

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF ALBANY

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THE STATE OF VERMONT,

Petitioner,

-against-

AFFIDAVIT OF
JOHN H. NUCKELS

THE NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION and
INTERNATIONAL PAPER COMPANY,

Respondents,

For a Judgment Pursuant to Article 78 of the New York
Civil Practice Law and Rules.

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STATE OF OHIO)
)SS.:
COUNTY OF HAMILTON)

JOHN H. NUCKELS, being duly sworn, deposes and says:

1. I am an Environmental Engineer specializing in air pollution issues. I submit this Affidavit in support of the Article 78 Petition filed by the State of Vermont seeking to annul the determination by Respondent New York State Department of Environmental Conservation (“NYSDEC”) that the proposal by Respondent International Paper Company (“IP”) to conduct a two-week “test burn” of Tire-Derived Fuel (“TDF”) at its Ticonderoga Mill is a Type II action exempt from environmental review under the State Environmental Quality Review Act.

Professional Qualifications

2. I earned a Bachelor of Science degree in Mechanical Engineering and a Masters Degree in Urban and Environmental Planning from the University of Virginia. I have worked as

an environmental consultant for seventeen (17) years. During that time my work has concentrated in air quality compliance and enforcement, air pollution emission estimation, air dispersion modeling, air quality permitting, air pollution control system evaluation, environmental impact statements, and multi-pathway risk assessments. I am currently employed as an independent consultant providing air quality compliance and enforcement expertise to the federal government and to various state governments. I also provide assistance to private companies on air quality modeling and related issues. A copy of my resume, setting forth in detail my educational and professional background and experience, is annexed to this Affidavit.

3. I have been asked by the State of Vermont to review and evaluate IP's application for a significant modification to the air pollution permit for its Ticonderoga Mill for the purpose of conducting a two-week "test burn" of TDF. According to IP's application, the test burn is the first step in its plan to permanently convert to burning TDF at its mill.

The Proposed IP Test Burn

4. IP proposes to conduct a two-week test burn of TDF at its Ticonderoga Mill. According to IP's application, the test burn will involve loading up to three tons per hour of TDF in the Mill's boiler. The boiler currently burns No. 6 fuel oil and wood bark as fuel. *See Revised Title V Permit Application for Tire-Derived Fuel Trial ("Application")*, annexed as Exhibit A to Petition.

5. The Ticonderoga Mill boiler is an 855 BTU per hour dry-bottom boiler built by Erie City in 1970. The boiler is capable of supplying up to 600,000 pounds of steam per hour.

6. The boiler has low nitrogen oxide burners (to remove nitrogen oxides from the flue gas), flue gas recirculation, fly ash reinjection, and over-fire air. The boiler also includes

multiclones and a wet scrubber to partially control emissions of particulate matter and sulfur dioxide.

7. As part of its regulatory review of IP's test burn proposal, NYSDEC has required that IP submit an application for a "significant modification" to the Title V Air Permit for the Ticonderoga Mill. Application, Exh. A to Petition, at 1-1. I have reviewed the IP Application, including the air dispersion analysis included as Exhibit B to the Application.

Emissions of Air Pollutants, Including Toxic Air Pollutants, Are Likely to Increase as a Result of the Test Burn

8. As part of its Application, IP conducted an air dispersion analysis "for those air contaminants that may increase as a result of TDF [burning]" Application, Exh. A, *Air Dispersion Analysis For Tire-Derived Fuel Trial*, dated July 2005, annexed to Application as Exhibit B, at 1-1. IP conducted air dispersion modeling for aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc and zinc oxide. Thus, by IP's own admission, it anticipates that emissions of *twenty-one* air pollutants "may increase" as a result of the test burn.

9. Twenty of the twenty-one air contaminants which IP has conceded "may increase" as a result of TDF burning are classified by NYSDEC as "toxic air contaminants." See NYSDEC Department of Air Resources Air Guide 1 ("DAR-1") AGC/SGC Tables, dated December 22, 2003, annexed as Exhibit D to Petition.

10. TDF has a higher ash content than No. 6 fuel oil. The ash content of the TDF is predicted by IP to range between 4.2% and 12.6%. Ash content for residual fuel oil is normally

less than 0.1%. It is therefore very likely that hourly emissions of particulate matter will increase during the TDF test burn. This likelihood has been conceded by IP. See Application, Exh. A to Petition, at 2-5 (“[t]he higher ash content of TDF may tend to increase PM [particulate matter] emissions”).

11. TDF has a higher sulfur content than No. 6 fuel oil. The sulfur content of the TDF is predicted by IP to range between 1.58% and 2.07%. The air pollution permit for the Ticonderoga Mill establishes the maximum allowable sulfur content for the residual oil currently used as fuel at the Mill at 1.5%. It is therefore likely that hourly emissions of sulfur dioxide will increase during the TDF test burn.

12. TDF also contains chlorine. The Application notes that “[a]ny combustion source that burns a fuel with chlorine may emit trace levels of dioxins.” Application, Exh. A to Petition, at 2-6; (emphasis added). Thus, it is likely that dioxins will be emitted during the test burn.


Conclusion

13. It is my opinion that, to a reasonable degree of scientific certainty, the IP test burn is likely to result in increased emissions of twenty-^{two}~~three~~ air pollutants, including twenty-~~one~~ that are classified by NYSDEC as toxic air contaminants, and will result in emissions of dioxins.



JOHN H. NUCKELS

Sworn to Before Me
This 2nd Day of February, 2006



Notary Public

PAMELA S. PIERSON
NOTARY PUBLIC, STATE OF OHIO
MY COMMISSION EXPIRES 02-20-07

JOHN H. NUCKELS

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SUMMARY

- Environmental engineer with seventeen years of experience in air quality analyses. Areas of expertise include:
 - Air quality compliance and enforcement
 - Air quality permitting
 - Air pollution control system evaluations and BACT analyses
 - Facility inspections and audits
 - Leak detection and repair (LDAR) evaluations
 - Multi-pathway risk assessments
 - Air dispersion modeling (ISC, screening and toxic plume models)
 - Geographic information systems (GIS; e.g. ArcView and MapInfo)
 - Environmental database development
 - Emission inventory development (point, area and mobile source)
 - Meteorological and air quality data acquisition and processing
 - Environmental impact statements

PROFESSIONAL HISTORY

Independent Consultant

September 2001 – Present

- Providing a variety of air quality assessment work for clients such as the U.S. EPA Regions II, III, and VII, U.S. Department of Justice, private and non-profit organizations and the states of New Jersey, New York and Pennsylvania.
- Performed air permitting analyses on several power plants and manufacturing companies to determine compliance with the Clean Air Act provisions. These analyses have involved examination of company documents including work orders, fuel usage and outage information.
- Emission estimates and modeling for oil exploration firms as part of their environmental impact assessments. These studies have involved characterizing emissions from different processes and determining air quality impacts on the surrounding area.

Science Applications International Corporation; Falls Church, Virginia and Cincinnati, Ohio

Senior Engineer

April 1991 – September 2001

- Responsible for providing federal, state and local agencies with all aspects of air quality planning and pollution control.
- On-site air compliance manager for NASA Langley Research Center in Hampton, Virginia.
 - Maintained and updated the center's State Operating Permit
 - Provided the Virginia DEQ periodical compliance reports
 - Maintained records of compliance related information.
 - Liaison for responding to state questions and inspections, and provided environmental training to center personnel.

- Assisted the EPA Office of Enforcement and Compliance (OECA) with permit reviews, emissions characterizations, air quality modeling reviews, pollution control equipment assessments and regulatory review. Also assisted with case development for EPA and Department of Justice litigation actions against possible violators of Clean Air Act regulations.
- Developed GIS maps and overlays for the presentation of air quality modeling results, risk assessments and air quality monitoring optimizations. Also used GIS and other programs to develop concentration profiles of various pollutants and topographic elevation maps for EIS and air permit applications.
- Developed and reviewed health risk assessments involving hazardous waste incinerators and cement kilns. The health risk assessments used both indirect and direct pathways to determine overall risk to the surrounding environment.
 - Responsible for the acquisition of meteorological and on-site data and the preparation and running of the air dispersion models to determine risk values and air pollutant concentrations for the surrounding study areas.
- Modeled Confined Animal Feeding Operations (CAFOs) to determine odor impacts for surrounding communities. The air quality modeling used representative meteorological data to determine areas of significant impact. The results were then displayed using GIS software that highlighted areas of concern.
- Investigated the air quality impacts of various facilities including gold mines in Alaska, industrial facilities in Arizona, several hazardous waste incinerators and cleanup activities for both federal organizations and private companies.
- Principle investigator assisting Region VIII with an inventory and survey of federal facilities for applicability to Executive Order 12586 to determine major sources of hazardous air pollutants and assess pollution prevention practices and opportunities.
- Responsible for the modeling and air quality analysis efforts for the U.S. Army Chemical Demilitarization Program.
 - This involved the preparation and execution of the regulatory air quality models that were used to determine impacts from the Army's 32 proposed hazardous waste incinerators that were designed to destroy the nation's chemical weapon stockpile.
 - Two of the eight hazardous waste incinerator permit applications involved Prevention of Significant Deterioration (PSD) permitting requirements for the states of Alabama and Arkansas.
 - Responsibilities included meteorological data acquisition, development of modeling protocols, emission estimate calculations, interpretation and compliance with applicable state and federal regulations, interaction with state permitting agencies and the calculation and presentation of the modeling estimates.
- Helped to create environmental databases of pollutant sources and their respective control technologies for the Illinois portion of the Chicago Metropolitan Area in response to the new 1990 Clean Air Act RACT provisions and for EPA Region I for a survey of the leather coating industry.

Engineering-Science, Inc.; Fairfax, VA***Environmental Engineer******May 1989 - April 1991***

- Participated in the development of several emission inventories of both toxic and criteria pollutants. Acquired and interpreted on-line government database information including SARA 313 (TRIS) records to develop and supplement toxic emissions databases in the Great Lakes area.
- Developed calculation methodologies for area and mobile source emission inventory databases for agencies performing post-1987 SIP inventory programs in Virginia and New Jersey. Worked with CAD and GIS systems to determine area and mobile source emissions and growth factors.

- Helped evaluate California's South Coast emission inventory tracking system and made recommendations for improvements and changes.
- Developed methodologies and database systems for performing automated emission calculations for highway vehicles using MOBILE 4 and highway statistics.
- Motor fuel volatility studies for the South Coast Air Board of California and idle CO emissions from vehicles in the Massachusetts and Texas areas.
- Helped with the database development for a centralized continuous emission monitoring system (CEMS) in the State of Pennsylvania and developed a database system to receive, interpret and process both magnetic and hand entered data from a superfund monitoring site and generate daily and monthly reports of the average and largest ambient concentrations for that time period.
- Performed ISCLT concentration and modeling runs for the Detroit and Chicago areas using NAPAP, NEDS and TRIS plant and emission information. GIS Mapping systems were used to help determine local concentrations and locate companies that fell within the study area's boundaries.

U.S. Environmental Protection Agency

Student Assistant

August 1988 to February 1989

- Conducted research on risk assessment methodologies using a computer modeling system and the Toxic Release Inventory for USEPA Region V.
- Performed risk calculations using EPA's Graphical Exposure Modeling System (GEMS) for a study area in East St. Louis. The dispersion model ISCLT was used to calculate concentrations of toxic chemicals which were emitted from manufacturing plants within the area and the risk estimation module GAMSERE was used to assess risk levels due to toxic exposure.

EDUCATION

- M.A., Environmental Planning: University of Virginia (1989)
- B.S., Mechanical Engineering: University of Virginia (1987)