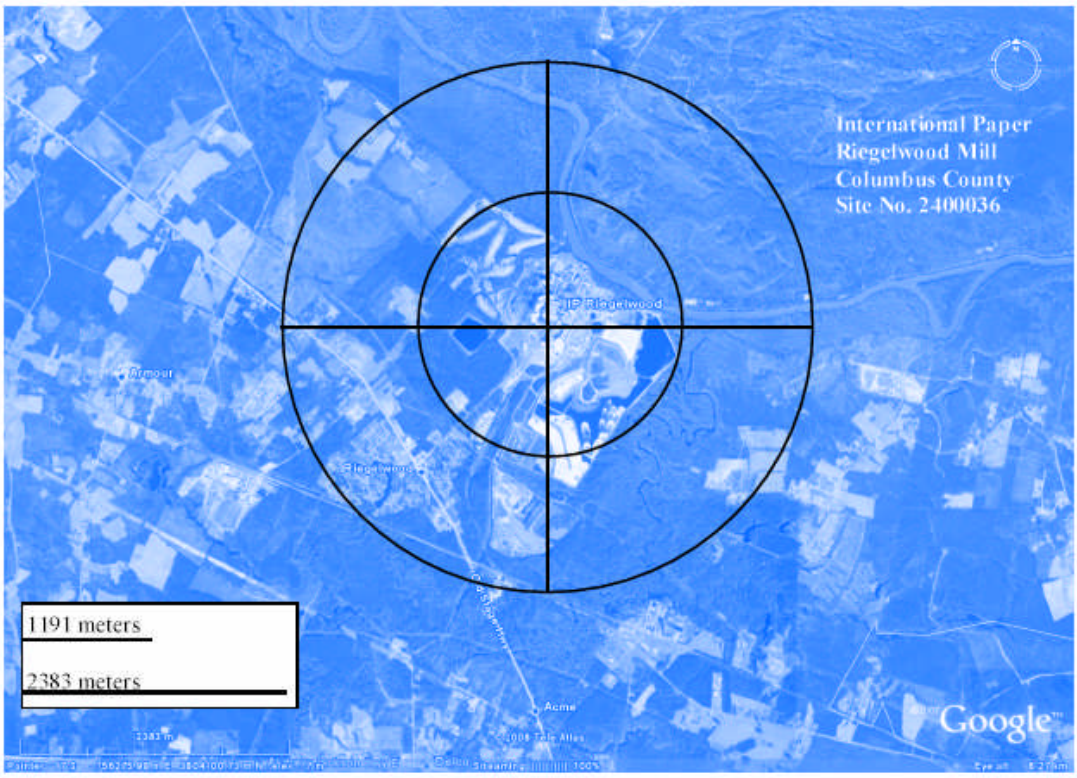
[1] IP Air Permit No. 03138R30 effective May 12, 2008
[2] URS Corporation 1600 Perimeter Drive, Morrisville, NC
[3] P:\COMMON_PROJECTS\2007\IP RIEGELWOOD\TOXICS MODELING\REPORT\FINAL REPORT.DOC\11-JUL-07, Section 3.3, page 3-4
[4] We note that Power Boiler No.2 is permitted to burn "bark/coal/wood fiber sludge/No.6 fuel oil/woodwaste absorbed oil residue/natural gas/Noble Oil Services No.4 equivalent used oil" and is not exempted from the modeling analysis. Presumably, the exemption does not apply because the listed fuels for boiler 2 are not deemed "unadulterated."

Blue Ridge Environmental Defense League performed an analysis of the impacts of the exempted units, Power Boilers No.1 and No.3. Point source data for our analysis was based on information in permit files in Raleigh Central Office DAQ.[5]

Analysis of Toxic Air Pollution Impacts from Exempt Combustion Sources

The aerial photograph below of the IP Riegelwood site illustrates the extent of the potential contamination from the exempted combustion sources.[6]

Aerial Photograph of International Paper, Riegelwood, North Carolina



The aerial photo above provides a surface reference scale of 2383 meters. BREDL utilized this distance and one-half this distance to add the concentric circles at 1191 and 2383 meters, both of which encompass areas outside of the property boundary of the paper mill. The property boundary is the point of compliance for the NC Toxic Air Pollutant acceptable ambient limits (AALs). The terrain in the vicinity of the paper mill is relatively flat; therefore, the steady-state, gaussian dispersion model utilized in our analysis indicates that pollution levels at the outer circle are higher within the area of the circle, rising as the distance to the mill decreases. Well inside the southwestern segment of the outer circle can be seen the town of Riegelwood, NC.

[5] International Paper Riegelwood Mill, URS Project No.318256636, July 2007, Point Source Parameters, Table 3-2

[6] Google Earth data from an eye altitude of 8.27 km, UTM 756311 easting, 3804631 northing

Power Boiler No. 1

Power Boiler No.1 is permitted to burn waste oil as fuel. Therefore, we utilized waste oil emission factors listed in the US EPA's AP-42 database. Three values are listed: (1) small boilers, (2) space heaters with vaporizing boilers and (3) space heaters with atomizing burners. Table A below lists all three values in reference to IP Power Boilers.

Table A. Power Boiler No. 1 Burning Waste Oil

Pollutant	Emission Factor[a] lb/10^3 gallon	Pollutant Emissions[b] Lb/hr	Actual ambient concentration[c] microgram/cubic meter	AAL[d] ug/m3	Ratio of Actual to AAL[e]
Arsenic (1)	1.1 E-01	0.205	7.6 E-03	2.3 E-04	3,304 %
(2)	2.5 E-03	4.66 E-03	1.73 E-03	2.3 E-04	75 %
(3)	6.0 E-02	1.12 E-01	4.15 E-03	2.3 E-04	1,804 %
Cadmium (1)	9.3 E-03	1.72 E-02	6.42 E-04	5.5 E-03	11.7 %
(2)	1.5 E-04	2.79 E-04	1.03 E-05	5.5 E-03	0.2 %
(3)	1.2 E-02	2.23 E-02	8.27 E-04	5.5 E-03	15 %
Chromium(1)	2.0 E-02	3.73 E-02	1.38 E-03	8.3 E-05	1,662 %
(2)	1.9 E-01	3.54 E-01	1.31 E-02	8.3 E-05	15,783 %
(3)	1.8 E-01	3.35 E-01	1.24 E-02	8.3 E-05	14,939 %

a. AP-42 Emission Factors Table 1.11-4 speciated metals from waste oil combustors
b. Product of 259 mmBTU/hr maximum heat input divided by 139,000 BTU/gallon times Emission Factor (BTUs/gallon from DOE Energy Information Administration, www.eia.doe.gov/basics/conversion_basics.html)
c. Product of Generic Modeled Concentration from SCREEN3 Model at a distance of 1,191 meters from the plant stack (.4636 ug/m3, see Attachment) x Pollutant Emissions lb/hr x Conversion Factor of 0.08 for annual concentration.[7]
d. Toxic Air Pollutant Guidelines 15A NCAC 02D .1104 converted to ug/m3
e. Actual ambient concentration divided by AAL

These stunning levels of pollution are the result of burning waste oil in the boiler. No matter which emission factor is applied, the pollution levels outside of the fence line of the IP mill should raised caution flags for the EMC. If this were an isolated finding, it would require the Commission to reassess its potential acceptance of the combustion source exemption based on the DAQ's study. As this finding is one among many, we believe it should cause the EMC to eliminate the combustion source exemption.

Power Boiler No. 3

Power Boiler No.3 is permitted to burn fossil fuel and/or wood residues. The US EPA database lists emission factors for wood waste combustors. The League's SCREEN3 modeling analysis indicates high levels of benzene and hexachlorodibenzo-p-dioxins at 1,191 meters and at 2,383 meters. The results are compiled on Table B, below. Although the level of pollution from this unit alone does not appear to exceed NC AALs,

[7] This follows NC DAQ modeling practice as stated in Air Quality Section memorandum to John Evans AQS from Henry Manfrediz AQAB, March 27, 1997

the ambient concentrations of 32% and 54% for dioxin and benzene must be included in the overall facility emissions total.

Table B. Power Boiler No. 3 Burning Waste Wood

Pollutant	Emission Factor[f] lb/mmBTU	Pollutant Emissions[g] lb/hr	Actual ambient conc.[h] ug/m3 at 1191 meters	Actual ambient conc.[i] ug/m3 at 2382 meters	AAL[j] ug/m3	Ratio Actual to AAL[k] at 1191 m	Ratio Actual to AAL[k] at 2383 m
Benzene	4.2 E-03	2.52	9.35 E-02	6.42 E-02	1.2 E-01	78%	54%
HxCDD	1.6 E-06	9.6 E-04	3.56 E-05	2.45 E-05	7.6 E-05	47 %	32%

f. AP-42 Emission Factors Table 1.6-3 for wood residue combustion
g. Product of 600 mmBTU/hr maximum heat input times Emission Factor
h. Product of Generic Modeled Concentration from SCREEN3 Model at a distance of 1,191 meters from the plant stack (.4636 ug/m3, see Attachment) x Pollutant Emissions lb/hr x Conversion Factor of 0.08 for annual concentration. (See footnote 7 *infra*)
i. Product of Generic Modeled Concentration from SCREEN3 Model at a distance of 2,383 meters from the plant stack (.3186 ug/m3, see Attachment) x Pollutant Emissions lb/hr x Conversion Factor of 0.08 for annual concentration. (See footnote 7 *infra*)
j. Toxic Air Pollutant Guidelines 15A NCAC 02D .1104 converted to ug/m3
k. Actual ambient concentration divided by AAL

In their 2007 toxic air pollution report to DAQ, IP Riegelwood requested facility-wide benzene emissions of 25,165 pounds per year. If Power Boiler No.3 is exempted from the facility-wide total, two outcomes obtain: 1) the facility-wide analysis did not include the benzene emissions from boiler #3 and/or 2) the permitted emissions limits for all the sources of benzene do not include boiler # 3. The end result is that higher amounts of benzene are emitted from the IP Riegelwood mill, more benzene than would be legally permitted if Power Boiler No.3 were not exempt. This scenario is repeated in the case of HxCDD and scores of other toxic compounds.

Conclusion

The NC Environmental Management Commission can and should eliminate the combustion source exemption by striking 15A NCAC 02Q .0702(a)(18).

Respectfully,

Louis A. Zeller

Attachment

Attachment

SCREEN3 Air Pollution Dispersion Modeling for International Paper-Riegelwood

Data Sources

Power Operations:
Air Permit No. 03138R30, International Paper-Riegelwood Mill, effective May 12, 2008

Point Source Parameters:
Table 3-2 International Paper Riegelwood Mill, URS Project No.318256636, July 2007,

Assumptions which form the basis of this analysis:
Stack heights in the URS Final Report for Power Boilers No. 2 and No. 5 are 78 and 76 meters. Therefore, we utilized an average value of 77 meters for stack height for units 1 and 3. In a similar fashion, stack gas exit velocity for units 2 and 5 are 14.2 and 12.4. Therefore, we utilized a value of 13 meters/second for units 1 and 3.

Modeling data

```
ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):
IP Riegelwood 081230_b

ENTER SOURCE TYPE: P    FOR POINT
                   F    FOR FLARE
                   A    FOR AREA
                   V    FOR VOLUME
P
ENTER EMISSION RATE (G/S):
0.126
ENTER STACK HEIGHT (M):
77
ENTER STACK INSIDE DIAMETER (M):
3
ENTER STACK GAS EXIT VELOCITY OR FLOW RATE:
OPTION 1 : EXIT VELOCITY (M/S):
 DEFAULT - ENTER NUMBER ONLY
OPTION 2 : VOLUME FLOW RATE (M**3/S):
        EXAMPLE "VM=20.00"
OPTION 3 : VOLUME FLOW RATE (ACFM):
        EXAMPLE "VF=1000.00"
13
ENTER STACK GAS EXIT TEMPERATURE (K):
338.6
ENTER AMBIENT AIR TEMPERATURE (USE 293 FOR DEFAULT) (K):
293
ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR FLAGPOLE RECEPTOR) (M):
2
ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):
R
CONSIDER BUILDING DOWNWASH IN CALCS?  ENTER Y OR N:
N
```

USE COMPLEX TERRAIN SCREEN FOR TERRAIN ABOVE STACK HEIGHT?
ENTER Y OR N:
N
USE SIMPLE TERRAIN SCREEN WITH TERRAIN ABOVE STACK BASE?
ENTER Y OR N:
N
ENTER CHOICE OF METEOROLOGY;
1 - FULL METEOROLOGY (ALL STABILITIES & WIND SPEEDS)
2 - INPUT SINGLE STABILITY CLASS
3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED
1
USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:
Y
ENTER TERRAIN HEIGHT ABOVE STACK BASE (M):
2
ENTER MIN AND MAX DISTANCES TO USE (M):
1000
2000
****
*** 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
1000.	.5307	1	1.0	1.2	365.8	364.77	224.32	461.24	NO
1100.	.4934	1	1.0	1.2	365.8	364.77	241.42	561.35	NO
1200.	.4609	1	1.0	1.2	365.8	364.77	258.49	672.63	NO
1300.	.4324	1	1.0	1.2	365.8	364.77	275.49	795.10	NO
1400.	.4074	1	1.0	1.2	365.8	364.77	292.42	928.79	NO
1500.	.3852	1	1.0	1.2	365.8	364.77	309.28	1073.75	NO
1600.	.3654	1	1.0	1.2	365.8	364.77	326.06	1230.06	NO
1700.	.3476	1	1.0	1.2	365.8	364.77	342.75	1397.76	NO
1800.	.3315	1	1.0	1.2	365.8	364.77	359.36	1576.93	NO
1900.	.3169	1	1.0	1.2	365.8	364.77	375.89	1767.64	NO
2000.	.3176	2	1.0	1.2	365.8	364.77	297.39	247.85	NO

ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1000. M:

1000.	.5307	1	1.0	1.2	365.8	364.77	224.32	461.24	NO

USE DISCRETE DISTANCES? ENTER Y OR N:
Y
TO CEASE, ENTER A DISTANCE OF ZERO (0).

****
*** SCREEN DISCRETE DISTANCES ***
****

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

```
 DIST     CONC          U10M   USTK  MIX HT   PLUME   SIGMA   SIGMA
  (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)   Y (M)   Z (M)  DWASH
-------  ----------  ----  -----  -----  ------  ------  ------  ------  -----
ENTER DISTANCE (M) (0 TO EXIT):
1191
  1191.  .4636       1    1.0    1.2   365.8  364.77  256.95  662.16    NO
ENTER DISTANCE (M) (0 TO EXIT):
2383
  2383.  .3186       2    1.0    1.2   365.8  364.77  343.80  295.06    NO
ENTER DISTANCE (M) (0 TO EXIT):
3574
  3574.  .2456       2    1.0    1.2   365.8  364.77  484.57  449.65    NO
ENTER DISTANCE (M) (0 TO EXIT):
0

DO YOU WISH TO MAKE A FUMIGATION CALCULATION? ENTER Y OR N:
N

    ****************************************
    *** SUMMARY OF SCREEN MODEL RESULTS ***
    ****************************************

 CALCULATION      MAX CONC   DIST TO  TERRAIN
  PROCEDURE      (UG/M**3)   MAX (M)   HT (M)
--------------  -----------  -------  -------
SIMPLE TERRAIN    .5307       1000.      0.


**************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**************************************************

DO YOU WANT TO PRINT A HARDCOPY OF THE RESULTS?  ENTER Y OR N:
```