

Synthetic Minor vs. Major Permit

At a public meeting in Chatham on February 26, 2004, a local resident (not among the signers of this letter) questioned Allen Armistead of the South Central Regional Office of DEQ regarding how close Columbia Forest Products-Chatham is operating to the major source emission thresholds. Mr. Armistead replied that they were "not anywhere close to those thresholds."

Subsequent inspection of the records indicated that actually the reported emissions numbers are very close to, or beyond, the major source thresholds. This situation has somehow been delicately maintained through approximately 10 years of plant expansions of operational functions and production and employment levels. At the same time, the significant emissions numbers listed in the plant's permits involve the relatively innocuous (to the neighborhood observer) panel gluing operation, while emissions associated with the heavy, pungent, particulate-laden boiler stack plume and strong, irritating unidentified releases from the ultraviolet finishing system are assumed to be small or negligible. Thus, if the panel gluing operation is so large that it strains the limits of the synthetic minor source category, it would seem that the addition of actual emissions from the boiler and finishing department operations surely would greatly surpass the major-source permit threshold.

Ten years ago the plant was minimally noticeable within the neighborhood as to its environmental impact, except for occasional incidents which were corrected, in a general scenario which one might expect from a synthetic minor source. Since 2001, problems of smoke, odor, and noise have rapidly increased and have become extraordinarily oppressive within the neighborhood. The impact is major, and it is our opinion that proper weighing of the evidence would indicate that the air permit should also be of a major category.

It was with this background that we presented notes regarding the air permit's history, and regarding the emissions numbers in the present and proposed permits, at the July 19, 2005 meeting in Lynchburg. We are reprinting those notes below, with attached references which were not included on July 19 (DEQ staff said that references were not necessary). However, the December 19 DEQ reply (3C-01 through 3C-10) indicates at some points uncertainty as to the origin of our information, therefore we are including both the notes and the references for the public record.

We also note that the issue of usage of CR 595 LF resin and resulting permit ramifications involving its emissions (3C-03) are not yet resolved, to our knowledge (see section 5 of this letter, and its references).

Following are documents we presented on July 19, 2005, with references.

Formulation of the Present Air Permit

Columbia Forest Avoids Major-Source Status by Agreeing to Limits

In 1996, SECOR applied for a Synthetic Minor Operating Permit for Columbia Forest Products - Chatham (see 3A-01, 3A-02, and 3A-03). The application stated, "Based on potential to emit, CFP-VA is a major Title V source for a single HAP (methanol emissions would exceed 10 tons/yr if panel gluing was operated 8,760 hours per year at the highest potential throughput rate). CFP-VA has chosen to apply for a state operating permit as a 'synthetic minor' source. CFP-VA will stay out of the Title V federal operating permit program by taking an enforceable limitation on its 'Potential to emit' . . ." (3A-01).

Columbia Forest Seeks to Get as Close to Limit as Possible

The plant initially asked for a methanol limit of 9.95 tons (3A-02). L. S. Leonard, DEQ Air Permit Manager for the Lynchburg office, responded in a July 1, 1996 letter (3A-04, 3A-05), "Since this would be rounded off to 10 tons/yr, your facility would be classified as a major source and a Title V permit would be required. To avoid a Title V permit, it will be necessary to reduce the methanol limit to 9 tons/yr (preferred), or 9.4 tons /yr at the absolute maximum."

DEQ Acquiesces to Columbia Forest

In a November 20, 1996 letter (3A-06, 3A-07, 3A-08) from SECOR to L. S. Leonard, J. Patrick Stevens stated that 9.8 tons/yr methanol limit had been agreed upon (4-07), a reversal of the DEQ's earlier judgment that the numbers needed to be below the amount that could be rounded to 10 tons. In a December 3, 1997 conference call (3A-09), the DEQ and SECOR agreed that the limit on emissions of both methanol and formaldehyde would be 9.8 tons each.

Once Permit Issued, Limits Immediately in Contention

Columbia Immediately Deficient on Compliance-Proving Recordkeeping

On July 11, 1997, David J. Brown issued a Letter of Noncompliance (3A-10, 3A-11) for "deficiencies . . . in the area of record keeping for the permitted UV finishing line . . ." A follow-up inspection by DEQ on June 26, 1997 initiated a period during which records of concern would be submitted by the plant to DEQ (see Craig Nicol's June 15, 2004 explanation, attached as 3A-16, 3A-17, 3A-18, 3A-19), evidently including records related to the synthetic minor permit.

Second Noncompliance Notice Involves Wider Recordkeeping Failure

On March 26, 1998, Columbia Forest Products was cited by DEQ inspector Margaret Wagner (3A-12, 3A-13) for not properly maintaining records to show that they were in compliance with the conditions of their synthetic minor permit. On April 22, 1998, David J. Brown issued a letter of noncompliance (3A-14, 3A-15) for the infraction. In response to the noncompliance letters, the monthly data for resin, the number of panels coated, and the number of hours per month that the boiler were operated were submitted to DEQ, along with the days per month that the boiler was in operation and other data, from February 1998 to July 2002. From July 2002 to present, according to recent plant inspector Craig Nicol (3A-16), the plant has not been required to submit the data to the DEQ, but has been required to maintain the records on-site.

Submission of Data Stops; Emissions Noncompliance Obvious

On February 25, 1999, SECOR asked DEQ for a 30-day extension on submitting 1998 data emissions forms (3A-20). Dave Skelly acknowledged approval of the request on February 26 (3A-21).

Methanol Numbers Exceed Limits; Formaldehyde Numbers Mysteriously Minimized

The delay apparently involved a realization by Columbia Forest and SECOR that their numbers showed they had exceeded their minor-source permit. Back on May 4, 1998, Columbia Forest had submitted to Margaret Wagner, in response to the previously-mentioned noncompliance notifications (3A-12, 3A-13, 3A-14, 3A-15), data for February, March, and April 1998 (3A-22, 3A-23, 3A-24, 3A-25). In these submissions, the methanol-from-resin emission factor was listed as .34%, as had been specified in earlier permit-related correspondence (see 12/3/1997 correspondence, attached as 3A-26), but the *formaldehyde-from-resin emission factor was reduced from .34% to .10% without comment.*

DEQ Catches Methanol Excesses; Misses Identical Formaldehyde Numbers

On March 25, 1999, the delayed data was forwarded from Columbia Forest to DEQ (3A-27 through 3A-40), still containing the new .10% formaldehyde emission factor, but with an additional change showing a new methanol emission factor of .186%, rather than .34%. In response, on May 10, 1999, David J. Brown of DEQ issued Columbia Forest Products a letter of noncompliance (3A-41, 3A-42) stating that using the established .34% emission factor, the plant emitted 10.15 tons of methanol in 1998, thus exceeding their 9.8-ton limit (and by implication, their minor permit status). Inexplicably, nothing was mentioned in the letter regarding formaldehyde, which by the previous standard had in 1998 exceeded the permit limit and minor permit status by the same amount as methanol.

Columbia Forest Gets Unique Test from Supplier; Changes Reporting Technique

In the meantime, Columbia Forest Products had obtained from their resin supplier, Borden Chemical, Inc., new and miraculously lower emissions data regarding the resin they had been purchasing from them. A preliminary letter from David L. Bishop, Manager, Hazard Communications, was sent to Columbia Forest Products plant manager David Abts on April 9, 1999 (3A-43, 3A-44). A specific response to the DEA letter of noncompliance was sent from Bishop to Abts on May 31, 1999 (3A-45), certifying emission factors of .19% for methanol, .12% for formaldehyde, and .457% for total VOC content. Borden Chemical prepared a customized product data sheet for Columbia Forest, dated April 27, 1999 (3A-46).

Unique Test and Resulting Factors: Questionable in Seven Ways

The new emissions factors were exceptional in several aspects:

1. The test batch was custom-made, rather than a production sample (3A-43), and the type of analysis done is not described;
2. The test results came from Borden's Hazard Communications department in Springfield, OR, rather than the Regulatory Compliance and Product Stewardship department in Louisville, KY, from which the previous determination had been received (November 17, 1995, 3A-47). Additionally, the method of calculating the formaldehyde emission factor from the formaldehyde content, as specified in the 1995 letter, was subsequently ignored by both DEQ and Columbia Forest Products, resulting in a decrease of two-thirds;
3. Borden's Bishop *qualified the results by suggesting that methanol analysis be performed once per quarter on actual production samples sent to Columbia Forest*;
4. DEQ's Elizabeth Doan recommended on April 19, 1999 (3A-48) that Columbia Forest Products *obtain a certification of methanol content with every shipment of resin received, in order to continue to use the lower emissions factor (no record of such certifications has been found in DEQ records)*;
5. DEQ's Larry Leonard *formally advised Columbia Forest on April 20, 1999 (3A-49, 3A-50) that methanol content certification would be required with every shipment of resin received, since values being used are lower than stated on the material safety data sheet (3A-51 through 3A-56, but, oddly, only formaldehyde, not methanol, is enumerated there on 3A-55, but the formaldehyde level listed there, .20%, is higher than either the 3A-47, .18%, or 3A-43, .12%).*
6. Columbia Forest's other resin supplier, Neste Resins, had provided formaldehyde content of .50% (Material Safety Data Sheet, 3A-57, 3A-58) and .29% (May 20, 1996, 3A-59, 3A-60) for their product;
7. The emissions numbers used are significantly lower than standard industry numbers found in EPA documents.

Formaldehyde Production Ignored; Numbers Remain Low

As previously mentioned, on May 4, 1998, Columbia Forest had submitted to DEQ's Margaret Wagner data for February, March, and April 1998 (3A-22, 3A-23, 3A-24, 3A-25) in which the formaldehyde-from-resin emission factor was reduced from .34% to .10% without comment. On April 19, 1999 Elizabeth Doan created a memo to file (3A-48) including note that the appropriate formaldehyde concentration should be .12% rather than .10%. The .10% had been used by Columbia Forest in 1998 calculations, but the figure was adjusted to .12% in 1999 reports (3A-61). However, it should be noted that the 12/17/95 *analysis by Borden's Robert J. Boudreau of the resin used indicated that the actual formaldehyde emitted is 300% of that contained in the resin, because more is created through "hydrolysis of methylolurea present in the resin."*

Therefore, it would seem that the emission factor to be used is actually 300% of the formaldehyde content, which has been variously stated as .12% (the unique batch test of March 1999), .15% (typical content stated by Boudreau in December 1995), or .20% (from the actual material safety data sheet from Borden). By that logic, the proper emission factor to be used should be .60% (34,000 pounds), or with significant further verification it could be .45% (25,500 pounds) or .36% (20,400 pounds), but the .12% (6,800 pounds) in use during this period is unjustifiably low, and the reported formaldehyde emissions should have been much higher, likely higher than the 19,600 pounds permit limit and 20,000 pounds minor source limit. (Also note that these figures do not include any of the significant formaldehyde emissions which are certain to have occurred from the large-scale burning of plastics wastes at the facility, which emissions are assumed arbitrarily to be zero – see section 3 of this document.)

It is our understanding that the Borden resin being used is now a different one (CR-601 instead of CR 595 LF). CR-601 has a formaldehyde content of .1% to 1.0%. The material safety data sheet of the new resin (3A-62 through 3A-67) gives a Section 313 content of .19%. Which of these percentages (and whether it should be adjusted by 300%) should be used is not known, but it is again evident that the numbers if complete would likely exceed the permit and category limits.

Numbers from DEQ Files

9.8 tons methanol (3B-01)
9.8 tons formaldehyde (3B-01)
0.69 tons formaldehyde (increase in number of openings of press) (3B-02)
1.09 tons methanol (increase in number of openings of press) (3B-02)
0.006 tons diethanolamine (increase in number of openings of press) (3B-02)
1.126 tons formaldehyde (replacement of older resin spreader with new spreader) (3B-03, 3B-04)
0.237 tons methanol (replacement of older resin spreader with new spreader) (3B-03, 3B-04)
0.011 tons diethanolamine (replacement of older resin spreader with new spreader) (3B-03, 3B-04)
0.03 tons diethanolamine (information submitted in order to be allowed to use new methods of calculating glue emissions) (3B-05)
2.4259 tons xylene (from the use of top coat stain) (3B-10)
0.5307 tons ethyl benzene (from the use of top coat stain) (3B-10)
0.6613 tons xylene (from the use of sealer) (3B-09)
0.7214 tons 2-butoxyethanol (from the use of sealer) (3B-09)
1.0589 tons diethanolamine (from the use of sealer) (3B-09)

28.1882 tons HAPS (11.127 tons methanol and 11.616 tons formaldehyde -- over 10 tons of two different HAPs)

0.13 HAPS (unidentified) are listed as coming from the boiler (Summary of Annual Emissions, 12-03-97) (3B-11)

0.005 HAPS (unidentified) are listed as "Facility Wide," 12-03-97 (3B-11)

28.3232 HAPS

0.003094 tons lead (actual emissions in 2003, based on 6/17/96 emission factors) (3B-12, 3B-13)

28.326294 HAPS

0.000818 tons arsenic (3B-14)
0.00184 tons cadmium (3B-14)
0.001567 tons chromium (3B-14)
0.004088 tons copper (3B-14)
0.11242 tons formaldehyde (3B-14)
0.177147 tons manganese (3B-14)
0.019759 tons nickel (3B-14)
0.000409 tons vanadium (3B-14)

28.644342 tons total

Other HAPS enumerated in various documents

From the use of cleaning solvents (PTE usage 49 gallons per year)

- 1.63E-03 tons xylene (3B-15)
- 8.14E-04 tons ethylbenzene (3B-15)
- 8.14E-04 tons toluene (3B-15)
- 8.14E-04 tons 1, 1, 1-trichloroethane (3B-15)
- 8.14E-04 tons perchloroethylene (3B-15)

HAPs listed in various documents as being released from the boiler:

- Acetaldehyde (3B-16, 3B-17)
- Acrolein (3B-16, 3B-17)
- Benzene (3B-16, 3B-17)
- 2, 4-Dinitrophenol (3B-16, 3B-17)
- Formaldehyde (3B-16, 3B-17)
- Naphthalene (3B-16, 3B-17)
- 4-Nitrophenol (3B-16, 3B-17)
- Phenols (3B-16, 3B-17)
- 2, 3, 7, 8-Tetrachloro-dibenzo-p-dioxin (3B-16, 3B-17)
- Chlorine (3B-16, 3B-17)
- Cobalt (3B-16, 3B-17)
- Chromium (total) (3B-16, 3B-17)
- Mercury (3B-16, 3B-17)
- Selenium (3B-16, 3B-17)
- Hydrogen cyanide (3B-19, 3B-23, 3B-27)