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January 5, 2005

Mr. Robert G. Burnley, Director
Virginia Department of Environmental Quality
P. O. Box 10009
Richmond, VA 23240

Re: Appeal of plastics-burning practice at Columbia Forest Products - Chatham.

Dear Mr. Burnley:

Thank you for your attention to our concerns during the Community Open House in Lynchburg on October 20, 2004. As we discussed, we are looking for solutions to the recently-escalating problems of smoke, odors, and noise from the Columbia Forest Products plant in Chatham. Significant communications with officials from both the plant and the South Central Regional Office DEQ have so far failed to resolve the difficulties.

During the October 20 meeting, we mentioned several aspects of the problem, perhaps the most pressing of which involves the burning of plastics in a primitive low-temperature boiler at the facility, allowed by South Central Regional Office DEQ officials, in contradiction to the apparent intent of the air permit, and also in contradiction to acceptable environmental practice. At least three types of plastics are involved: urea-formaldehydes, polyurethanes, and acrylics.

Following is a brief comparison of the burning restrictions in the plant's air permit with a list of the products actually being burned.

<i>The air permit says:</i>	<i>The following are being burned annually:</i>
<p>"The approved fuel for the boiler is wood waste generated from the hardwood panel consolidation facility, excluding any wood which contains chemical treatments or paper or plastic laminates."</p>	<p>Approximately 12 million pounds of:</p> <ul style="list-style-type: none"> Hardwood and softwood veneers; Wood and wheatstraw from composite core boards; Miscellaneous wooden shipping pallets; Urea-formaldehyde resin from veneer application; Urea-formaldehyde resin from composite core boards; Polyurethane resin from core boards; Acrylic stains from the UV-finishing process; Acrylic finishes from the UV-finishing process.

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Following is a list of some of the hazardous byproducts of burning these plastics:

<i>Source:</i>	<i>Byproduct:</i>	<i>Effects on humans:</i>
Urea-formaldehyde and polyurethane resins, and some acrylics	Hydrogen cyanide and isocyanates	Prevent cells from utilizing oxygen. Low exposure can cause nausea, vomiting, breathing difficulties, heart pains, blood changes, headaches, thyroid enlargement, optic nerve damage and blindness. Extended or heavy exposure may cause asthma, harm to the brain and heart, coma and death.
Acrylics	Acrolein	Retained irreversibly in the respiratory tract. Low exposure may cause irritation to the eyes, nose, throat and lungs. Extended exposure may cause general respiratory congestion. Exposure to higher levels may cause death.
Urea-formaldehyde and polyurethane resins, and acrylics	Formaldehyde	Low exposure causes eye and respiratory irritation. Extended or heavy exposure can cause asthma, nausea, vomiting, severe headaches, nosebleeds, impaired lung function, pneumonia, and/or respiratory failure ending in death. It is classified as a possible carcinogen.

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<i>Source:</i>	<i>Byproduct:</i>	<i>Effects on humans:</i>
Urea-formaldehyde and polyurethane resins, and acrylics	Ammonia	Low exposure causes eye and respiratory irritation . Repeated or prolonged exposure to high levels may damage the eyes, liver, kidneys, and lungs , and may cause bronchitis , with cough, phlegm and shortness of breath.
Urea-formaldehyde and polyurethane resins, and acrylics	Carbon monoxide	Reduces the availability of oxygen in the blood. Low exposure causes headache, fatigue, and dizziness . Extended or heavy exposure may be fatal .

You will find that the above points are fully supported in the attached documentation, which includes copies of pertinent references and records as requested.

The discomfort presently caused to residential neighbors is significant. The danger is unacceptable. The fact that the byproducts are not regulated by the plant's permits, nor required to be reported in full in their annual emission reports, is inexcusable. That even the company's own data sheets require the disposal of these materials by licensed incineration or landfill, rather than low-temperature, minimally-controlled burning, is remarkable.

The Columbia Forest Products facility was a compatible neighbor to all of us for decades. We trust that the Commonwealth, acting through the Department of Environmental Quality, can obtain correction of the apparent compounding of errors for the past few years, so that our community can return to the safety, health, and tranquility so long enjoyed.

Yours truly,

(Signatures on next page)

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Enclosures:

Detailed discussion
 Document references
 Videotape of Columbia Forest boiler emissions

Copies to other Community Open House group participants:

Mr. David J. Brown, Air Permit Manager, DEQ South Central Regional Office,
 7705 Timberlake Road, Lynchburg, VA 24502
 Ms. Kathy Frahm, DEQ Director of Policy, P. O. Box 10009, Richmond, VA 23240
 Ms. Helen Tansey, The Nature Conservancy, 530 E. Main St, Suite 1020,
 Richmond, VA 23219

Copies to local officials:

The Hon. Charles Hawkins, Virginia Senate, P. O. Box 818, Chatham, VA 24531
 The Hon. Robert Hurt, Virginia House of Delegates, P. O. Box 2, Chatham, VA 24531
 The Hon. George Haley, Mayor, Town of Chatham, P. O. Box 370, Chatham, VA 24531

Gillispie, Mitchell, Watson, et al, to Robert G. Burnley, Director, Virginia DEQ
January 5, 2005
Attachment – Detailed Discussion – Appeal of plastics-burning practice in Chatham

Introduction

We are urgently requesting, as stated in our cover letter, that the Commonwealth of Virginia, through the Department of Environmental Quality, halt the current practice of burning plastics at the Columbia Forest Products plant in Chatham, Virginia. The following text provides the reasons we are alarmed, and the facts which call for your attention.

Included is information regarding Columbia Forest's air permit, its boiler, and the products being produced and burned. Also within are scientific and medical references regarding the hazardous byproducts of combustion of the plastics being processed at this facility. (At least three types of plastics are involved: urea-formaldehydes, polyurethanes, and acrylics.) Copies of pertinent records and references are annotated in the text and attached, as requested.

Air Permit Restrictions, Columbia Forest Products-Chatham

Current Restrictions on Burning

The current air permit (reference 1C-01) for Columbia Forest Products - Chatham, issued by the South Central Regional Office DEQ on August 28, 2003, includes the statement:

"The approved fuel for the boiler is wood waste generated from the hardwood panel consolidation facility, excluding any wood which contains chemical treatments or paper or plastic laminates."

We have been advised verbally by Craig Nicol, Allen Armistead, and David Miles of the South Central Regional (Lynchburg) Office DEQ that, according to their interpretation of the above, it is permissible for the plant to burn *as wood wastes* urea-formaldehyde and polyurethane resins and acrylic finishes and stains. It is this practice which we are appealing.

As a result of this interpretation of the permit by the Lynchburg DEQ staff, Columbia Forest Products is burning these plastics without restriction, and without any reporting of emissions from that burning (the Catch-22 assumption is that, according to the permit, only *wood wastes* are being burned, so only *wood* emissions are calculated).

Original Permit Wording Lists Wood as Fuel

When the present boiler (a salvaged 1916 German ship's boiler) was installed at the plant in 1980, regional engineer Thomas L. Henderson (present director of the Lynchburg DEQ office) stated in an analysis and evaluation (1C-02):

"Kiln dried wood will be used as fuel."

In both the draft (1C-03 through 1C-08) and the final (1C-09 through 1C-11) permit, the statement was simply:

"The approved fuel for this unit is woodwaste."

1998 Change Created Loophole Allowing Plastics

Eighteen years passed before changes occurred in the permit description of the fuel.

On June 17, 1996, Columbia Forest Products' consultant SECOR provided a more elaborate description (1C-12), indicating the fuels being used in the boiler at that time:

"The facility uses a hogged fuel boiler to provide steam for the plywood presses. The hogged fuel is "white wood" (no bark) consisting of plywood trim, sawdust, sander dust, and scrap such as crate heads. The average moisture content is estimated to be 10%."

That description mentions plywood, but does not mention the resin it contains. The description also does not mention the later-to-come torrent of plastics in sawed, chipped, and sanded composites and finishes.

The first hint of potentially significant anticipated changes appear on October 14, 1997, when a draft of a new permit (1C-13) included the newly-constructed statement:

"The approved fuel for the boiler is wood waste, excluding any wood which contains chemical treatments or has affixed thereto paint and/or finishing materials or paper or plastic laminates."

Such a provision indicates likely concern about the types of burning which are now being done at the plant. However, in an undated subsequent rough draft (1C-14), the portion *"or has affixed thereto paint and/or finishing materials"* is scratched through, thus deleting that restriction.

On December 16, 1997, SECOR addresses the question of materials burned (1C-16, 1C-17) as follows:

"As the DEQ is aware, CFP burns the ply trim from plywood which contains resin, as well as sanderdust which contains sealer coating material, in the boiler. The facility would like this acceptable practice to be documented in writing to distinguish it from 'any wood which contains chemical treatments . . .'"

The term plywood is still used at this point (rather than "composite") as the source of resin, but the question of "sealer coating material" is introduced, without stating that the material is actually acrylic.

In a further, somewhat-confusing, attempt at clarification on December 23, 1997 (1C-17, 1C-18), Larry Leonard of the Lynchburg DEQ office stated:

"... the 'wood waste' condition has been clarified; it includes composite wood generate on-site, but prohibits burning of waste containing plastics or chemical treatments such as creosote."

Thus the term "composite" is first introduced by Mr. Leonard, but his statement is contradictory in that the composites involved are mixtures of woods and plastics, and yet he asserts that the burning of waste containing plastics is prohibited.

In the permit as granted (1C-19), the final statement regarding approved fuel is:

"The approved fuel for the boiler is wood waste generated from the hardwood panel consolidation facility, excluding any wood which contains chemical treatments or paper or plastic laminates."

Under this wording, and with the Leonard "clarification," the Lynchburg DEQ office has apparently created loopholes **allowing the burning of** at least three types of **plastics** (urea-formaldehyde and polyurethane composites, and acrylic finishes), as well as softwoods (more aromatic in nature than hardwoods). At the same time the DEQ has left in place (ineffective) wording indicating the unacceptability of burning plastics and chemicals. The resulting **permit gives the appearance of protecting the surrounding population** from such a practice, while **actually allowing these plastics and chemicals to be burned without acknowledgment, accountability, or restriction.**

Result is Horrendous Increase in Smoke and Smell in the Neighborhood

In recent years, the smoke and smells from the plant have become oppressively worse in the neighborhood and town. At times in the past, the plant's smoke was recognizable as wood smoke. Now, much of the time, the strong odor is like **burning rubber, rotting fish, chicken manure, and other various non-wood smells** which are consistent with the burning of plastic resins and finishes. Additionally, the particle fall has also intensified. The most visible typical particulate residue is brown fibers (1A-05 through 1A-07), indicating that a significant proportion of the material being heated in the boiler is simply not burning. (Note that, in addition to the plastics question, wood particles, unburned and burned, are a significant health hazard – see product data in 1E-01 through 1E-93 and 1D-35, and other information at 1F-33.)

Noise, smoke, and smell from the plant all began to rapidly increase beginning around mid-2001. Calls to the plant regarding various incidents in 2001 and 2002 always brought a variation of the response, "We're working on [something]." Neighbors note that for decades only very occasional difficulties had occurred, which had always been corrected, so there was a significant residual of patience toward the plant. However, by early 2003 the situation had far exceeded anything experienced before, and attempts were made by local citizens to obtain improved conditions, through contacts directly with plant management, and through

governmental officials at all levels, and the DEQ. To date the noise, smoke, and smell problems continue to worsen.

We, the authors of this correspondence, believe that ending the practice of burning plastics will be a major step toward correcting the severe problems we are experiencing.

The Company's Products

Hardwood and Softwood Veneering

The Columbia Forest plant in Chatham applies hardwood (including oak, birch, poplar, maple, cherry, ash, mahogany, walnut, and teak) and softwood (including pine and cedar) veneers to various core boards for use in interior construction, cabinetry, etc. (see references 1D-01 through 1D-29).

Early Use of Plywood Core Boards

The discussion and wording of the original 1980 permit for the Columbia Forest boiler (see above) indicates that it was assumed that the plant would be using cores made of wood, commonly referred to as "vencer cores" (1B-02). Such boards do contain urea-formaldehyde resin between the layers, and therefore the wisdom of the original permit could be argued in retrospect. However, the resin content of veneer cores is apparently low in comparison to composite cores which are the overwhelming favorites in today's production. One example of interior grade plywood contains .1% up to 5% urea-formaldehyde resin by weight (1E-63).

Use of MDF Composite Core Boards (with Urea-Formaldehyde Resin)

Apparently the most frequently used core board at present is medium density fiberboard (MDF), made of wood fiber bonded with a urea-formaldehyde resin. Also utilized are lower-density boards, usually called particleboard core (PBC), also made of wood fiber bonded with urea-formaldehyde resin.

Examples of MDF boards range up to 30% urea-formaldehyde resin by weight (1D-40, 1E-72, 1E-77, 1E-85, 1F-49), with apparently typical ranges around 9% - 12%. PBC boards seem to fall in the range of 9% - 12% urea-formaldehyde resin by weight (1D-40). MDF and PBC boards contain up to 10% paraffin wax as well, with the typical content being less than 2% (1E-72, 1E-77, 1E-85, 1F-49).

Use of Woodstalk Composite Core Boards (with Polyurethane Resin)

Dow Chemical's Woodstalk™ boards, consisting of wheatstraw in a polyurethane resin, are also utilized. Strawboards typically contain 3% - 5% polyurethane resin by weight (1D-36, 1F-54). Strawboards also may include up to about 6% of paraffin wax and/or unidentified proprietary chemical additives (1D-36).

Adding Veneers Also Adds Resins

The Columbia Forest Product plant typically adds veneer on both the front and rear faces of core boards. The resin typically used to secure those veneers onto the core board is of the urea-formaldehyde type (see the company's suppliers' data sheets 1E-40 through 1E-47). The company also advertises the availability of no-added-formaldehyde resin (see 1E-06); some of those resins used in industry are of the polyurethane type. The veneering process also involves the addition of wood fillers (1E-21 through 1E-23).

Addition of Acrylic Stains and Finishes

Some of the boards processed at the plant also are stained and finished with an ultraviolet (UV) polymerizing technique(1D-08), which adds acrylic layers on the outside.

All Products Sanded, Sawed, Chipped, Burned

All products manufactured at the plant go through processes of sawing (trimming) and sanding (the sander dust is collected for burning). All the trimmed waste is chipped ("hogged"), along with discarded wood pallets. In the process the sanded and chipped waste accumulates the resins, filler, stains, and finishes present at each step of the manufacturing process. About half of the waste is reportedly burned in the boiler at the plant, and the other half is said to be disposed of elsewhere.

If the boiler burns around 10 million pounds of waste per year (the records below show numbers as high as over 12 million pounds), and one assumes that only half is from product waste (the other half's being discarded shipping pallets), and 10% of product waste is plastics, then **500,000 pounds of plastics are being burned at the plant per year, or about a ton per workday.** (We believe that all those assumptions err on the conservative side.)

We note that **none of these types of products – composites, finishes, used pallets – are allowed to be burned at the nearby wood cogenerator facilities (1F-58) in Hurt, Virginia, because of the unacceptable nature of the resulting by-products.** The archaic, primitive Columbia Forest boiler is far less capable of proper combustion than the modern cogenerator equipment, and its location and stack are also poorly located and configured relative to nearby residential areas. Therefore, it seems logical and quite prudent that **these materials should not be burned here.**

The Boiler at Columbia Forest Products-Chatham

Primitive Salvaged 1916 German Ship's Boiler

The boiler at Columbia Forest is a salvaged and converted 1916 German ship's boiler, which was likely originally designed for burning coal. **It has neither an auxiliary fuel source, nor other design features found in modern equipment to insure rapid and complete**

combustion. Therefore it is **only capable of burning at low and variable temperatures.** For these and other evident reasons, it is anything but a modern and efficient device for burning wood wastes, much less when plastic resins and finishes (and wax) are included in those wastes.

Topography Exacerbates Problems from Smoke and Smells

The boiler stack (1B-04) is short (40 feet). The Columbia Forest plant lies in a deep valley on the western edge of the town of Chatham. Due to the location and topography, the **prevailing winds carry the smoke and smells of the plant directly into the town** much of the time. **The top of the stack is significantly below the nearest homes to the east, and over a hundred feet below the center of town and the two local prep schools.** The heavier-than-air emissions often hug the ground, fill the valleys, and push as concentrated, compact zones of smoke and dust into various parts of town, depending on atmospheric conditions.

Large Increase in Material Burned

DEQ records since 1980 show a significant increase in the amount of wastes burned per year in the boiler:

<i>Date</i>	<i>Source</i>	<i>Reference Document</i>	<i>Annual Fuel Burned</i>
10/22/1980	Permit modification	1B-04	1250 tons
10/28/1988	Inspection report	1B-08	1785 tons
01/06/1989	Registration update	1B-10	2500 tons
06/17/1996	Permit application	1B-11	3416 tons
11/05/1997	Permit modification	1B-12	4271 tons
01/25/1999	Annual recordkeeping draft	1B-13	5232 tons
03/25/1999	Annual recordkeeping final	1B-14	2802 tons
02/08/2000	Annual recordkeeping final	1B-15	3474 tons
03/01/2000	DEQ summary	1B-16	3402 tons
2000	Emission calculations	1B-17	6637 tons
02/01/2001	Annual recordkeeping	1B-18	3661 tons

2001	DEQ summary	1B-19	5562 tons
01/04/2002	Annual recordkeeping	1B-20	3090 tons
04/04/2003	DEQ summary	1B-21	6082 tons

Although the reports are erratic as to the specific amounts, the overall trend is dramatically **upward**, around **five times the original**. With increasing numbers such as these, it seems likely that the **aged boiler** is being utilized in a **more intensive manner than its design allows**. Add the fact that plastics and straw, as well as wood, are known to cause **significant slagging and maintenance problems in boilers** (1F-04, 1F-25, 1F-61, 1F-62 through 1F-68). These circumstances are all consistent with the disturbing and continuing increases in air pollution being experienced near the Columbia Forest facility.

As shown in further information below, the materials being burned at the facility actually **require incineration** for disposal, **not mere low-temperature, largely-uncontrolled burning, which guarantee excessive dangerous emissions** (1F-04 through 1F-24, 1F-26). The **standard industry practice for disposal** of woodwastes containing resins and finishes is **either incineration or disposal in hazardous-waste landfills** (1F-56).

The Columbia Forest Products **boiler**, since its purpose is the production of process steam rather than destruction of the fuel material, **is by definition not an "incinerator."** (See EPA definitions, 1G-01 through 1G-03). The observed residues of burning also make it obvious from a practical standpoint that the combustion process that is occurring is nowhere near that of incineration. Furthermore, the location of the plant and its boiler, in a deep ravine immediately to the west and upwind of the town of Chatham, would be an extraordinarily inappropriate site for even an "incinerator" processing materials which produce hazardous combustion by-products.

Videotaped Boiler Emissions

Enclosed with this document is a videotape showing **boiler emissions** on numerous occasions during the past several months. The images were obtained **under widely-varying atmospheric conditions**, and on **all days of the week including Saturdays and Sundays**. It is **evident from the heavy smoke** in the videotaped images that **combustion is incomplete** in this boiler, and thus a **dangerous condition** exists regarding hazardous byproducts of plastics burning (see below).

It can also be seen from the videotaped episodes that the boiler emissions tend to travel in **concentrated streams**, and **collect and build in the nearby neighborhoods**, thus causing very uncomfortable conditions for the neighbors. It is evident that such incidents, frequent in nature, are dangerous to the health of residents.

Wood Stove Comparisons

Brochures distributed by the Lynchburg DEQ office give advice which may be pertinent to the Columbia Forest Boiler situation.

First, the EPA's "Wood Stove Features and Operation Guideline for Cleaner Air" states, "Watch for signals: **Visible smoke leaving the top of the chimney** or long lazy flames leaving the firebox are signs of **incomplete starved-air burning.**" (1F-37)

Second, the State Air Pollution Control Board's "Before You Light Your Woodstove" advises, "**Such materials as plastic do not burn up completely** and can clog the pipes and chimney, as well as **foul the air.**" (1F-34)

In this context, Columbia Forest's plant manager David Abts was quoted in the local media (1F-29) as follows:

The general manager said he's baffled by complaints of smoke and odor, noting glue used in making plywood is basically an extended flour paste and the plant operates a wood-fired boiler.

"We burn pretty much what you would in your fireplace at home," he said.

Columbia Forest's wastes are not appropriate for a fireplace, a wood stove, or even the plant's boiler, as will be further demonstrated below.

The Burning of Plastics

General Problems

The combustion of plastics presents a number of problems in the toxic chemical products of combustion (1F-01). One authoritative study funded by EPA is reported as EPA-670/2-73-049, *Combustion Products from the Incineration of Plastics*, by Boettner, Ball and Weiss, University of Michigan, 1973. Their conclusions include the statement (1F-04) that,

"On incomplete combustion [of plastics containing nitrogen], hydrogen cyanide, cyanogen, nitriles and ammonia may form in addition to hydrocarbon gases, presenting a significant health hazard"

The "plastics containing nitrogen" category would include urea-formaldehyde, polyurethane, and some acrylics, **all of which are currently allowed to be burned in the Columbia Forest Products boiler.**

The Boettner testing of the combustion of plastics is reported (1F-02) to have:

*“ . . . generated large numbers of gaseous and condensed products. Additional gaseous products included **straight-chain saturated and unsaturated hydrocarbons through hexane, aromatic hydrocarbons, hydrogen chloride, sulfur dioxide, cyanides, ammonia, and oxides of nitrogen.** Liquefied fractions produced by most plastics were complex mixtures of **10 to 50 compounds, including heterocyclic and polycyclic hydrocarbons.**”* (Emphasis is added here and in quotations below.)

Urea-Formaldehydes

On p. 73 of the above-mentioned Boettner study's urea-formaldehyde tests (1F-16), the authors, finding significant cyanide content, state:

*“**Cyanide and carbon monoxide are the only acutely toxic compounds identified in either of our studies. The fact that animals removed from exposure before death recovered rapidly is evidence for **this particular combination of toxicants****’ being responsible for the observed effects.”*

Urea-formaldehyde is probably **the plastic burned in greatest quantities** at the Columbia Forest Products plant in Chatham, because it is the binder in all core boards except Woodstalk™ (which contains polyurethane resin – see below) used at the plant, plus is the major binder used to adhere the plant's veneers. Thus the sander and saw dust and scrap all contains a significant percentage, probably on the order of 10% or more (see discussion on pp. 4-5 above), of urea-polyurethane resin.

Polyurethanes

A similar result occurred in the Boettner study's polyurethane tests: hydrogen cyanide is the most significant product of combustion, besides carbon dioxide and carbon monoxide, in every sample studied. The authors state (1F-14, 1F-15) on pp. 55-56:

*“**Carbon monoxide and cyanide are the only acutely toxic compounds identified Since carbon monoxide disrupts the blood's ability to carry oxygen and cyanide disrupts the cell's ability to use oxygen, there is a toxicological synergism between these two compounds making their **combination particularly hazardous.****”*

Polyurethane resins are the binder used in the Dow Woodstalk™ core board utilized at the plant.

Acrylics

Some acrylics produce **cyanide** on burning, as do plastics urea-formaldehyde and polyurethane. All acrylics produce **acrolein** on burning. Acrolein is very dangerous to the eyes,

skin, and especially the respiratory system (see attached 1F-95, 1F-99 through 1F-102, 1F-105). It is **retained irreversibly in the respiratory tract** after exposure by inhalation (1F-107).

All finishes and stains applied at the Columbia Forest Products plant are **acrylic**. After application of the stains and finishes by a ultraviolet (UV) polymerization process, the resulting finished boards are sanded and trimmed, and the resulting sander and saw dust and scrap, all of which include acrylics, are burned.

Doane Cowan, Columbia Forest Divisional Engineer, sent DEQ's Allen Armistead a letter (1A-01) on May 4, 1995, with an attachment (1A-02) containing the following statement:

"Vapours caused by the combustion of U. V. curable products are extremely irritating and must be avoided. Proper respiratory protection must be worn if a fire occurs in any area where U. V. curable products are present."

It is noteworthy that those products are now being **burned intentionally**, and the neighbors who are being forced to breathe the "extremely irritating" smoke are certainly not wearing "proper respiratory protection."

Summary of Hazards of Plastics Burning

Following is a list of some of the hazards of burning these plastics, referenced to Columbia Forest Products' and their suppliers' data sheets and other explanatory literature:

<i>Source:</i>	<i>Byproduct:</i>	<i>References:</i>	<i>Effects on humans:</i>
Urea-formaldehyde and polyurethane resins, and some acrylics	Hydrogen cyanide and isocyanates	1D-35 1E-03 1E-07 1E-11 1E-42 1E-47 1F-01-02 1F-04 1F-11-18 1F-41 1F-44 1F-46-47 1F-79-93	Prevent cells from utilizing oxygen. Low exposure can cause nausea, vomiting, breathing difficulties, heart pains, blood changes, headaches, thyroid enlargement, optic nerve damage and blindness. Extended or heavy exposure may cause asthma, harm to the brain and heart, coma and death.

Acrylics	Acrolein	1F-01 1F-94-109	Retained irreversibly in the respiratory tract. Low exposure may cause irritation to the eyes, nose, throat and lungs. Extended exposure may cause general respiratory congestion. Exposure to higher levels may cause death.
Urea-formaldehyde and polyurethane resins, and acrylics	Formaldehyde	1E-01 1E-03 1E-07 1E-42 1E-47 1F-110-122	Low exposure causes eye and respiratory irritation. Extended or heavy exposure can cause asthma, nausea, vomiting, severe headaches, nosebleeds, impaired lung function, pneumonia, and/or respiratory failure ending in death. It is classified as a possible carcinogen.
Urea-formaldehyde and polyurethane resins, and acrylics	Ammonia	1E-50 1E-53 1F-02 1F-04 1F-11-18 1F-123-136	Low exposure causes eye and respiratory irritation. Repeated or prolonged exposure to high levels may damage the eyes, liver, kidneys, and lungs, and may cause bronchitis, with cough, phlegm and shortness of breath.

Urea-formaldehyde and polyurethane resins, and acrylics	Carbon monoxide	1D-35 1E-01 1E-03 1F-04 1E-07 1E-11 1E-31 1E-34 1E-36 1E-42 1E-47 1F-11-18 1F-40 1F-137-140	Reduces the availability of oxygen in the blood. Low exposure causes headache, fatigue, and dizziness. Extended or heavy exposure may be fatal.
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The Related Paraffin Problem

The composite boards (MDF, particleboard, strawboard) being burned in the boiler all contain paraffin wax, typically in a quantity less than the plastic resin contained in the same product. Paraffin is a **fire retardant** material, and **generates dense smoke upon burning** (1E-98). It is likely that paraffin from composite boards **significantly contributes to problems of incomplete combustion and heavy smoke** of the Columbia Forest boiler.

If one assumes that the paraffin content of the composite boards is only 1% (it can range up to 10%), which would be about a tenth of the plastic resin content, the boiler would be burning somewhere in the range of **50,000 pounds of paraffin per year.**

Fire Retardancy in General

The Federal Item Identification Guide includes in its **fire retardant** coatings listing (1F-68 through 1F-77) not only **paraffin wax**, but also **acrylics, urea resins, and polyurethane.** A logical inference from such a listing is that the burning of such items could hardly be efficient, and that in order to achieve **complete combustion** of these **fire-retardant materials, high temperatures and precise controls of all variables of the combustion process** would be necessary. **None of those process characteristics occur in the Columbia Forest boiler.**

Additionally, **Woodstalk™** strawboard is actually classified as a **Class C (or Class 3) Fire Retardant** (1D-05, 1D-34).

Product Disposal Instructions

The following published **instructions** in Material Safety Data Sheets from **Columbia Forest Products and their suppliers** emphasize the need for **incineration**, thus making it clear that the current disposal procedures at the Chatham facility are inappropriate.

<i>Product Sheet</i>	<i>Listed Byproducts of Burning</i>	<i>Safety Factors Related to Burning</i>	<i>Disposal Instructions</i>
Columbia Forest Hardwood Plywood (1E-01)	Carbon dioxide, methane, carbon monoxide, aldehydes, and organic acids	Formaldehyde and wood dust cause respiratory and other irritations, and are both considered carcinogens	Landfill or incineration .
Columbia Forest -Formaldehyde- and No-Added-Formaldehyde Bonded Boards (1E-02 – 1E-09)	Irritating and toxic fumes and gases, including carbon monoxide, hydrogen cyanide, aldehydes, organic acids, and polynuclear aromatic compounds	Formaldehyde and wood dust cause respiratory and other irritations, and are both considered carcinogens	In accordance with regulations.
Dow Chemical Co. Woodstalk™ Boards (1E-10 – 1E-16)	May include but are not limited to phenolics, carbon monoxide, carbon dioxide, polycyclic aromatic compounds, nitrogen oxides, hydrogen cyanide	Fire fighters wear self-contained breathing apparatus	Do not dump into any sewers, on the ground, or into any body of water. Preferred options include licensed, permitted recycler, reclaimer, incinerator , landfill.

<p>R&D Coatings Storm Cloud UV Stain RD113-46A (1E-17 - 1E-20); UV Wood Sealer RD1023 (1E-30 - 1E-32); UV Topcoats RD1056, RD1089 (1E-33 - 1E-38)</p>	<p>(Not listed in document.)</p>	<p>Fire fighters wear self-contained breathing apparatus and complete personal protective equipment when entering confined areas where potential for exposure to vapors of combustion exists</p>	<p>Incinerate or use biological treatment in accordance with Federal, State, and Local regulations. This material is a hazardous waste under current RCRA regulations because of reactivity.</p>
<p>Willamette Valley Co. Face Grade Wood Filler (1E-21 - 1E-23)</p>	<p>(Not listed in document.)</p>	<p>Fire fighters wear self-contained breathing apparatus</p>	<p>Landfill or incineration</p>
<p>Borden Casco-Resin CR-595LF Urea-formaldehyde Resin (1E-39 - 1E-45)</p>	<p>Carbon dioxide, carbon monoxide, aldehydes (including formaldehyde), hydrogen cyanide, particulate matter and other organic compounds.</p>	<p>Formaldehyde is a potential cancer hazard, and may also cause respiratory and skin problems. Avoid prolonged or repeated breathing of vapor. If airborne contaminants are generated when the material is heated, sufficient ventilation should be provided. Where air contaminants can exceed acceptable criteria, use respiratory protection equipment.</p>	<p>Dispose according to local, state, and federal requirements.</p>

Neste Resins Chembond Urea Formaldehyde Resin (1E-46 - 1E-47)	Hydrogen cyanide, carbon monoxide, carbon dioxide, formaldehyde, nitrogen oxides, sulfur oxides, sodium oxide and sodium carbonate particulates.	Fire-fighting: wear full protective clothing and NIOSH approved self- contained breathing apparatus.	(Not listed in document.)
Chemcraft Sadolin UV Sealer 437-5085; UV Topcoat 437- 5065 (1E-48 - 1E-54)	Ammonia	Avoid all personal contact and breathing of vapors or spray mist. Fire fighters must wear self contained breathing apparatus or air mask.	Dispose in chemical disposal area or in a manner that complies with local, state, and federal regulations.

The following entries from other manufacturers are listed as representative and illustrative of acrylics (all the stains and finishes) and paraffin wax (in all the composite boards) at Columbia Forest Products.

<i>Product Sheet</i>	<i>Listed Byproducts of Burning</i>	<i>Safety Factors Related to Burning</i>	<i>Disposal Instructions</i>
City Plastics Acrylic (1E-95 - 1E-97)	When heated to decomposition acrylic emits acrid smoke and irritating fumes. Irritating to eyes, respiratory system and skin.	Fire fighters and others exposed to products of combustion should wear full protective clothing including self-contained breathing apparatus. Fire fighting equipment should be thoroughly decontaminated after use.	Landfill or incineration in compliance with federal, state, and local regulations.

Rita Corporation Paraffin Wax 130/135 (1E-98 - 1E-99)	Dense smoke may be generated while burning. Carbon monoxide, carbon dioxide and other oxides may be generated as products of combustion.	Not listed in document.	Remove to landfill or incinerate in accordance with federal, state and local regulations..
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The Bhopal Precedent

The December 1984 incident involving accidental release of **isocyanate** gases in Bhopal, India, resulting in several thousand deaths, has caused worldwide awareness of manufacturing and community safety issues. **Several local circumstances recall the Bhopal precedent:**

1. The **hazmat** reporting and community preparedness program known as SARA Title III ("**TRI reporting**") was enacted **largely in response to the Bhopal incident** (1F-78). It is noteworthy that the **Columbia Forest - Chatham plant does not participate in that program**, even though it appears that there are several requirements for them to do so. Thus, there is no opportunity at present for the local community to get information about, and take normal preparatory precautions regarding, the chemicals and processes at the Columbia Forest plant;
2. As in Bhopal, the Columbia Forest Products - Chatham factory is **located very close to and upwind from residential neighborhoods and the center of town**. Residences are only a few hundred feet away, and receive directly and almost instantly the releases of the boiler stack and the UV finishing department's vents, both sources only recently having become a major and continuing problem for the nearby residents. The circumstances urgently need remediation, because the factory and town do not have a safety buffer of significant space for the diffusing of airborne chemicals emitted by the plant;
3. The Bhopal incident involved an accidental runaway leak of gases of the isocyanate/cyanide family. As discussed in detail above, the Columbia Forest - Chatham plant is apparently **releasing gases of the isocyanate/cyanide family**, as well as acrolein, from its boiler, on a continuing basis without any control or monitoring. We can only hope that the levels of release are not already causing permanent health damage to residents nearby, and ask that the process be stopped as quickly as possible.

Conclusion: Relief Needed, Without Delay

By means of a loophole which perverts the apparent intent of the burning restrictions in Columbia Forest's air permit, **plastics are being combusted in large quantities**. The method of burning is obviously primitive, largely uncontrolled, and produces incomplete combustion evidenced by smoke and smells grossly troublesome to nearby inhabitants. The plastics being burned are known to have byproducts of combustion which are hazardous to human health and life. Therefore, **we fervently ask that the practice be ended immediately**.

Columbia Forest Products and its industrial predecessors on the site were **good neighbors** and a **source of pride to the town for decades**. Surely we can return to that situation of **safety and pleasant tranquility** through the application of **scientific good sense** and safe process engineering, rather than the present conditions of **high risk** and onerous burden to residents.

Further Note

In the process of our preparing this document, we received information from plant manager David Abts that Columbia Forest Products intends to replace their present boiler during 2005. We have advised the DEQ South Central Regional Office - Lynchburg that we consider such a proposal to be controversial, in view of the above facts presented, and thus requiring a public hearing (see copy of letter, 1A-08).

References:

1A-01 – 1A-08	Correspondence
1B-01 – 1B-23	Operations Data
1C-01 – 1C-19	Permits
1D-01 – 1D-41	Product Advertising
1E-01 – 1E-99	Product Data Sheets
1F-01 – 1F-140	Published Documents
1G-01 – 1G-03	Regulations

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- 1A-01 – 1A-02 Columbia Forest Products (Doane Cowan) to DEQ-Lynchburg (Allen Armistead), May 4, 1995, regarding UV coatings (portion of letter)
- 1A-03 – 1A-04 Air Inspection Report by Craig R. Nicol, DEQ-Lynchburg, January 6, 2004.
- 1A-05 DEQ-Lynchburg Draft Intra-Agency Memorandum by Craig R. Nicol, January 14, 2004.
- 1A-06 DEQ-Lynchburg Intra-Agency Memorandum by Craig R. Nicol, February 6, 2004.
- 1A-07 Virginia DEQ Office of Air Quality Monitoring, Microscopic Analysis Form, February 10, 2004.
- 1A-08 – 1A-09 Gillispie, Mitchell, Watson, et al, to Thomas L. Henderson, Director, DEQ South Central Regional Office, "Request for Public Hearing Concerning New Boiler for Columbia Forest Products - Chatham," January 5, 2005.

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1B-09 – 1B-10	Source Registration Update for Calendar Year 1988, January 6, 1989.
1B-11	Permit application, March 15, 1995 (excerpt).
1B-12	Permit modification, November 5, 1997 (excerpt).
1B-13	Annual recordkeeping draft, January 25, 1999.
1B-14	Annual recordkeeping final, March 25, 1999.
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1B-16	DEQ summary, March 1, 2000.
1B-17	Emission calculations, 2000.
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1B-19	DEQ Summary, 2001.
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1B-21	DEQ summary, April 4, 2003.
1B-22 – 1B-23	DEQ Consolidated Plant Emission Report (excerpt), April 12, 2004.

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- 1C-02 – 1C-08 Thomas L. Henderson, "Analysis and Evaluation . . .," October 30, 1980.
- 1C-09 – 1C-11 State Air Pollution Control Board permit notification, December 29, 1980.
- 1C-12 SECOR, "Backup Documentation," June 17, 1996.
- 1C-13 Draft permit, October 14, 1997 (excerpt).
- 1C-14 Draft permit, undated (excerpt).
- 1C-15 – 1C-16 SECOR, "Comments on Draft No. 3 Operating Permit," December 16, 1997.
- 1C-17 – 1C-18 DEQ-Lynchburg (Larry Leonard) to Brad Thompson, reply concerning third revised draft permit, December 23, 1997.
- 1C-19 Columbia Forest Products, air permit, February 9, 1998 (excerpt).

References 1D - Product Advertising

- 1D-01 Columbia Forest Products, "Product Information," www.columbiaforestproducts.com/products/ , December 17, 2004.
- 1D-02 Columbia Forest Products, "Presenting Appalachian Traditions," 2004.
- 1D-03 – 1D-04 Columbia Forest Products, "Columbia Hardwood Plywood featuring WOODSTALK™ Agrifiber Core," September 2003.
- 1D-05 – 1D-06 Columbia Forest Products, "Hardwood Plywood," 2004.
- 1D-07 Columbia Forest Products, "Aromatic Cedar," www.columbiaforestproducts.com/products/hardply/ac.html , December 17, 2004.
- 1D-08 Columbia Forest Products, "Prefinished hardwood Plywood (UV Wood)," www.columbiaforestproducts.com/products/hardply/ph.html , December 17, 2004.
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- 1D-36 – 1D-38 "Overview of the Goldboard® Products," Goldboard Development Corporation, August 29, 2001.
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and
Product Data Sheets

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- 1E-01 MSDS for hardwood plywood.
- 1E-02 – 1E-05 MSDS for finished and unfinished boards bonded with -formaldehyde resins.
- 1E-6 – 1E-09 MSDS for boards with no-added-formaldehyde bonding.

Suppliers

- 1E-10 – 1E-16 MSDS for Dow Chemical Woodstalk™.
- 1E-17 – 1E-20 MSDS for R&D Coatings Storm Cloud UV Stain RD113-46A.
- 1E-21 – 1E-23 MSDS for face grade wood fillers.
- 1E-24 – 1E-28 MSDS for Safety-Kleen 105 solvent.
- 1E-29 – 1E-38 MSDS for R&D Coatings UV Sealer RD 1023 and UV Topcoats RD 1056 and RD 1089.
- 1E-39 PDS for Borden Chemical Casco-Resin CR-595LF.
- 1E-40 – 1E-45 MSDS for Borden Chemical Casco-Resin CR-595LF.
- 1E-46 – 1E-47 MSDS for Neste Resins Corporation Chembond 712 liquid urea-formaldehyde resin.
- 1E-48 – 1E-54 MSDS for Chemcraft Sadolin International, Inc. UV Sealer 437-5085 and UV Topcoat 437-5065.
- 1E-55 – 1E-56 Environmental Data Sheet for PPG Industries, Inc. Raycron Sealer/Topcoat R1125Z74.

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1E-63 – 1E-69	MSDS for Norbord hardwood plywood.
1E-70 – 1E-75	MSDS for Plum Creek plywood, MDF, and wood dust.
1E-76 – 1E-83	MSDS for Customwood MDF products
1E-84 – 1E-93	MSDS for Laminex Single Sided MDF MR
1E-94	Information sheet for CitiLog Wheatboard.
1E-95 – 1E-97	MSDS for City Plastics acrylic.
1E-98 – 1E-99	MSDS for Rita Corporation paraffin wax.

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January 5, 2005
Enclosure: Videotape

Videotape Summary – Columbia Forest Products, Chatham

Variety of Days, Times, Conditions

The enclosed videotape shows smoke from the boiler stack at Columbia Forest Products, Chatham, Virginia. The segments illustrate conditions at the plant and in the surrounding neighborhood during **different days of the week, times of day, seasons, and atmospheric conditions.**

Incomplete Combustion, Dangerous By-Products

The scenes show **thick, heavy smoke resulting from incomplete combustion.** The smells associated with the smoke are unpleasant, and include similarities to burning tires, rotting fish, and chicken manure. The smoke is often quite irritating to the respiratory system. We believe, as expressed in the enclosed correspondence, that such incomplete combustion is a **very dangerous** situation to the neighborhood, given the plastics (urea-formaldehyde and polyurethane resins, and acrylic stains and finishes) being burned in the boiler and that the byproducts of their incomplete burning include **hydrogen cyanide, isocyanates, carbon monoxide, acrolein, formaldehyde, ammonia,** etc.

High Quantities of Emissions

The plant's **air permit** provides a limit of 24.6 tons of particulate matter (12.3 tons PM, 12.3 tons PM 10) of emissions from the stack per year (1B-23), which, it appears to us from the heavy smoke as well as residues, is likely being **vastly exceeded.** Only 16.08 tons (8.04 tons PM, 8.04 tons PM 10) were reported as actually emitted in 2003 (1B-23).

Long Hours of Emissions

Additionally, recent boiler emission reports are based on the **assumption** of 6400 hours (267 days) of operation per year(1B-23), apparently indicating that **the boiler would have no emissions on most Saturdays and Sundays.** DEQ Inspector Craig Nicol's Air Inspection Report of 1/6/2004 describes the operation as "24 hours a day 5 days a week with the boiler being placed in an idle state over weekends" (1A-03). Our experience (examples are included below) is that **emissions are quite heavy on many Saturdays and Sundays.**

See contents of videotape footage (next page).

Sunday, December 26, 2004

1. 00:00 – 00:55 4:52 p.m. Boiler stack has high, dark plume.

Sunday, December 19, 2004

2. 00:55 – 04:38 12:15 p.m. Smoke rolling from plant across neighborhood.
3. 04:38 – 06:50 12:30 p.m. Heavy smoke from the stack (cause of previous display).

Sunday, December 5, 2004

4. 06:50 – 08:11 1:08 p.m. Heavy smoke from stack fills immediate area.
5. 08:11 – 09:20 3:00 p.m. Smoke drops to ground as it leaves stack.

Sunday, November 21, 2004

6. 09:20 – 10:09 11:30 a.m. Smoke fills immediate area.
7. 10:09 – 11:18 1:25 p.m. Smokes moves in Rison Street neighborhood.
8. 11:18 – 13:29 1:29 p.m. Another view of the boiler stack.

Sunday, November 14, 2004

9. 13:29 – 14:29 5:15 p.m. Boiler stack with black plume.

Saturday, November 13, 2004

10. 14:29 – 15:03 9:37 a.m. Boiler stack with heavy smoke.

Friday, October 15, 2004

11. 15:03 – 16:10 12:23 p.m. Boiler stack with heavy smoke.

Wednesday, August 18, 2004

12. 16:10 – 17:35 9:57 a.m. Boiler stack with heavy smoke.

Tuesday, July 27, 2004

13. 17:35 ~ 18:52 9:10 a.m. Smoke in low ground of Courthouse Spring valley between Whittle and Depot Streets.
14. 18:52 – 20:20 9:20 a.m. Smoke at the end of Whittle Street.
15. 20:20 – 21:17 9:25 a.m. Boiler stack with smoke.

Thursday, July 22, 2004

- | | | | |
|-----|---------------|------------|---|
| 16. | 21:17 – 21:45 | 12:55 p.m. | Boiler stack with billowing smoke. |
| 17. | 21:45 – 24:35 | 1:06 p.m. | Billowing smoke as seen from location of DEQ monitoring equipment on nearby hillside. |

Saturday, July 10, 2004

- | | | | |
|-----|---------------|-----------|--|
| 18. | 24:35 – 26:08 | 5:00 p.m. | Smoke from boiler stack. |
| 19. | 26:08 – 27:15 | 8:05 p.m. | After rainfall, smoke in neighborhood. |
| 20. | 27:15 – 27:57 | 8:10 p.m. | Smoke in White's Branch valley. |
| 21. | 27:57 – 28:28 | 8:10 p.m. | Smoke from boiler stack. |

Friday, July 9, 2004

- | | | | |
|-----|---------------|-----------|-------------------------------|
| 22. | 28:28 – 28:58 | 8:30 p.m. | Boiler stack with high plume. |
|-----|---------------|-----------|-------------------------------|

Wednesday, July 7, 2004

- | | | | |
|-----|---------------|-----------|--|
| 23. | 28:58 – 29:14 | 2:43 p.m. | Smoke from boiler stack. |
| 24. | 29:14 – 30:10 | 2:45 p.m. | Smoke fills yard at end of Whittle Street. |

Monday, June 14, 2004

- | | | | |
|-----|---------------|-----------|---|
| 25. | 30:10 – 31:26 | 6:50 p.m. | Smoke from boiler stack. |
| 26. | 31:26 – 33:52 | 8:30 p.m. | During rain, emissions roll through neighborhood. |

Monday, May 17, 2004

- | | | | |
|-----|---------------|-----------|---|
| 27. | 33:52 – 34:22 | 9:15 a.m. | Smoke from boiler stack |
| 28. | 34:22 – 35:14 | 9:20 a.m. | Smoke visible in Whittle Street and White's Branch valley area, with comments by Charles Tackett, Ft. Worth, Texas. |

Sunday, December 26, 2004

- | | | | |
|-----|---------------|------------|--|
| 29. | 35:14 – 36:25 | 10:45 p.m. | Under dark conditions, intermitted high arching plumes of stack emissions are visible. (Low, light puffs are steam.) |
|-----|---------------|------------|--|

Sunday, December 19, 2004

- | | | | |
|-----|---------------|------------|---|
| 30. | 36:25 – 45:15 | 12:30 p.m. | Nine-minute stack emissions sequence from which the #3 excerpt above was taken. |
|-----|---------------|------------|---|



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
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 Mailing address: P.O. Box 10009, Richmond, Virginia 23240
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W. Tayloe Murphy, Jr.
 Secretary of Natural Resources

Robert G. Burnley
 Director

(804) 698-4000
 1-800-592-5482

March 9, 2005

Mr. Henry H. Mitchell
 P.O. Box 429
 Chatham, Virginia 24531-0429

Dear Mr. Mitchell:

Thank you for your submittal, dated January 5, 2005, titled "Appeal of plastic-burning practice at Columbia Forest Products – Chatham". I recognize the considerable effort spent to research and produce this document. Consequently, the Department has also dedicated considerable resources to evaluate the issues raised. Our formal comments on the appeal are enclosed. I understand that the intent of the submittal is to provide evidence that the air pollutants from current fuel burning practices at Columbia Forest Products (CFP) are adversely affecting the health and welfare of the plant's neighbors. I further understand that you would like to see the practice of burning fuel that contains any non-wood constituents that may be degrading air quality discontinued or controlled more aggressively.

As you know, the DEQ implements a number of programs designed to protect human health and the environment from the adverse impacts of air pollution. Those most relevant to the issues raised in your submittal are the regulations that establish ambient air quality standards and significant ambient air concentration guidelines, various permit regulations, and the compliance assessment or inspection program.

National ambient air quality standards (NAAQS) for certain air pollutants are established at levels designed to protect human health by the U.S. Environmental Protection Agency pursuant to the federal Clean Air Act and are incorporated into Virginia's air pollution control regulations. One of the pollutants of concern that you have identified, carbon monoxide, is addressed by one of these standards (NAAQS).

Virginia's air pollution regulations also establish significant ambient air concentration (SAAC) guidelines for certain pollutants that are not subject to NAAQS standards, but have been identified in the federal clean air act as hazardous air pollutants. These guideline concentrations

are generally significantly lower than the threshold values used to determine if a work-place atmosphere is safe. Hydrogen cyanide, acrolein, and formaldehyde are subject to the SAAC guidelines. Air quality that meets the federal standards and state guidelines is not considered to be a threat to public health or welfare.

Once the pollutants of concern have been identified, the appropriate permitting program is used to evaluate facilities that could emit air pollutants in quantities that exceed established thresholds. Permit approval must be obtained prior to construction or operation of a facility, and DEQ cannot issue such a permit if the proposed activity would cause emissions to exceed a NAAQS or SAAC. The boiler referenced in your January 5, 2005, submittal was initially evaluated and permitted prior to the regulatory standards implementing the SAAC guidelines, and these pollutants were not considered at that time. The boiler is, however, covered by a state operating permit, which does evaluate the emissions which may have a potential for NAAQS and SAAC violations.

Once an air pollution source is permitted, it is subject to periodic compliance assessment through surveillance, on-site evaluation and review of self-recorded or reported information. These activities are used to gauge the compliance status of facilities with respect to permit conditions and regulatory requirements.

In response to issues raised in your January 5, 2005, submittal and at the SCRO's Community Open House, we have re-evaluated the current permit approval for the CFP facility. Provided below is a summary response based on this evaluation.

- The fuel currently burned in the CFP boiler, including the non-wood materials identified, is consistent with the fuel type that was approved through the new source review permit process. The fuel definition in the permit is intended to restrict the fuel to that which was considered during review of the permit application.
- The DEQ agrees that the chemicals of concern identified in the January 5, 2005, submittal could be present in the exhaust from the CFP boiler. Some of the identified compounds are potential combustion by-products of many fuels (e.g., coal, natural gas or wood) that are routinely considered during permit evaluation. The staff's evaluation of the CFP boiler, using dispersion modeling of predicted emissions, found no unacceptable ambient air impacts when compared to the NAAQS or SAAC. Ammonia is not a regulated air pollutant and, therefore, is not subject to evaluation under the current state program.
- The video tape sent with the January 5, 2005, submittal does indicate potential compliance issues with respect to standards for visible emissions. Recent visible emission evaluations were conducted on the boiler by South Central Regional Office staff and are being followed up with company personnel.

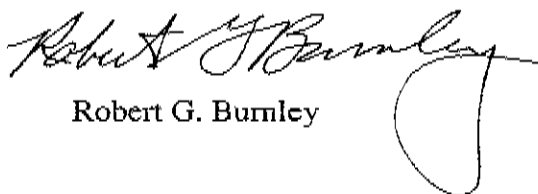
At this time, we do not plan to modify the CFP permit to place additional restrictions on the fuel used in the boiler. The DEQ will, however, continue with efforts to bring about improvements to the operation of the boiler and address any compliance issues existing at the

plant. I would encourage you to contact the South Central Regional Office staff whenever you have additional or continuing concerns or information. You are, of course, also welcome to continue to communicate with my office; however, it is important that the regional staff gain a first-hand understanding of any issue raised.

DEQ staff is ready to meet with you and the other individuals who signed the appeal to discuss these matters further. Please contact David Miles at 434-582-5120, ext. 6028, to arrange that meeting.

Again, I want to thank you for your commitment to a healthy environment and assure you that we will take all appropriate actions to assure compliance with all applicable environmental laws and regulations.

Sincerely,



Robert G. Burnley

C: Tom Henderson, Regional Director, SCRO
Helen Tansey, The Nature Conservancy
Donna Reynolds, American Lung Association
Harry & Sylvia Gillispie
Fletcher B., Watson, IV
Sarah E. Mitchell
Rebecca Edwards
Mary L. Yardley
Hon. Charles Hawkins, Senate of Virginia
Hon. Robert Hurt, Virginia House of Delegates
Hon. George Haley, Mayor, Town of Chatham

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Virginia Department of Environmental Quality
response to an Appeal
from plastics burning at the
Columbia Forest Products facility,
Chatham, Virginia

The staff of the Virginia Department of Environmental Quality (DEQ), have completed a review of the appeal to halt the practice of burning plastics in the boiler at the Columbia Forest Products facility in Chatham, Virginia.

The appeal was submitted, on behalf of eight citizens from the town of Chatham, to DEQ Director, Mr. Robert G. Burnley, on January 5, 2005.

The appeal alleges that Columbia Forest Products (CFP) is currently burning plastics in their boiler. This action results in emissions of combustion byproducts that are not regulated by DEQ. The appeal raises several issues concerning the CFP boiler, and contains eight sections of supporting documentation, which includes a videotape of boiler emissions.

DEQ staff has attempted to address each of the major issues raised in the appeal, and comment on the supporting documents presented. For clarity major points in the appeal are presented in bold, with the DEQ response underneath.

The Boiler

The boiler at CFP is a stoker-fed unit capable of burning solid fuel and is equipped with both under-fire, and over-fire forced draft air to facilitate good combustion. Although considerably smaller, the CFP boiler utilizes the same principles of combustion as other solid fuel-fired boilers found in the Commonwealth.

DEQ evaluates all emission units installed after March 17, 1972, as "New and Modified" sources in accordance with State Air Pollution Control Board Regulations (SAPCB). The regulations require DEQ to establish Best Available Control Technology (BACT) for controlling emissions from a stationary source of air pollution. BACT for this boiler was established as a mechanical collector (multicyclone) for particulate control. SAPCB regulations do not require boilers to have the capability for combusting auxiliary fuels.

There appears to be a misconception that the CFP boiler is capable of only burning at low temperatures. The concept of low temperature combustion, in any boiler, is a misnomer. The operating temperature of a boiler is influenced by a number of variables (steam demand, amount of fuel combusted, type of fuel, radiant heat loss, heat enthalpy, etc.) however the temperature of combustion is directly related to the type and amount of material being combusted. Combined with forced excess air, boilers provide a controlled atmosphere in which the combustion reaction will take place.

Wood waste

Whittle Plywood Corporation submitted a permit application, dated October 22, 1980, to construct and operate a Houston, Stanwood & Cample boiler with a rated heat capacity of 7MMBtu/Hr, using wood waste as fuel. The application states that the facility is a manufacturer of plywood panels for cabinets and that the boiler fuel will be wood waste.

The appeal places emphasis on an excerpt from the engineering analysis which states, "kiln dried wood will be used as fuel." This statement is correct. It is common practice that wood used in the manufacturing of plywood and furniture in general, is first kiln dried to reduce the moisture content and prevent warping in the final product.

The application and engineering analysis both indicate that the boiler fuel would be wood waste generated from the manufacturing of plywood panels. There does not appear to be any misconception that the boiler fuel would be comprised of sawdust, sanding dust, and plywood trimmings from the process. Therefore, Condition 6 of the original permit, dated December 29, 1980, specifies that the approved fuel for this unit is wood waste.

The burning of facility generated wood waste, as boiler fuel, is a conditionally accepted practice in the Commonwealth. DEQ evaluates the proposed fuels for each facility, on a case-by-case basis, to define what types of material may be burned. Because of this, the boiler at CFP is currently prohibited from burning wood waste which contains chemical treatments, paper, or plastic laminates. The term "chemical treatments" is intended to refer to pressure treated lumber containing creosote, chromated-copper arsenate, or pentachlorophenol solutions. Paper, and plastic laminates are specifically omitted from the approved boiler waste fuel. Based on the evaluation of the type of products used and the potential to emit, both criteria and hazardous pollutants, DEQ considers this definition of wood waste to be appropriate for CFP.

Burning of Plastics

One of the primary focal points in the appeal is the allegation that plastics are being burned in the CFP boiler. Much of the supporting documentation consists of product information, material safety data sheets (MSDS), and various publications (including newspaper articles, laboratory studies on combustion of plastics, and chemical abstract sheets (CAS)). The appeal contends that combustion of wood products, burned in the CFP boiler, produce byproducts that include formaldehyde, acrolein, hydrogen cyanide, ammonia, and carbon monoxide. DEQ concurs, that with the combustion of any fuel (gaseous, liquid, or solid) byproducts of combustion are emitted to the atmosphere. However, DEQ does not agree that plastics are being combusted in the CFP boiler.

Manufactured wood products (MWP), such as plywood, fiberboard, or oriented strand board, are comprised of a variety of constituents including veneers, wood chips, wood fibers, glues or resins. Although a particular type of glue or resin may contain polymers, the resulting product is classified as a manufactured wood product. It is not classified as plastic.

The appeal attempts to equate information contained in the MSDS sheets, with actual emissions from the boiler. This approach misrepresents the intent of the MSDS sheets and does not adequately reflect boiler emissions. MSDS sheets, as required by the Occupational Safety and Health Administration (OSHA) regulations (§ 1910 et seq.) and the federal Emergency Planning and Community Right to Know Act (EPCRA), were designed to inform workers of the potential health hazards associated with exposure to bulk quantities of chemicals. The MSDS lists Threshold Limit Values (TLV) for exposure to bulk chemicals, precautions for handling of chemicals, and recommended waste disposal methods. MSDS sheets were also intended to inform firefighting crews of potential hazards associated with a fire, or open burning incident, involving various bulk chemicals. The potential health hazards, and effects on humans, of combustion byproducts are associated exclusively with an open fire event. MSDS sheets cannot, and more importantly, should not be used in an attempt to quantify emissions from the controlled combustion atmosphere of a boiler.

The appeal also references laboratory studies, intended to identify compounds emitted from the combustion of various plastics, and manufactured wood products. DEQ believes that the purpose of these studies was to identify compounds associated with the combustion of various materials. Further review indicates that many of the conclusions drawn from these studies, were based on laboratory conditions that included simulating open burning or accidental fire. A significant number of laboratory studies have been conducted over the years to enable the USEPA to evaluate emissions being discharged to the atmosphere from various sources.

From studies, such as those referenced, the USEPA (under §112 of the federal Clean Air Act) has compiled a list of hazardous air pollutants (HAP) and has developed sector-based initiatives to control and reduce emissions of HAP. These initiatives require the use of Maximum Achievable Control Technology (MACT) at affected facilities, to control certain processes and emission units. Facilities that are not covered by a MACT standard (or for which a standard has yet to be established) may still be evaluated for HAP emissions under SAPCB regulations.

The CFP boiler is currently not subject to a MACT standard, however DEQ has evaluated HAP emissions from the boiler for both threshold limit values (TLV) and Significant Ambient Air Concentrations (SAAC). The TLV refers to the maximum airborne concentration of a substance to which the American Conference of Governmental Industrial Hygienists (ACGIH) believes that nearly all workers may be repeatedly exposed, day after day, without adverse effects. SAAC refers to the health-based standard, established by Virginia's air pollution control regulations, to evaluate the

concentration of a toxic pollutant in the ambient air that if exceeded may have the potential to injure human health.

In the course of evaluating boiler HAP emissions, DEQ staff used all available USEPA approved techniques. Actual boiler fuel usages was compared with the USEPA compendium of emission factors found in AP-42, predictive computer modeling was performed on the CFP boiler stack, air sampling was conducted from the plant area (including the UV finish line exhaust vents), and an ambient air toxics monitoring station was established in a public area adjacent to the facility. All results, when compared with both TLV and SAAC limits, were found to be below the standard for ambient air concentrations.

As a follow-up, DEQ forwarded a copy of the sampling analysis to Dr. Ram K. Tripathi, a toxicologist with the Virginia Department of Health's Division of Health Hazards Control. Dr. Tripathi stated in his response, dated January 25, 2005, that "Analytical results indicate the average concentrations of VOCs are below the level at which any known health effects are seen." Although Dr. Tripathi called the compounds VOC (volatile organic compounds) instead of HAPs, the point should be taken that ambient air concentrations of these compounds were not being emitted at a level that would cause the Virginia Department of Health to be concerned.

DEQ has concluded that there is no indication of HAP emissions being emitted at levels that exceed any applicable state, or federal standard. Therefore, DEQ has no reason to alter the definition of wood waste for this boiler.

Bhopal

The appeal attempts to draw an analogy between CFP boiler emissions, and the incident at Bhopal, India. As previously stated, DEQ has evaluated HAP emissions from the CFP boiler and has concluded that emissions are within applicable standards.

The incident at Bhopal involved the release of methyl-isocyanate gas from a storage tank. Methyl-isocyanate is not stored or used at the CFP facility.

Boiler Visible Emissions

The appeal included a forty-five minute video recording of boiler emissions, during various atmospheric conditions on different days. Condition 17 of the current boiler permit states; "Visible emissions from the boiler shall not exceed 20 percent opacity as determined by EPA Method 9 (references 40 CFR 60, Appendix A) except during one six-minute period in any hour in which visible emissions shall not exceed 30 percent opacity. This condition applies at all times except during start-up, shut-down, or malfunction."

Although the video does record visible emissions from the boiler, the observation requirements of EPA Method 9, do not provide for visible emission evaluations from photographs or video recordings. In addition, EPA Method 9 is quite specific with regards to the position of the stack in relationship with the sun, the availability of a contrasting background, and the point at which visible emissions should be observed. Due to these requirements, DEQ staff is unable to make a compliance determination from this video.

SAPCB regulations provides for one, six-minute period per hour when visible emission may exceed the 20 percent opacity limit. In order to document a violation of an opacity standard, DEQ staff are required to conduct an eighteen minute visible emission evaluation. This action would document the existence of two, six-minute periods in an hour where visible emission exceed the opacity standard. With the exception of one, nine-minute segment, the video is comprised of one to two minute segments of boiler emissions either from the stack, or drifting through an area. Therefore, the video is inconclusive as to whether these boiler emissions are conditionally exempt under SAPCB regulations.

The video does, however, indicate that there may be times when the boiler is not being operated in a manner consistent with good combustion practices. DEQ regional staff have recently performed visible emissions evaluations on this boiler and are following up with plant personnel on this issue.

There is currently no restriction on the amount of fuel combusted, or the hours of operation for the boiler. The fact that the boiler is operated during the weekend does not violate any current permit limitations.

DEQ takes all complaints, and allegations of non-compliance, very seriously. Regional staff attempt to investigate all complaints in a timely manner, and to pursue enforcement actions when appropriate.