BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE

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January 27, 2004

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Re: International Paper-Riegelwood Mill, Site Number: 2400036, Air Permit No. 03138T20

Dear Mr. Miller:

On behalf of the Board of Directors of the Blue Ridge Environmental Defense League and our members in the Columbus, Bladen, Pender, Brunswick, and New Hanover county area, I write to provide comments on the air permits for International Paper-Riegelwood.

Requests

We ask that the EPA comment period be extended two weeks so that additional oral and written remarks may be included in the record for this permit. As you know, upon the denial of requests for public hearing by NC DAQ Director Keith Overcash, we planned to have a grassroots organized People's Hearing for Columbus County residents and other interested citizens. The hearing was to have been held tonight in Lake Waccamaw but winter weather, downed telephone lines and power outages in coastal NC counties have forced us to postpone the hearing until February 12th. Therefore, we hereby request that the EPA comment period be extended from January 30 to February 13, 2004.

Overview

International Paper-Riegelwood is a bleached kraft paper mill (SIC 2631, NAICS 32213) which manufactures paperboard from wood fiber. Wood chips are cooked in digesters with white liquor: sodium sulfide and sodium hydroxide, Na_2S and NaOH. Spent liquor and lignin are removed from the mixture, leaving a brown cellulose pulp. Turpentine is also removed from the resulting mixture when softwoods are used. The pulp is then bleached with chlorine dioxide to make paper.

To reduce water pollution, paper mill operators burn waste products from the paper process in the power boilers. International Paper-Riegelwood's draft permit lists 5 power boilers, 3 recovery boilers, 4 smelt tanks, 2 lime slakers, 2 lime kilns, and many other sources of air pollutants. The plant is a major source of HAPs and must comply with Title III maximum achievable control technology (MACT) standards for paper mills (40 CFR Part 63, Subparts S and MM).

International Paper seeks a case-by-case MACT determination for two of the power boilers under the Industrial, Commercial, Institutional Boiler source category (Section 112j of the 1990 Clean Air Act Amendments). Case-by-case MACT allows the operator of a major pollution source to satisfy air quality standards based on a risk assessment, that is, an estimate of the hazard to public health. Three of the power source boilers for the paper mill burn fuel oil (No. 4 or No. 6). The other two boilers burn a variety of fuels including coal, wood bark, paper making sludge, and oil residue; these are the two boilers for which IP seeks a case-by-case MACT . A risk assessment and computer air modeling analysis was performed by International Paper and were submitted to the NC Division of Air Quality.

Riegelwood mill is a major source, with annual emissions of:

PM	2192	tons/year
SO2	2830	tons/year
VOC	1,40	tons/year (sic)
NOx	5408	tons/year
CO	6214	tons/year
HAP	1106	tons/year

Total reduced sulfur (TRS) air emissions are regulated by NSPS CAA section 111. National Emission Standards for Hazardous Air Pollutants (NESHAP) Subparts S, MM, BB and Kb apply to emission sources at IP-Riegelwood.

The permit approved by the NC Division of Air Quality sets the following state-only enforceable acceptable ambient limits (AAL) for toxic air pollutants which may be emitted annually by IP-Riegelwood (in pounds of emissions per year):

toxic air pollutant	**pounds per year**
Acetaldehyde	7,513,452
Acrylonitrile	436
Carbon disulfide	986,376
Carbon tetrachloride	23,125
Chlorine	100,338
Chloroform	38,051
Chromium VI	80
Cresol	91,104
Fluorides	75,701
Formaldehyde	72,708
Hexachlorocyclopentadiene	1,569
Mercury compounds	137,386
Methylene chloride	18,150,346
Pentachlorophenol	2,299
Phenol	7,884
Sulfuric acid	1,337,104
Total	**28,537,963**

General Comments

Air pollutants emitted by IP-Riegelwood include compounds which cause serious neurological damage, carcinogens, and many other health problems in plant workers and mill neighbors. The pollutants include large amounts of toxic formaldehyde, hydrogen sulfide, hydrochloric acid, sulfuric acid, mercury, dioxin and many others. Because they emit large amounts of hazardous air pollutants (HAP) to the air, paper mills are regulated by Title III of the federal Clean Air Act.

Neurotoxicants

Paper mills are well known for their distinctive, rotten-egg odor caused by sulfur compounds. Medical data continues to mount revealing serious and long-term negative health impacts from these pollutants. Reduced sulfur compounds such as hydrogen sulfide and carbon disulfide have devastating effects even at levels previously thought to be acceptable. A study published in *Archives of Environmental Health* on these compounds' effects (below) on residents living near a paper mill indicates that "that adverse health effects of malodorous sulfur compounds occur at lower concentrations than reported previously." The total reduced sulfur exposure levels in this study were in the 2 to 3 microgram/cubic meter range which is two to three orders of magnitude lower than the North Carolina AALs for such compounds.

> Arch Environ Health. 1996 Jul-Aug;51(4):315-20
>
> **The South Karelia Air Pollution Study: effects of low-level exposure to malodorous sulfur compounds on symptoms.**
>
> **Partti-Pellinen K, Marttila O, Vilkka V, Jaakkola JJ, Jappinen P, Haahtela T.**
>
> South Karelia Allergy and Environmental Institute, Tiuruniemi, Finland.
>
> Exposure to very low levels of ambient-air malodorous sulfur compounds and their effect on eye irritation, respiratory-tract symptoms, and central nervous system symptoms in adults were assessed. A cross-sectional self-administered questionnaire (response rate = 77%) was distributed during March and April 1992 to adults (n = 336) who lived in a neighborhood that contained a pulp mill and in a nonpolluted reference community (n = 380). In the exposed community, the measured annual mean concentrations of total reduced sulfur compounds and sulfur dioxide measured in two stations were 2 to 3 micrograms/m3 and 1 micrograms/m3, respectively. In the reference community, the annual mean concentration of sulfur dioxide was 1 micrograms/m3. The residents of the community near the pulp mill reported an excess of cough, respiratory infections, and headache during the previous 4 wk, as well as during the preceding 12 mo. The relative risk for headache was increased significantly in the exposed community, compared with the reference area: the adjusted odds ratio (aOR) was 1.83 (95% confidence interval [95% CI] = 1.06-3.15] during the previous 4 wk and 1.70 (95% CI = 1.05-2.73) during the preceding 12 mo. The relative risk for cough was also increased during the preceding 12 mo (aOR = 1.64, 95% CI = 1.01-2.64). These results indicated that adverse health effects of malodorous sulfur compounds occur at lower concentrations than reported previously.
> PMID: 8757412 [PubMed - indexed for MEDLINE]

Carbon disulfide is a potent neurotoxicant which affects the nervous system; even low levels of may result in headaches, loss of energy, altered behavior, sleep disturbances, memory loss, depression and suicide. Research indicates that negative health effects occur at lower levels of exposure. Abstracts of two studies are reproduced below:

Neurobehavioral toxicity of carbon disulfide.
Neurobehav Toxicol Teratol. 1981 Winter;3(4):397-405
Wood RW.

Carbon disulfide is an exceptionally potent neurotoxicant. In industrial settings its effects are pernicious, producing symptoms and behavioral alterations in the absence of frank poisoning; affective disorders are common, and exposure is associated with an elevated incidence of suicide. With more severe exposure, sensory disturbances are commonplace, as are alterations in sensory and motor nerve function. Alterations in behavior and central nervous system function can be readily produced in the laboratory with acute or chronic carbon disulfide exposure. Profound morphological changes, especially in the basal ganglia, can be produced with intense exposure. Dopamine beta-hydroxylase inhibition has been demonstrated in vivo and in vitro. Despite prolonged interest in its health effects, the toxic sequelae of exposure have not been adequately described using modern techniques of neurobehavioral toxicology, nor have the mechanisms of action been adequately elucidated.
Publication Types: Review
PMID: 7038525 [PubMed - indexed for MEDLINE]

Carbon disulfide and the central nervous system: a 15-year neurobehavioral surveillance of an exposed population.
Environ Res. 1993 Nov;63(2):252-63
Cassitto MG, Camerino D, Imbriani M, Contardi T, Masera L, Gilioli R.
Institute of Occupational Health, University of Milan, Italy.

Carbon disulfide-induced neurobehavioral effects are well known and do not need further evidence. Carbon disulfide vasculopathy and the syndromic complex resulting in depression, loss of memory and concentration, and behavior disturbances have been widely demonstrated. Less known is the evolution of the symptomatology when the environmental conditions are consistently improved, that is, the reversibility or the progression of the dysfunctions observed. This paper reports on a neurobehavioral follow-up in a viscose rayon factory carried out, in intervals, from 1974 to 1990. Several successive improvements were implemented in the plant through the years, until finally, the most radical changes were made at the end of the Seventies and these resulted in exposure levels far below the current Threshold Limit Values. A total of 493 subjects were examined and some of them were reexamined up to six times. The last examination was completed in September, 1990. In this paper, studies by our group over the 15 years of monitoring are discussed. The results show that the general mental state, as measured by neurobehavioral methods, reflects past and current exposure. This point was explored by dividing the subjects into six groups on the basis of their length of exposure and year of examination and by comparing their performances. The results show that even exposure to levels of carbon disulfide not exceeding 8 mg/m3 may induce absentmindedness and difficulties in perceptive abilities.
PMID: 8243419 [PubMed - indexed for MEDLINE]

Other studies indicate that negative effects are increased when women of child-bearing age who are taking oral contraceptives are exposed to carbon disulfide. The researchers state, “oral contraceptive users are at increased risk of experiencing adverse psychological disorders, including irritability and depression, when exposed to elevated levels of carbon disulfide.” The study concludes: “These effects are thought to occur at exposure levels below those normally associated with adverse effects.”

Does use of oral contraceptives enhance the toxicity of carbon disulfide through interactions with pyridoxine and tryptophan metabolism?
Med Hypotheses. 1980 Jan;6(1):21-33
Calabrese EJ.

It is proposed that oral contraceptive (OC) users are at increased risk to experiencing adverse psychological disorders (e.g. irritability, depression) from exposures to elevated levels of carbon disulfide (CS2). This theory is based on studies indicating that both OCs and CS2 induce either a vitamin B6 deficiency and/or enhance its requirement. Since disruptions of B6 metabolism are thought to explain, at least in part, the adverse psychological effects of OCs and CS2, it is speculated that joint exposure to these substances may result in an exaggerated disruption of B6 metabolism with the development of CS2 induced adverse psychological effects occurring at exposure levels below those normally associated with adverse effects.

PIP: This paper argues, hypothetically, that oral contraceptive (OC) users are at increased risk of experiencing adverse psychological disorders, including irritablitity and depression, when exposed to elevated levels of carbon disulfide. The theory is based on studies that indicated that both OCs and carbon disulfide are capable of inducing either a vitamin B6 deficiency or an enhancement of the requirement for the vitamin. B6 metabolism alterations are thought to be associated with psychological effects; therefore, joint exposure to OCs and carbon disulfide would probably result in an exaggerated disruption of that vitamin's metabolism leading to carbon disulfide-induced adverse psychological effects. These effects are thought to occur at exposure levls below those normally associated with adverse effects.
PMID: 7382884 [PubMed - indexed for MEDLINE]

Carcinogens

Acrylonitrile, methylene chloride, and dioxin are three cancer-causing compounds emitted by the IP-Riegelwood mill. Acrylonitrile, also known as vinyl cyanide, is “reasonably anticipated” to cause cancer in humans (ATSDR, http://www.atsdr.cdc.gov/tfacts125.html). Methylene chloride, according to the EPA, is a “probable cancer-causing” toxin (ATSDR, http://www.atsdr.cdc.gov/tfacts14.html). Dioxins and furans are known to cause cancer in humans. A study of paper mill workers found elevated levels of stomach cancer and leukemia which were related to their exposure to pollutants on the job. (Galson, S. K., *Hazard Evaluation and Technical Assistance Report: Boise Cascade*, published by National Institute of Occupational Safety and Health, 1990.)

In 2003 an analysis of the US EPA’s Dioxin Reassessment found that there is no evidence of a safe threshold for exposure to dioxin. The report states, “We have reexamined the threshold analysis and found that the data have been incorrectly weighted by cohort size. In our reanalysis, without the incorrect weighting, the threshold effect disappears.” In other words, there is no safe level of dioxin. The use of chlorine dioxide in the bleaching process inevitably creates dioxin and should be phased out as soon as possible and replaced with safer processes. The abstract of the researched paper published in *Environmental Health Perspectives* is reproduced below:

No Evidence of Dioxin Cancer Threshold
Environmental Health Perspectives Volume 111, Number 9 , July 2003
David Mackie, Junfeng Liu, Yeong-Shang Loh, and Valerie Thomas
http://ehpnet1.niehs.nih.gov/docs/2003/5730/abstract.html

Abstract

The U.S. Environmental Protection Agency (EPA) has developed an estimate of the human cancer risk from dioxin, using the standard low-dose linear extrapolation approach. This estimate has been controversial because of concern that it may overestimate the cancer risk. An alternative approach has been published and was presented to the U.S. EPA Science Advisory Board's Dioxin Review Panel in November 2000. That approach suggests that dioxin is a threshold carcinogen and that the threshold is an order of magnitude above the exposure levels of the general population. We have

reexamined the threshold analysis and found that the data have been incorrectly weighted by cohort size. In our reanalysis, without the incorrect weighting, the threshold effect disappears. *Environ Health Perspect* 111:1145-1147 (2003). doi:10.1289/ehp.5730 available via http://dx.doi.org/

EPA and the State of North Carolina must do more to reduce toxic air and water emissions from kraft paper mills. The costs of medical treatment, hospitalization, and lost work days which are borne by the workers and their families and neighbors who live near the mill are not factored into International Paper's bottom line. These costs are externalized. The resultant human misery cannot be calculated in terms of dollars alone.

Specific Comments

Recovery Boiler No. 5 Upgrade Project

On June 6, 2003 IP submitted an application which requested permission to modify its permit to allow increased burning of black liquor solids (BLS) in Recovery Boiler No. 5 from 115 TPH to 140 TPH, an increase of 21%. The increase was to be offset by the closure of three other emission sources: Recovery Boiler No. 3, Smelt Tank No. 3 and Power Boiler No. 1. The change qualifies as a major modification and requires new source review (NSR) because it has the potential to increase emissions of nitrogen oxides and carbon monoxide in excess of PSD Significant Emission Rates. However, no Title V permit application update was submitted. Further, both draft Permit No. 3138R20 (Case-by-case MACT under CVAA 112j for which an application was received by DAQ on August 6, 2003) and draft Permit No. 3138T20 (Title V permit which went to notice October 10, 2003) still list all three sources and seek permitting for continued operation for recovery boiler 3 (ID No. RB3), smelt tank 3 (ID No. ST3), and power boiler 1 (ID No. PB1). The draft Title V permit must be revised to eliminate the three sources proposed for closure by International Paper in its June 6th request.

Federal Regulations

NSPS standards for fossil-fuel fired steam generators, ICI steam generating units, and kraft pulp mills (40CFR60 Subparts D, Db, and BB) were deemed by IP to be met without new pollution controls. As we have stated above, we object to the shifting of costs from IP to local residents and plant personnel. Nowhere in their documents submitted to NCDAQ is this externalization addressed by International Paper.

IP would have had to meet the NESHAP standards for kraft mills (40CFR63 Subpart MM) for chemical recovery combustion under MACT II of the "cluster rule" published in January 2001. Under this standard, the emissions of PM would be limited to 0.10 g/dscm at 8% oxygen, 0.15 g/dscm at 10% oxygen, or 0.1 kg/mg BLS fired. IP would have had to comply with this MACT by March 2004, but NC DENR has granted IP a one-year compliance deadline extension for MACT II. Further, NC DENR has granted a separate extension of six months for IP to meet the pulp and paper MACT I, Phase 2 rule. On what basis can NC DAQ or EPA justify this delay? The federal Clean Air Act provides ample means to allow a duly diligent plant operator to comply with all air quality standards. This unjustified extension should be cancelled.

IP utilized a "top-down" approach in its determination of best available control technology (BACT) for its boiler recovery upgrade project. According to IP, BACT, "is based on the 'maximum degree of emissions limitation achievable' … but equal emphasis is … placed on the words 'maximum' and 'achievable.'" The applicant's explanation of what BACT means defies accepted definitions. For example, the state of California defines BACT without the qualifiers posed by IP:

> Definition of Best Available Control Technology
> 40405. (a) As used in this chapter, "best available control technology" means an emission limitation that will achieve the lowest achievable emission rate for the source to which it is applied.
> H&S 40405, *California Air Pollution Control Laws*, 2003

For control of NO_X and carbon monoxide, IP dismisses as technically infeasible selective catalytic reduction/selective non-catalytic reduction and catalytic oxidation, respectively, settling on proper design and good combustion control. One performance test is proposed, but no continuous monitoring, reporting or recordkeeping is outlined. Without periodic monitoring, it is impossible to determine if a facility is violating air quality standards or emission limits for best available control technology.

North Carolina Regulations

NC regulations are incorporated in the State Implementation Plan approved by EPA. In its application for the Recovery Boiler Upgrade Project, IP asserts that particulates from recovery boiler 5 would remain within previous permit limits required under 15A NCAC 2D .0508 (3 lbs. per equivalent ton of air dried pulp). But no actual testing is proposed to support this claim. In a similar way, SO_2, NO_X, and toxic air pollutant emissions limits are set aside. For TAPs, net emissions changes were calculated based on "emission factors and/or engineering judgments" instead of site-specific measurements and test data. Typically, North Carolina's TAP program uses computer estimates of pollution levels when permit applications are submitted before a new source is constructed. However, the IP Riegelwood plant has been in operation since 1951. Computer modeling is no substitute for real world testing.

Pulp and Paper Mill NESHAP

Under the Clean Air Act Section 112, the EPA must regulate emissions of HAPs to protect public health. Emission standards for new or existing sources of hazardous air pollutants must result in "the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section (including a prohibition on such emissions where achievable)..." [CAA 112 (d)(2)] To certify compliance under Section 112j of the Clean Air Act, IP must certify compliance with the terms and conditions of the MACT including the format and frequency of the certification. Each Title V permit and Notice of MACT Approval must contain sufficient testing, monitoring, reporting, and recordkeeping requirements to assure compliance with the MACT emission limitation.

Under the pulp and paper NESHAP Subpart S, paper mill operators must conduct an initial performance test to demonstrate compliance and establish performance parameters. Thereafter, continuous monitoring of air pollution control devices or operating parameters or CEM must be done. Exceeding a monitoring limit must be reported and constitutes a violation of NAAQS.

Yet no testing is required by the draft Title V permit. Throughout the draft the DAQ uses the following language: "If emissions testing is required, the testing shall be performed in accordance with…(NC or federal regulations)…. If the results of this test are above the limit given above, the Permittee shall be deemed in noncompliance with …(regulation)…." In order to determine if a given facility is complying with the law, adequate periodic monitoring, recordkeeping, and reporting is required to be stipulated in the Title V permit. In addition to production limits and other measures, the operating permit must require the facility to monitor emissions. This is the only means available to assure the public that the facility is complying with its permit.

Paper mill operators must comply with Subpart S by April 16, 2001 except for HVLC systems which must comply by April 17, 2006. Operators at mills which implement a Voluntary Advanced Technology Incentives Program for bleaching systems must comply by April 15, 2004. To qualify for VATIP, the operator must meet three conditions: 1) no increase in rates of chlorine use in bleaching systems, 2) submit control strategy report by April 1999, and 3) submit updated control strategy status reports every two years until in compliance. We can find no such restrictions in the draft Title V permit for the requirement to limit chlorine *use*.

A Title V permit may not sanction non-compliance. However, according to DAQ records, the plant is not fully in compliance with all state and federal regulations. The DAQ Permit Review for the R20 permit states:

> **VIII. Statement of Compliance**
> Based on the latest inspection of August 25, 2003, by Lynette Bryan of the Wilmington Regional Office, the facility was found to be in compliance with all applicable air quality regulations.

However, the October 2003 Title V Permit Review states that International Paper-Riegelwood Mill does not meet two NESHAP requirements: 1) for pulp & paper mills and 2) for chemical recovery combustion sources:

> The DAQ has reviewed the compliance status of this facility. During the last inspection performed in August 2003, the facility appeared to be operating in compliance with all permit conditions. The applicant has certified compliance with all applicable requirements. The facility is subject to two NESHAP requirements: Subpart S (National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper) and Subpart MM (National Emission Standards for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills). The applicant is not fully in compliance with either requirement but has indicated that the units will meet the requirements by the specified compliance dates. The applicant has also certified that the facility will be in compliance with any applicable requirements taking effect during the term of the permit and will meet such requirements on a timely basis. (TV Permit Review, Section IV. Statement of Compliance) [emphasis added]

The ongoing Title V process contemporaneous with the 2Q .0300 permit process may allow important issues to be overlooked or poorly addressed. We believe that a public hearing and further public comments would be in the best interest of the people in eastern North Carolina.

Respectfully submitted,

Louis Zeller, Clean Air Campaign Coordinator

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