

06-4704-OP

**IN THE
UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT**

In re: State of Vermont, Petitioner

BRIEF OF AMICI CURIAE

NORTHEAST CLEAN AIR COALITION

&

PEOPLE FOR LESS POLLUTION, INC.

IN SUPPORT OF PETITIONER STATE OF VERMONT

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CORPORATE DISCLOSURE STATEMENT (F.R.APP.P. 26.1)

I. The Northeast Clean Air Coalition is an unincorporated association.

II. Pursuant to Rule 26.1 of the Federal Rules of Appellate Procedure, People For Less Pollution, Inc. certifies that no publicly held corporation or other publicly held entity owns 10% or more of People For Less Pollution, Inc.

STATEMENT OF INTEREST OF AMICI CURIAE

I. NORTHEAST CLEAN AIR COALITION.

The Northeast Clean Air Coalition (NECAC) was established specifically to protect the children, citizens and environment in the Middlebury, Vermont, Addison County region from the harmful effects resulting from International Paper Company's Ticonderoga, NY proposal to burn 72 tons (144,000 pounds) of tires daily. NECAC believes that the tire burn will increase morbidity and mortality of children, citizens and wildlife throughout this area. The Northeast Clean Air Coalition's mission is to protect children and the public health and environment from the harmful impacts of air and water pollution.

The majority of NECAC members live within fifteen miles of International Paper, Ticonderoga's Paper Mill and in the direct path of the toxic air pollution emissions.

II. PEOPLE FOR LESS POLLUTION, INC.

People for Less Pollution ("PLP") is a non-profit citizen's group committed to opposing an increase of dangerous fine particulate emissions in the Champlain Valley. The group formally incorporated in

the State of Vermont in May 2005, in response to IP's stated intention to burn tire-derived fuel (TDF) without an electrostatic precipitator (ESP). The group consists of a broad cross-section of the community, including doctors, attorneys, engineers, scientists, artists, farmers, legislators, teachers, and counselors. The members hail from a number of Vermont towns closely situated to the plant.

PLP has fifty financial contributing members, and reaches many more individuals through its activities. The group maintains a written mailing list of over 1,600 names, and distributes an electronic newsletter to an additional 475 subscribers. PLP has garnered hundreds of signatures on its petitions, and sponsored busloads of hundreds more concerned individuals to attend and comment at the administrative hearings held in Middlebury, Vermont and Ticonderoga, New York.

ARGUMENT

I. INTRODUCTION & SUMMARY OF THE ARGUMENT

The amici fully support the State of Vermont's request for a temporary injunction enjoining the commencement of the proposed burning of tires at the IP Ticonderoga Mill. The amici submit this brief to make clear the human toll of the proposed tire burn – its significant adverse impacts on the health and safety of Vermont residents and business.

On September 20, 2006, the New York State Department of Environmental Conservation (NYSDEC) issued a permit modification, allowing IP to burn 72 tons of used tires daily as additional fuel for its paper mill. Because IP's smoke stacks are not equipped with ESPs, which are standard air pollution control equipment, IP's proposed burning of TDF will release numerous additional toxins and carcinogens into the air.

Vermont, located directly across Lake Champlain, is less than one mile from the mill. Prevailing winds blow from west to east, carrying these additional toxins and carcinogens from the IP mill to Vermont. These toxins will have both a direct short-term adverse effect and a

long-term cumulative effect on the health and well being of Vermont residents, farms and the environment.

Amici therefore believe it is critical that the status quo be maintained while the United States Environmental Protection Agency (EPA) takes the full time needed to review the air pollution control permit modification issued by the New York State Department of Environmental Conservation authorizing this tire burn. 42 U.S.C. § 7661d(b)(2).

Likewise, amici believe it is critical to maintain this Court's jurisdiction over this matter. Opportunity for the full regulatory and judicial processes should be allowed, before Vermonters are subjected to the "fall out" from the proposed tire burn.

II. THE TIRE BURN WILL EMIT SIGNIFICANT POLLUTANTS, THE EFFECT OF WHICH ARE INADEQUATELY ADDRESSED

The nature of the tire-derived fuel that IP proposes to burn necessarily engenders significant increases in emissions of harmful pollutants, including small particulates, heavy metals such as mercury, and dioxins. The toxicity of these substances has prompted tighter regulations from the EPA, as a substantial body of scientific evidence

continues to mount pointing to their significant adverse environmental and health effects.

While technology (in the form of an ESP) exists to moderate the effects of these emissions, the NYSDEC has not required it in the permit modification.¹ Nor does the permit modification meaningfully address significant issues concerning the composition of the fuel, the process of monitoring toxic emissions, or the means of preventing such emissions. Without such information, IP's air emissions cannot be adequately regulated as mandated by the Clean Air Act.

The magnitude of the health and environmental impacts at stake, combined with the nature and number of the omissions in the NYSDEC's permit modification, compel the conclusion that the Administrator of the EPA must be afforded the full 60 days granted for review under the Clean Air Act.

A. The Proposed Tire Burn Will Produce Significant Harmful Emissions

Substituting TDF for part of the oil and wood waste now burned by IP will dramatically increase pollution. Tires consist of numerous chlorine-containing compounds, including but not limited to aromatic

¹ No other U.S. plant burns as much tire derived fuel as IP intends to burn without such a device.

extender oils and halogenated butyl rubber; large quantities of zinc oxide; and other heavy metals.²

One of the most dangerous by-products of a tire burn is a class of chemical compounds known as dioxins. Dioxins “are extremely persistent compounds;” they break down so slowly that they remain in the environment for many years.³ Sufficient exposure to dioxins can cause numerous adverse health effects.⁴

The additional chlorine and heavy metals contained in TDF (as opposed to other fuel) can result in the formation of dioxins and other toxic chlorinated chemicals such as PCBs, as the volatilized gases cool in the upper part of the boiler. These dioxins and other incompletely combusted organics, as well as volatile metals (especially mercury and, to a lesser extent, lead), can form on or adsorb onto the smallest particles of ash and other matter. Some of the ash containing these toxic compounds and metals will escape airborne from the smokestack. The rest will be deposited in a landfill very close to Lake Champlain.

² See EPA-450/3-91-024, Pacific Environmental Services, Charlotte Clark, et al, Burning Tires for Fuel and Pyrolysis: Air Implications, Dec. 1991, at p. 16.

³ See Fact Sheet: EPA's draft risk assessment on dioxins, by The Interagency Working Group on Dioxins, a joint initiative of the Departments of Health and Human Services, Agriculture, Veterans Affairs, Defense, and State, as well as the EPA and the Executive Office of the President, available at <http://www.cfsan.fda.gov/~lrd/dioxinqa.html#top>.

⁴ Id.

The adsorption process occurs upon extremely small particulate matter (measuring 2.5 microns and less). Conventional pollution control equipment such as wet scrubbers — technology that IP employs — cannot capture more than about 50% of particulates in the 0.1 to 1 micron range before they are released into the atmosphere.⁵

A large and growing body of research demonstrates that small particulates adversely impact human health even if they do not contain dioxins. See Argument III, infra. Particulates are tiny particles of solids or liquids suspended in a gas (manifesting as a smoke or an aerosol, respectively). Fine particulates measure 0.1 - 2.5 micrometers in diameter. Their extremely small size allows them to penetrate deeply into the lungs.

Fine particulate emissions from combustion sources such as the tire burn are composed primarily of unburned fuel (hydrocarbons, many of which are carcinogens), elemental carbon, elemental sulfur, and mineral salts. They also contain traces of toxic metals, such as mercury, arsenic, zinc, cadmium, lead, chromium, and other minerals.

⁵ Pacific Environmental Services, Emissions Standards Division, “Wet Scrubber Doesn’t Capture Small Particulates: Burning Tires For Fuel And Pyrolysis: Air Implications,” Report # EPA-450/3-91-024, sponsored by the Environmental Protection Agency, at 16.

In September 2006, the EPA revised the National Ambient Air Quality Standards to reduce the allowable levels of daily emissions of particulate matter, from 65 micrograms/cubic meter of air to 35 micrograms. See Argument III, infra. During the test burn, the IP plant will not be measuring fine particulates and may release fine particulates in excess of this standard.

Prevailing winds will carry these fine particulates (laden with dioxins and heavy metals) for hundreds of miles. They will fall on Vermont's farms and pastures, accumulate in the soil, and enter the food chain. Cows, sheep and other farm animals concentrate dioxins in their fat. Humans consuming the meat and milk from these animals will absorb the dioxins. The persistence of these materials ensures that they will continue to accumulate in the bodies of humans living in polluted areas.

B. IP's Permit Modification Does Not Adequately Address Emissions Concerns

IP's permit modification fails to address a number of significant issues that bear directly on pollution levels in New York and Vermont:

1. The permit modification provides no statistical analysis of the composition of the TDF. Without hard data detailing the components of the fuel material, IP cannot predict the level of emissions that the burn will produce — and the regulatory authorities cannot enforce the laws that limit such emissions.

2. Adding TDF to IP's current fuel mix will change its fuel combustion process, and temperature is key to the formation of various pollutants.⁶ It is crucial to measure temperature in all boiler locations during the test burn, yet the permit modification does not address the location or process of this measurement.

3. Zinc oxide is homogeneously dispersed in tire rubber; therefore, burning rubber releases very small particulates of zinc, which can easily pass through the plant's wet scrubber and exit the smokestack.⁷

IP's permit modification assumes a 73% removal efficiency for all metals based on a 1999 stack test for nickel emissions from oil.

Moreover, the removal efficiency of zinc is not comparable to that of

⁶ E.g., increasing boiler temperature increases levels of nitrogen oxides (NO_x), a class of environmental pollutants that travel over great distances. See EPA, description of NO_x, [available at http://www.epa.gov/oar/urbanair/nox/chf.html](http://www.epa.gov/oar/urbanair/nox/chf.html). By contrast, dioxides form in the cooler post-combustion region of boilers.

⁷ This concern is validated by the report prepared for the EPA's 1997 revision of the National Ambient Air Quality Standards, which noted major increases in zinc emissions for all pulp paper facilities that did not employ an ESP.

nickel or other metals, and in fact is removed at a much lower efficiency. The permit modification fails to address these issues.

4. IP has characterized its wet scrubber only as "a Venturi like scrubber," or a "spinning basket scrubber." As wet scrubbers are generally far less effective for particulate matter removal, without more information the likelihood of significant emissions from this technology cannot be adequately gauged.

5. It is essential to have priority pollutant and whole effluent toxicity testing before, during, and after any test burn, in order to relate any observed changes in water quality to the test burn. The permit modification requires no monitoring of pH in the wastewater treatment facility, internal testing to measure the actual effectiveness of the precipitation of zinc and metals, or adequate sampling design for testing impacts of the TDF trial on the plant's wastewater discharge.

6. The permit modification requires no data to support IP's estimates of scrubber removal efficiency for zinc or other metals, or for its zinc mass balance calculation. As such, the validity of the proposed mass balance calculation cannot be assessed.

7. Because IP lacks proper equipment for feeding TDF to the power boiler, the TDF to be burned during the test will have 99.5% of the tire bead and cord wire removed. If the plant is granted permission to burn tires on a regular basis, it will burn TDF with only 95% of the tire bead and cord wire removed. The higher-grade TDF will have different energy, ash, zinc, and metal contents than the lower-grade TDF. Consequently, the results of the test burn will not accurately reflect the future operating conditions or the magnitude of pollutants released.

III. EMISSIONS FROM THE TIRE BURN WILL ADVERSELY AFFECT THE HEALTH AND WELL BEING OF VERMONT RESIDENTS.

The additional toxins to be emitted from the proposed tire burn will directly harm Vermonters' health. They will also hurt Vermont agriculture and its water quality. The effects of only some of the more serious of these toxins are described below.

A. Mercury

IP's existing pollution control mechanisms will not prevent additional mercury emissions from the tire burn. IP's proposed use of

TDF is calculated to result in annual emissions of 27.156 pounds of mercury per year.⁸

Mercury, particularly methyl mercury – the form of mercury found in fish – is an extremely potent and bio accumulative neurotoxin. Infants, children, pregnant women, and women of child-bearing age are most at risk from this widespread poison.⁹ The neurological impacts of mercury are devastating and include memory deficits, serious neurological disorders, birth defects, and cognitive impairments.¹⁰

Vermont already has numerous lakes contaminated with environmental mercury and methyl mercury in the food chain at levels preventing the safe consumption of fish.¹¹ Merely over the proposed

⁸ EPA, "Air Emissions from Scrap Tire Combustion" (1997) (The 1-2% TDF Trial Burn produced a 20% mercury increase, but with a far lower TDF fuel rate used than IP's proposed TDF Trial Burn. IP's proposal is to burn 6,000 pounds of TDF per hour with a heating value of 12.4% of the power boiler's 748 MMBtu/hour maximum heating, which represents 6 times the heating rate cited at Facility O in the 1997 EPA report; thus, the total heat input may be reasonably expected to yield increased mercury emissions of at least 20%, and extrapolating higher up 6 times at 31.536 pounds of mercury emissions per year. Thus, IP's 3 tons/hour of TDF on an annual basis could produce an extra 27.156 pounds of mercury per year above the 4.38 pounds of mercury produced with 0% TDF as Facility O demonstrated.).

⁹ Davidson PW, Myers GJ, Weiss B Mercury Exposure and Child Development Outcomes. *Pediatrics*. 2004 April; 113 (suppl): 1023-9; EPA Mercury Report to Congress (1997), available at <http://www.epa.gov/oar/mercury.html>

¹⁰ Gunderson VM, Grant-Webster KS, Burbacher TM, et al. "Visual recognition memory deficits in methyl mercury-exposed *Macaca fascicularis* infants," *Neurotoxicol Teratol* 1988, 10(4):373-379; Harada H. "Congenital Minamata disease: intrauterine methyl mercury poisoning," *Teratology* 1978, 18:285-288; Amin-Zaki L, Ehassani S, Majeed MA, et al. "Perinatal methylmercury poisoning in Iraq." *Am J Dis Child* 1976, 130: 1070-1076.

¹¹ See EPA Mercury Report to Congress (1997), <http://www.epa.gov/oar/mercury.html>. The most recent Vermont Water Quality Standards (2000) reference the Food and Drug Administration (FDA) mercury advisory limit of 1.0 mg/kg to determine whether fish advisories are needed. Approximately 10% of all Vermont fish tested exceed the 1.0 mg/kg mercury level. Vermont has issued advisories with the widespread prohibition or limitation of consumption of certain fish from Vermont water bodies. See http://healthvermont.gov/enviro/fish_alert/fish_alert.aspx ("This advisory is based on

test burn, approximately 15 or more grams of mercury will be emitted.¹² According to one study, a single gram of mercury in a 20-acre lake was sufficient to produce enough methyl mercury bioaccumulation in the fish to render them unsafe for human consumption.

B. Dioxin

The proposed TDF test burn will emit additional dioxins. Dioxins are highly toxic, and the EPA has classified TCDD, the most toxic of dioxins, as a human carcinogen, and mixtures of dioxins as “likely human carcinogens.”¹³ In addition to its carcinogenic effects, dioxin adversely affects reproduction and development of humans and other animals, suppresses the immune system, and causes skin lesions.¹⁴ Dioxins also cause learning disabilities. In sum, exposure to dioxins poses a real threat to human health.

Dioxin is unintentionally produced in a variety of industrial processes, including municipal and medical waste incineration.¹⁵ Once

tests of hundreds of fish caught in Vermont waters in the past 10 years and on scientific information about the harmful effects of mercury.”)

¹² Emissions for the test burn were calculated more conservatively than those for the annual basis.

¹³ EPA, “Dioxin: Summary of the Dioxin Reassessment Science,” at 1 (May 25, 2001).

¹⁴ EPA Dioxin: Summary of the Dioxin Reassessment Science (2000).

¹⁵ Malby TA, Moore RW, Peterson RE. “In utero and lactational exposure of male rats to 2,3,7,8 TCDD: 1. Effects on androgenic status.” *Toxicol Appl Pharmacol*, 1992, 114:97-107; “PCDDs and PCDFs from different environmental sources,” *Toxic Substances Journal*, 1992, 12: 133-150.

emitted into the air, dioxin travels and then settles on pastures and water bodies that produce the global food supply.

It accumulates in the cattle and fish feeding on contaminated vegetation. Dairy products (including human breast milk) are a major source of dioxins.¹⁶

In Vermont, and particularly in the extensive dairy farms in Addison County directly across Lake Champlain from the IP plant, dioxins from the test burn will accumulate in milk and dairy products, and in those who regularly consume such products, especially children.

C. Particulates

Fine particulate matter of a size 2.5 microns and less (PM 2.5) are among the most highly damaging pollutants to be emitted by the TDF burn. PM 2.5 have serious adverse effects on human health, and are more toxic to the respiratory and circulatory system than larger particles. The permit modification does not require IP to test for or monitor PM 2.5, but only for the larger, PM 10 particulates.

Numerous peer-reviewed articles describe the significant dangers of PM 2.5, even in short term exposure. Both short and long-term

¹⁶ *Id.*; Schettler, Stein, Reich, Valenti, *IN HARM'S WAY: Toxic Threats To Child Development* (2000) at 76.

exposure to fine particulates result in increased mortality.¹⁷ Exposure to fine particulates contributes to the early stages of arterial disease.¹⁸ Fine particles result in decreased children's lung growth and function.¹⁹

Due to the overwhelming clear and convincing scientific evidence of harm of fine particulates,²⁰ the EPA Clean Air Science Advisory Committee (CASAC) urged sharp cuts in annual and *daily* fine particulate emissions. In September 2006, the EPA revised the National Ambient Air Quality Standards to reduce the allowable levels of daily emissions of particulate matter, from 65 micrograms/cubic meter of air to 35 micrograms/cubic meter of air.²¹ It is very likely that IP's test burn will emit fine particulates in excess of EPA's proposed daily standard.

¹⁷ Mar, et. al., "Associations between Air Pollution and Mortality in Phoenix," *Environmental Health Perspectives* 2000;108:347- 53; Fairley, "Daily Mortality and Air Pollution in Santa Clara County, California," *Environmental Health Perspectives* 1999; 107:637-41; Peters, et. al., "Increased Particulate Air Pollution and the Triggering of Myocardial Infarction," *Circulation* 2001;103:2810-2815; Pope, "Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution," *Journal of the American Medical Assoc.* 2002;287:1132-41; Krewski, et. al., "Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality," Health Effects Institute, July, 2000.

¹⁸ Kunzli, et. al., "Ambient Air Pollution and Atherosclerosis In Los Angeles," *Environmental Health Perspectives* 2005; 113:201-20.

¹⁹ Gauderman, et. al., "Association between Air Pollution and Lung Function Growth in Southern California Children," *American Journal of Respiratory and Critical Care Medicine* 2002;166:76-84; Gauderman, et. al., "The Effect of Air Pollution on Lung Development from 10 to 18 Years of Age," *New England Journal of Medicine* 2004; 351:1057-67.

²⁰ Two thousand peer reviewed articles studying the adverse health effects of PM2.5 have been published since 1996.

²¹ See Environmental Protection Agency, "Fact Sheet: Final Revisions to the National Ambient Air Quality Standards For Particle Pollution (Particulate Matter)" (September 21, 2006), [available at http://www.epa.gov/oar/particlepollution/pdfs/20060921_factsheet.pdf](http://www.epa.gov/oar/particlepollution/pdfs/20060921_factsheet.pdf).

D. Zinc

A TDF burn releases excessive amounts of zinc, which has severe adverse human health effects. A study comparing various metal salts in particles found that acute toxicity associated with atmospheric dust was attributable to highly soluble zinc in the particles: “Zinc is the toxic factor in the lung response to an atmospheric particulate sample.”²² A seven-year study showed a correlation between atmospheric zinc and emergency-room asthma visits.²³

E. Cadmium

The TDF burn will result in increased levels of cadmium emissions. Studies of children exposed to cadmium have shown hyperactivity and reduced verbal and performance IQ. Cadmium is a metal with no essential biological function, but it may interfere with normal neurological development. Humans, particularly children, are exposed to cadmium through milk and food grown in the vicinity of a

²² Adamson, et. al., *Toxicol. Appl. Pharmacol.* 166(2) (July 15, 2000) at 111-19. Another study found that in concentrated ambient particles, zinc had a positive correlation with adverse pulmonary and systemic effects. Kodavanti, et. al., “Consistent Pulmonary and Systemic Responses from Inhalation of Fine Contrated Ambient Particles,” *Env. Health Perspectives* 113, No. 11 (Nov. 2005) at 1561-68.

²³ Clarborn, *et al.* “Testing the Metals Hypothesis in Spokane, Washington.” *Env. Health Perspectives Supplements* V. 110, No. 54 (Aug. 2003) at 547-552.

cadmium source, such as the IP mill (if burning TDF). Cadmium is readily taken up from the soil by leafy vegetables and grain crops.²⁴

In Vermont, where dairy cows and other food animals regularly graze, particularly on the rich soils along Lake Champlain's eastern shore, cadmium from the tire burn will be readily taken up by grass, leafy vegetables and grain crops, significantly increasing cadmium levels in crops grown on soil contaminated with cadmium.

F. Chromium

Hexavalent Chromium does not occur naturally and is produced by industrial processes and combustion. Hexavalent Chromium is classified as a human carcinogen by the EPA. Inhalation exposures increases the risk of lung cancer.²⁵ Burning tire derived fuel without an electrostatic precipitator will increase the release of Hexavalent Chromium on respirable fine particulates, compounding the hazard. IP has conceded that burning tire derived fuel "may increase" the release

²⁴ Pahren HR, Lucas JB, Ryan JA, et al. "Health risks associated with land application of municipal sludge," *J Water Pollution Control Fed*, 1979, 51:1588-1598; Agency for Toxic Substances and Disease Registry. Case Studies in Environmental Medicine: Cadmium Toxicity, Atlanta, GA: U.S. Department of Health and Human Services, ATSDR, (June, 1990); Hastings L, Miller ML. "Developmental Neurotoxicity of Cadmium," *IN HARM'S WAY: Toxic Threats To Child Development*, ed. Schettler, Stein, Reich, Valenti (2000); Slikker W, Chang LW, Eds. *Handbook of Developmental Neurotoxicology*, Academic Press, (1998); Baranski B, Stetkiewicz I, Sitarek K, Szymczak W. "Effects of oral, subchronic cadmium exposure on fertility, prenatal and postnatal progeny development in rats," *Arch Toxicol*, 1983, 54:297-302.

²⁵ EPA Technology Transfer Network: Air Toxics Website (January, 2002)
<http://www.epa.gov/ttn/atw/hlthef/chromium.html>.

of hexavalent chromium in the stack emissions. The New York State DEC has classified this compound as a “High Toxicity Air Contaminant.”

CONCLUSION

The amici support the State of Vermont’s Petition for Extraordinary Writ Providing Temporary Injunctive Relief in Aid of Jurisdiction, and pray that it be granted, in order to allow the regulatory process to take its proper course and preserve the Court’s jurisdiction.

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October 26, 2006

CERTIFICATE OF COMPLIANCE

I certify that, according to the word count of the word-processing system used to prepare this brief, this brief contains 3,740 words and therefore complies with F.R.App.P. 29(d) and 32(a)(7).

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