

**Responsiveness Summary**  
**International Paper Ticonderoga Mill**  
**Proposed Tire Derived Fuel Test**  
**DEC # 5-1548-00008/00081**  
**July 2006**

**Prepared by the New York State Department of Environmental Conservation**

**INDEX**

	<b>Pages</b>
<b>Overview.....</b>	<b>3 - 8</b>
<b>Permit Administration.....</b>	<b>9 - 13</b>
<b>State Environmental Quality Review (SEQR).....</b>	<b>13 - 17</b>
<b>Air Pollution Control.....</b>	<b>17 - 42</b>
<b>Wastewater Management.....</b>	<b>42 - 44</b>
<b>Solid &amp; Hazardous Waste.....</b>	<b>44</b>
<b>Miscellany.....</b>	<b>44 - 47</b>
<b>Notification Requirements.....</b>	<b>47</b>

**Overview of Response to Comments**

## **Background**

The applicant, International Paper Company (IP), has applied to the New York State Department of Environmental Conservation (herein referred to as the Department, DEC and/or NYSDEC) for a modification of the Air Pollution Control Title V Permit issued to its paper mill facility in Ticonderoga New York, to conduct a one-time, two-week test burn to evaluate the use of tire derived fuel (TDF) as an alternate, partial fuel source for the mill's power boiler. The power boiler currently burns number 6 fuel oil and bark/wood. TDF consists of scrap tires which have been shredded into small-sized chips so that they may be readily added to the boiler's existing feed system, and from which the bead wire and steel belts have been removed. Due to the significant degree of public interest in the IP facility, the Department published notice of the complete permit application and the draft permit to afford an opportunity for public review of and comment on the proposed test burn.

A Combined Notice of Legislative Hearing and Complete Application was issued on October 7, 2005 and published in the Plattsburgh *Press Republican*, the Glens Falls *Post Star* and the *Environmental Notice Bulletin (ENB)* on October 12, 2005, along with Ticonderoga *Times of Ti* on October 15, 2005, and Addison, Vermont's *Addison Independent* on October 13, 2005. The comment period ended on November 21, 2005. A Second Combined Notice was issued on October 20, 2005 and published on October 26, 2005 in the *Press Republican* and *ENB*, with comment period ending December 9, 2005. Legislative Hearings were held on November 9, 2005 and November 30, 2005. At the request of the State Attorney General of Vermont, the Department extended the public comment period to December 23, 2005, thus providing an additional 42 days for public comment on the application and draft permit.

DEC received more than 1,280 comments on the proposed test burn. Extensive comments were received from a Vermont group called People for Less Pollution and from the State of Vermont Attorney General's Office. The Natural Resources Defense Council submitted comments on January 19, 2006, 23 days after the close of the second comment period. These comments raised substantially the same issues that were raised in other comments submitted during the public comment period. Because of the lateness of the NRDC submission, however, the comments will not be considered as part of the permit record. The Department has completed its evaluation of, and prepared responses to, the public comments. Based on its review of the application and evaluation of the public comments, DEC now proposes to approve IP's application for a permit modification subject to additional review by the federal government. The Department will provide a copy of the permit determination and responsiveness summary to the United States Environmental Protection Agency (EPA or USEPA), which will then have 45 days to review the proposed permit.

The IP facility is located in northeastern New York in the Champlain valley. The facility

currently holds a Title V operating permit and is subject to emission limits for sulfur dioxide (SO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), and particulate matter (PM), among other applicable requirements. Prevailing winds in this region are predominantly from the South which means that the emissions from the plant typically travel north and into both New York State and the State of Vermont. Accordingly, not only is the Department concerned that it not take any permitting action which will result in emissions that cause significant adverse environmental impacts in neighboring states, the Department has a parallel concern with ensuring that New York's environment and citizens are also protected.

At issue is an application to modify IP's existing Title V operating permit. The modification to the existing Title V permit would authorize a one-time, two-week test burn during which TDF will be combusted in the mill's power boiler along with number 6 fuel oil and bark/wood. Department staff believe that the test, which as is explained below will be conducted under a rigorously controlled protocol, is necessary due to the lack of data regarding the combustion of tire chips in a wood fired boiler like IP's.

The TDF loading will not exceed 3 tons per hour and the total heat input to the boiler will not exceed 748 mmBtu per hour. TDF chips will be added to bark/wood in the mill's wood yard and will be conveyed with the bark/wood to the boiler. During the first five days of the test, TDF will be added gradually while the operators adjust the boiler to achieve optimum combustion conditions to ensure compliance with permit limits during this period. To ensure compliance with the existing permit, particulate matter (PM) emissions will be measured using USEPA Method 5 (40 CFR Part 60 Appendix A, Method 5) at baseline condition (0 tons per hour), and when the TDF feed rate is at 1, 2 and 3 tons per hour (tph). Test results must be available within 24 hours. DEC will review the results and may require additional testing, if appropriate. For example, if the results taken at 1.0 tph indicate that the permit limit might be exceeded at 2 tph, PM would be measured for compliance at 1.5 tph. Similarly, if the results taken at 2 tph indicate that the permit limit might be exceeded at 3 tph, PM would be measured for compliance at 2.5 tph. In addition, the facility maintains and operates continuous emission monitors ("CEMS") for SO<sub>2</sub> and NO<sub>x</sub>, which provide real time data from which the facility can immediately determine if emission limits for these pollutants are being exceeded. The purpose of the first week of the test is to establish the feed rate of TDF which the facility can accommodate at full operating load and still operate in a manner consistent with its current operating permit. This is the feed rate at which the facility will conduct more comprehensive monitoring during the second week of the two-week test.

During the second week, extensive stack testing will be performed to characterize emissions of contaminants of concern, including, but not limited to, particulate matter, metals, polycyclic aromatic hydrocarbons (PAHs), dioxins, hydrogen chloride (HCl) and polychlorinated biphenyls (PCBs). In addition, whenever TDF is being burned, facility personnel will continue to monitor the SO<sub>2</sub> emission rate and NO<sub>x</sub> emission rate utilizing the mill's CEMS. Stack opacity will also be monitored by certified personnel during daylight hours. If any of these indicators exceed permit limits, the facility will stop adding TDF until the conditions have stabilized and the

facility can operate in compliance with its existing permit conditions. In addition to the safeguards provided by the already existing Title V operating permit, IP performed extensive modeling analyses which it submitted as part of its permit application. These analyses predicted that under a worst case scenario, emissions from the two-week test burn will not cause a violation of any short-term ambient air quality guideline. DEC staff has reviewed these analyses, have concluded that they were properly done and agree with predictions that the test will not cause a violation of applicable short-term ambient air quality guidelines. In addition, DEC has invited air emission personnel from the Vermont Department of Environmental Conservation to observe the test burn.

**The test does not involve a “major modification” under the Clean Air Act.**

Many of the comments expressed appear to assume that the Department is allowing IP to undertake a modification of its facility without undergoing required regulatory review under the Clean Air Act (CAA or Act). These comments suggest that there may be some confusion with respect to the procedural review required for a permit modification for a major project under 6 NYCRR Part 621 (the Department’s Uniform Procedure regulations), and the substantive review required for a major facility modification under the New Source Performance Standards (NSPS) (CAA Section 111), Prevention of Significant Deterioration (PSD) (CAA Section 169), and Non-attainment New Source Review (NNSR) (CAA Section 173) programs. While IP’s permit application to conduct the one-time, two-week test does not involve a “major modification,” as envisioned by the Clean Air Act, it is being processed by the Department as a “major project” under the Department’s Uniform Procedures regulation, 6 NYCRR Part 621 given the degree of public interest in the application.

When used in connection with the NSPS, PSD, and NNSR programs, the term “modification” contemplates a physical change or change in the method of operation at a facility which is of a permanent nature and which results in a threshold increase in emissions of specified pollutants.<sup>1</sup>

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<sup>1</sup>Under the PSD regulations, 40 C.F.R. 52.21 (b) (2) (i), the term “modification” is defined as “any physical change or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.”

Under the NSPS regulations, 40 C.F.R. 60.14 (a), a modification is defined as “any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies.”

Under 6 NYCRR 200.1 (aq), a modification is defined as a any physical change or change in the method of operation which (1) increases the hourly emission rate, emission concentration or emission opacity of any air contaminant, or ..... (5) results in the emission of any air pollutant not previously emitted or authorized under the permit. 6 NYCRR Part 231, which implements the NNSR program in New York State, applies to significant source projects. A significant source includes, in part, a proposed physical change in, or change in the method of

There is no provision of the Clean Air Act (CAA or Act) or Environmental Conservation Law (ECL), or any implementing regulation, which provides that a temporary, two-week test burn is a “major modification,” nor do the circumstances of the proposed test burn bring it within the criteria for review as a major facility modification under the NSPS, PSD, or NNSR programs. The already existing IP Title V operating permit is being modified only to allow IP to conduct a one-time two-week test burn, for the purpose of gathering data and making technical determinations regarding the feasibility of the use of TDF as a fuel source. The terms and conditions of the existing operating permit remain in effect and applicable to IP’s operations during the test burn. The proposed modified permit does not allow IP to physically modify its facility to burn TDF, and IP must resume burning exclusively number 6 fuel oil and bark/wood in its boiler after the two-week test has concluded. For these reasons the Department has determined that this temporary, two-week test burn to gather data is not a major facility modification that triggers review under the NSPS, PSD, or NSR programs.

**While the test does not involve a “major modification” under the Clean Air Act, DEC treated IP’s application as a “major project” under the UPA.**

The uniform procedures set forth under 6 NYCRR Part 621 identify the types of projects which are to be considered major for the purpose of determining what procedural requirements – specifically public notice and comment and the determination to conduct a public hearing – apply to the permit application. Applications for permit modifications involving projects that do not fall within the list of major projects set forth at 6 NYCRR 621.4 (g), shall be considered minor and therefore not subject to public notice and comment. Nevertheless, the Department in its discretion may subject an otherwise minor project to the public notice and comment, and to the legislative hearing provisions of Part 621, if it believes that a significant degree of public interest exists for doing so (*see* 6 NYCRR 621.6 [b]; 6 NYCRR 621.7 [c][1]). Pursuant to both 6 NYCRR 621.3 (c)(3) and 6 NYCRR 621.7 (e), if a public hearing is required for an otherwise minor project, the permit application is thereafter to be treated as a major project for procedural purposes under 6 NYCRR Part 621.

As is set forth above, the criteria for major projects set forth under 6 NYCRR 621.4 (g) do not apply to IP’s application for a permit modification to allow a temporary two-week test burn at the facility. Nevertheless, due to the significant degree of public interest that exists in the proposed project, the Department believed that it was appropriate to hold legislative hearings on the application, as a result of which the Department was required to treat the project as major for procedural purposes under Part 621.

**Given the request for a public hearing, and public notice and comment, DEC treated IP’s application as a “significant modification” under 6 NYCRR Part 201.**

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operation of, an emission unit which results in an increase in the maximum annual potential of the emission unit above certain threshold levels.

Having determined that the project should be treated as major for procedural purposes under Part 621, the Department is constrained to treat the project as “significant” under Part 201, also for procedural purposes. Under 6 NYCRR 201-6.7 (d), if a Title V permit modification is neither administrative nor minor, as a procedural matter it defaults to being significant. The modification of the IP Title V permit to authorize the two-week test burn is not an administrative modification under 6 NYCRR 201-6.7 (b). Under 6 NYCRR 201-6.7 (c) (4), a minor Title V permit modification must be subject to the minor permit modification procedures of Part 621, which is inapplicable to the IP test burn. Therefore, due to the procedural requirements of Part 621, the Department is constrained to treat this project as a significant modification to the IP facility’s Title V permit, under Part 201. The proposed permit, in addition to being published for notice and comment, will also be submitted to EPA for a 45-day review period. Significantly, while for the purpose of review DEC has treated the application as a “significant modification” under Part 201, the Department cannot take any final action on the permit application until the conclusion of EPA’s 45-day review.

**Classification of the project as a “significant modification” under 6 NYCRR Part 201 does not mean that the project will have a significant environmental impact. It was therefore appropriate to classify the project as Type II under 6 NYCRR Part 617.**

The fact that the permit modification is significant under Title V does not lead to the conclusion that the project either constitutes a major facility modification or will have any significant environmental impact. The basis for many of the comments that the permit application must be reviewed under the standards applicable to the Clean Air Act definition of a “major modification” appears to be the fact that IP’s application characterizes the modification as “significant,” and sets forth IP’s hope that the data gained during the two-week test may support a future request for permission to use TDF as part of the mill’s fuel mix, on a permanent basis. These concerns also appear to form the basis for comments that the proposed project is not a Type II action under 6 NYCRR Part 617 and should be subject to review under the State Environmental Quality Review Act (SEQRA). As is set forth fully in both this overview and the Response to Comments, the analyses conducted as part of IP’s application predicted that under a worst case scenario, emissions from the two-week test burn did not indicate a potential for acute or subchronic adverse health impacts. Further, the classification of the test as a Type II study under 6 NYCRR 617.5 (c) (18) is appropriate and is consistent with DEC’s previous treatment of other data collection activities. Finally, it is the Department’s determination that this proposed one-time two-week test burn is not a “major modification” for the purposes of review under the NSPS, PSD, or NNSR regulations. The only permit action that is under consideration by the Department at this time is IP’s application for a one-time permit modification to allow a two-week test burn. If, at some future date IP seeks Department approval to burn TDF on a permanent basis, IP must submit an entirely separate permit application, which will be evaluated pursuant to a separate administrative process.

In summary, the Department believes it is both appropriate and necessary for IP to conduct a test

burn prior to submitting any application for a permanent permit modification. Importantly, the test burn is expected to provide valuable information with respect to: (1) whether the power boiler can handle TDF under its current configuration; (2) whether the use of TDF will require the installation of additional pollution control measures or equipment; (3) the maximum feed rate at which the boiler can burn TDF without causing an exceedance of applicable emission limits or violating air quality standards; and (4) the type and quantity of pollutants that will be emitted as a result of including TDF in the fuel mix. Given the absence of information regarding the combustion of tire chips in a wood fired boiler like IP's, Department staff determined that the brief, rigorously controlled test is appropriate. The data generated from the test burn will enable the Department, IP, and the public to more effectively evaluate the feasibility, practicability, and environmental impacts of using TDF at the IP facility, and would therefore inform future permit determinations should IP decide to submit a permit application to add TDF into the fuel mix on a permanent basis. The Department's approval of IP's application to modify the existing permit to allow a one-time, two-week test does not set any precedent for its review of any future permit application that may be submitted by IP, nor is the Department committing itself to any future course of action by virtue of the approval of this temporary two-week test.

**The IP Facility is in compliance with all National Emission Standards for Hazardous Air Pollutants.**

Some comments expressed concern that the facility will not comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP). The IP facility is subject to three different NESHAPs, however, the one at issue here is the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters - 40 CFR Part 63 Subpart DDDDD. Subpart DDDDD establishes notification requirements and imposes emission standards on new and existing industrial, commercial and institutional boilers, such as IP's power boiler, depending on the size of the boiler and the type of fuel combusted and establishes dates by which the boilers must comply with these standards. IP has already complied with the notification requirements of Subpart DDDDD. The substantive requirements for existing emission units greater than 10 mmBtu/hr solid fuel, such as IP's power boiler, do not take effect until September 13, 2007, which is after the expiration of the current Title V permit. Accordingly, Subpart DDDDD requirements will be included in the renewed Title V permit.

## Responses to Comments

DEC has thoroughly evaluated the scientific arguments and studies cited by Vermont and other commenters. As a result of that review DEC has determined that those studies and arguments are inapplicable to the two-week test burn of TDF. DEC has further determined that the test burn will not result in a significant environmental impact, nor will it violate applicable air quality or water quality standards or guidelines. DEC's exercise of discretion in reaching this determination is entitled to deference (*see e.g. City Council of Watervliet v. Town Bd. of Colonie*, 3 NY3d 508 [2004] ["DEC is entitled to deference in its construction and application of environmental conservation statutes"]; *Flacke v. Onondaga Landfill Sys.*, 69 NY2d 355, 363 [1987] ["where the judgment of the agency involves factual evaluations in the area of the agency's expertise and is supported by the record, such judgment must be accorded great weight and judicial deference"]; *see also Chemical Specialties Mfrs. Ass'n v. Jorling*, 85 NY2d 382, 395-96 [1995] [the legislature has vested DEC with significant discretion over environmental matters and to evaluate scientific studies]; *accord Brodsky v. Zagata*, 222 AD2d 48 [3d Dept. 1996] [DEC is entitled to judicial deference even where the record contains conflicting scientific evidence]; *Town of Preble v. Zagata*, 263 AD2d 833 [3d Dept. 1999] [in situations entailing technical and specialized expertise, great weight and deference are accorded to an agency's determination, even in situations involving conflicting evidence]).

The Department has prepared the following responses to public comments, both written and oral, that were received by the NYSDEC through the close of the public comment period. That comment period ended on December 23, 2005, after being extended for at the request of the State of Vermont.

Comment 1: The commenter contends that the application is incomplete because it is for a significant modification and does not include all information required in 40 CFR 70.7 (e)(4)(ii) and 6 NYCRR 201-6.7(d), including:

- information needed to determine NSR;
- a statement of all applicable requirements;
- a statement of the methods for determining compliance with each applicable requirement upon which IP's compliance certificate is based;
- any estimate of potential emissions from the modification;
- emissions data adequate to assess applicability of NSPS or NESHAPS;
- emission calculations showing the emissions increase projected to result from the proposed modification.

The commenter also states that application is for a major project under 6 NYCRR 621.4 (g) (2) and ECL § 70-0119(1). According to the comment, the missing information has the potential to require permit denial or major modification of the proposed permit or imposition of significant additional permit conditions.

Response to Comment 1: The permit application seeking authorization for a temporary two-week test burn does contain all the information required pursuant to 6 NYCRR Part 201 and other regulatory requirements and, thus, is a complete application.

According to 6 NYCRR 201-6.3(d), applications for Title V facility modifications and revisions generally need only supply information related to the proposed change. In this case the proposed change is to authorize a two-week test burn pursuant to the terms and conditions of the existing Title V permit and with additional requirements for reporting, monitoring and record keeping during the two-week test burn. There are no additional substantive requirements which apply to the two-week test burn, other than those requirements that are included in the proposed permit. Thus, the permit application accurately reflects the subject of the modification and meets all regulatory requirements, and the proposed permit appropriately contains all applicable requirements. The Department disagrees with the statement that pertinent information has been omitted from the permit application and that the permit could only be issued with significant additional permit conditions.

The commenter appears to be confused with respect to the review of a permit modification for a major project under 6 NYCRR Part 621 (the Department's Uniform Procedure regulations), and the substantive review required for a major facility modification under the New Source Performance Standards (NSPS) (CAA Section 111), Prevention of Significant Deterioration (PSD) (CAA Section 169), and Non-attainment New Source Review (NNSR) (CAA Section 173) programs. IP's permit application is being processed by the Department as a "major project" under the Department's Uniform Procedures regulation, 6 NYCRR Part 621. However, the permit application does not involve a major facility modification, as envisioned by the Clean Air Act and thus does not trigger additional applicable requirements under its implementing regulations.

When used in connection with the NSPS, PSD, and NNSR programs, the term “modification” contemplates a physical change or change in the method of operation at a facility which is of a permanent nature and which results in a threshold increase in emissions of specified pollutants.<sup>2</sup>

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<sup>2</sup>Under the PSD regulations, 40 C.F.R. 52.21 (b) (2) (i), the term “modification” is defined as “any physical change or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.”

Under the NSPS regulations, 40 C.F.R. 60.14 (a), a modification is defined as “any physical or operational change to an existing facility which results in an increase in the emission

There is no provision of the CAA or ECL, or any implementing regulation, which provides that a temporary, two-week test burn is a major modification. More importantly, the circumstances of the proposed test burn do not bring it within the criteria for review as a major facility modification under the NSPS, PSD, or NNSR programs. The existing IP Title V operating permit is being modified only to allow IP to conduct a one-time, two-week test burn for the purpose of gathering data and making technical determinations regarding the feasibility of the use of TDF as a supplemental fuel source. The terms and conditions of the existing operating permit, including all applicable emission limits and standards, remain in effect and applicable to IP's operations during the test burn. The proposed modified permit does not authorize any increase in an applicable emission limit or standard or allow IP to physically modify its facility to burn TDF. IP must resume burning exclusively number 6 fuel oil and wood chips/bark in its boiler after the two-week test has concluded. For these reasons the Department has determined that this temporary two-week data gathering exercise is not a major modification that triggers review under the NSPS, PSD, or NSR programs.

Accordingly, the permit application is complete, and the proposed permit is in full compliance with all statutory standards and regulatory requirements and can be issued without the imposition of significant additional conditions.

Comment 2: The draft permit fails to include standards, emission limits and requirements of all applicable programs, including NSR, NSPS and NESHAPS.

Response to Comment 2: See Response to Comment 1.

Comment 3: Because a variety of issues have been raised which are substantive and significant, an adjudicatory hearing is required.

Response to Comment 3: 6 NYCRR 624.4(c) ("Legislative Hearing and Issues Conference - Standards for Adjudicable Issues") establishes the standards for determining whether an issue is adjudicable. An issue is adjudicable if "it is raised by a potential party and is both substantive and significant" (6 NYCRR 624.4[c][iii]).

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rate to the atmosphere of any pollutant to which a standard applies."

Under 6 NYCRR§ 200.1 (aq), a modification is defined as a any physical change or change in the method of operation which (1) increases the hourly emission rate, emission concentration or emission opacity of any air contaminant, or ..... (5) results in the emission of any air pollutant not previously emitted or authorized under the permit. 6 NYCRR Part 231 regulations, which implements the NNSR program in New York State, apply to significant source projects. A significant source includes, in part, a proposed physical change in, or change in the method of operation of, an emission unit which results in an increase in the maximum annual potential of the emission unit above certain threshold levels.

An issue is “substantive” if sufficient doubt exists about the Applicant's ability to meet the applicable statutory or regulatory criteria such that a reasonable person would inquire further. To determine whether an issue is substantive, the Department must consider the proposed issue in light of the application and related documents, the draft permit, among other things (6 NYCRR 624.4[c][2]; *see Matter of Adirondack Fish Culture Station*, Interim Decision [August 19, 1999], *aff'd In the Matter of Upper Saranac Lake Association, Inc., et al. v. Cahill*, Slip Op., Index No. 6027-99 [Supreme Court, Albany Co., March 24, 2000]). To be substantive, an issue cannot be based merely on speculation, but rather must be grounded on facts that can be subjected to adjudication (*Matter of Concerned Citizens Against Crossgates v. Flacke*, 89 AD2d 759 [3rd Dept. 1982], *aff'd* 58 NY2d 919 [1983]).

An issue is “significant” if the outcome of a hearing could result in permit denial, a major modification to the proposed project, or the imposition of significant conditions in addition to those proposed in the draft permit (6 NYCRR 624.4[c][3]; *see also Matter of Jay Giardina*, DEC Interim Decision [September 21, 1990]). Where the DEC staff and the applicant agree on the terms and conditions of the proposed permit, Part 624 expressly provides that the burden of persuasion to show an adjudicable issue shifts to the party proposing the issue to demonstrate that the issue is both substantive and significant (*see* 6 NYCRR 624.4[c][4]).

There is no substantive issue that requires an adjudicatory hearing. The Department has explained in responses to other comments that the two-week test burn does not constitute a major modification and, consequently, does not itself trigger additional substantive regulatory requirements under the CAA or the ECL. Rather, the two-week test burn is in the nature of a study or data gathering exercise, the purpose of which is to provide data on the potential air pollution impacts from burning TDF in the power boiler at the IP mill. The proposed permit neither relaxes applicable regulatory requirements, nor does it authorize the emission of new air pollutants. The IP facility will continue to be subject to the terms and conditions of its existing Title V operating permit, including pollution control, record keeping, reporting, and monitoring.

In addition, IP and the Department have utilized conservative assumptions and established additional rigorous monitoring and stack testing protocol to ensure that the short-duration test burn will not result in a violation of any term or condition of IP's existing Title V operating permit or an ambient air quality standard. During the first week of the two-week test burn, IP will rely on its existing CEMS and stack testing to assure compliance with the permit terms and conditions and will stop adding TDF if the CEMS or stack tests show levels of pollutants in excess of allowable limits. The results from the first week of the test burn will establish the parameters pursuant to which IP will conduct more extensive stack emission testing during the second week.

Under the circumstances, including the fact that the existing permit does not relax existing standards or emission limitations, that IP will be subject to strict testing protocols during the two-week test burn, and that no new regulatory requirements will be triggered, Department staff do not believe sufficient doubt exists about IP's ability to meet statutory or regulatory standards to warrant further inquiry – the standard for a substantive issue.

Even assuming the existence of a substantive issue, the commenters have failed to meet the standard for a significant issue, namely that adjudication of any issue raised would result in a denial of or significant modification to the proposed permit. The proposed permit already incorporates extensive safeguards to assure compliance with applicable regulatory standards and the protection of the environment and public health during this one-time, two-week test of TDF at the IP facility. Any suggestion that IP should undertake the irrevocable step of installing an electrostatic precipitator (ESP) before being allowed to conduct a two-week test burn is both unreasonable and unfounded as a matter of law. When the DEC Staff and an applicant agree on the terms and conditions of the proposed permit, the permit application and the draft permit prepared by the DEC Staff are *prima facie* evidence that a proposed project will meet all of the relevant statutory and regulatory criteria (*see* ECL §70-0119[1] and 6 NYCRR 624.4[c][4]; *see also Matter of Sithe/Independence Power Partners, L.P.*, DEC Interim Decision [November 9, 1992]). In this case, DEC and IP have agreed on the terms of the permit modification for a two-week test, and the potential parties – members of the public who commented on the draft permit – have not raised an issue which meets the 6 NYCRR Part 624 standard for an adjudicable issue. An adjudicatory hearing is, therefore, not required under 6 NYCRR Part 624.

Comment 4: The test burn is not a Type II action, pursuant to the State Environmental Quality Review Act (“SEQRA”) and 6 NYCRR 618.2(b)(e). The project is an unlisted action that should require preparation of an Environmental Impact Statement. In addition, the NYSDEC's own regulations, 6 NYCRR 618.2 (e) state that the claimed exemption is in error.

Response to Comment 4: DEC has previously classified the proposed test burn as falling squarely within the information collection provision under 6 NYCRR 617.5 (c) (18) (*see e.g.* October 7, 2005 notice). The application of the Type II provision to the facts of this matter is entirely consistent with the Department's prior interpretation of this provision of the SEQRA regulations, including a recent classification of a 30-day test burn of TDF at a facility in western New York as a Type II action.

The Type II provision is routinely applied to those cases where, as here, some type of government approval "is necessary to enable preliminary data collection activities \* \* \* [for the] development or application of mathematical or statistical models to support more detailed and sophisticated site-specific analyses of proposed projects." The provision is legitimately applied to, among other things, data collection activities that will help to develop or refine a future proposal, and/or a reviewing agency's assessment of that proposal. Section 617.5(c)(18)

therefore also has been applied to several research and development permits issued by the Solid Waste program where "staff could not evaluate or comment on the potential of advancing to full scale [use of various types of wastes] without the data proposed to be collected under the RD&D approval." In terms of the relationship of the test burn to International Paper's future goals, the critical issue for determination is not, as Vermont argues, the fact that International Paper may be considering the potential use of TDF on a long-term basis. Indeed, if that were the case, DEC would have to require the development of a full-blown Environmental Impact Study in any situation where there existed the possibility of future action that was in any way related to or even potentially dependent on a preliminary study or data gathering exercise. There is nothing in either SEQRA's legislative history or the case law that supports such an interpretation.

Rather, the appropriate focus with respect to this issue is whether the preliminary data gathering action will "commit the agency to undertake, fund or approve any Type I or Unlisted action," 6 NYCRR § 617.5(c)(18), which is simply not the case here. Under the facts and the applicable law, the classification of this action as a Type II study under SEQRA falls squarely within the purposes and intent of that exemption, and DEC's decision in this regard is entitled to deference (*see e.g. New York City Coalition for Preserv. of Gardens v. Giuliani*, 246 AD2d 399, 400 [1st Dept. 1998] ("municipal respondent agency's determination that the action is Type II has a rational basis"); *Matter of We Stay/Nos Quedamos Comm. v. New York City Dept. of Citywide Admin. Servs.*, 240 AD2d 302 [1st Dept. 1997] [acknowledging court's limited review function and deferring to agency's Type II classification because it had a rational basis]); *Jamaica Chamber of Commerce v Metropolitan Transp. Auth.*, 159 Misc2d 601 [Sup. Ct. Queens County 1993] [giving deference to agency's Type II classification and concluding that experiment with temporary traffic conversion fell squarely within the scope of that exemption]).

Finally, 6 NYCRR 618.2 (b) has no relevance to this matter since that regulation applies only in a case where DEC is the entity planning and designing a proposed project. On its face 6 NYCRR 618.2 (b) applies only where DEC is the entity undertaking the action, and is seeking authorization for a regulated activity for one of its own facilities such as a DEC-operated fish hatchery, ski trail, or regional office. Moreover Part 618 is merely an expression of DEC's own Type II list; pursuant to 6 NYCRR 617.5 every State agency has the opportunity to promulgate a list of agency actions it considers Type II. This provision does not apply where DEC is exercising a regulatory function in reviewing a project of the type proposed by IP. As such, 6 NYCRR Part 617, not Part 618, is the applicable regulation for determining whether IP's proposed test burn is a Type II action.

Comment 4A: The Type II study provision of the SEQRA regulations, 6 NYCRR Part 617.5 (c) (18), applies only to existing environmental conditions.

Response to Comment 4A: The commenter misunderstands either the language or application of the Type II study exemption set forth at 6 NYCRR 617.5 (c) (18). There is no wording or restriction in the text of Item 18 that limits its application to “existing environmental conditions”, nor would any such limitation make sense, as there are instances where the critical data needed to reliably predict full-scale operating impacts must be samples taken under operating conditions. One example of such an application of Item 18 would be a well yield test, where a test well is drilled and water pumped, with the key observations being the volume pumped, water quality, and, often, effects on nearby wells or aquifers, with the observations subsequently used to more accurately predict and model wider-range and longer-term impacts. Significantly, the key observations and data relate to changes induced, and are not limited to existing conditions.

In addition, DEC’s classification of the two-week test burn as a Type II, Item 18 study is consistent with DEC’s previous treatment of other data collection activities. For example, the DEC Long Island office (DEC Region 1) has classified a number of “Research, Development and Demonstration” (RD&D) permits under the Solid Waste program as Type II based on Item 18, at least as early as the Ward Melville High School project in 1995, which investigated fabrication of building components from incinerator ash, asphalt or other related wastes. Specific, detailed data collection protocols are a fundamental component of those RD&D permits, and part of the rationale for the Type II classification in those cases was that staff could not evaluate or comment on the potential of advancing to full scale without the data proposed to be collected under the RD&D approval.

Notably, the DEC Buffalo office (DEC Region 9) classified a modification to a Title V permit to conduct a 30-day operational test burn of increased proportions of TDF at the Niagara Generating Facility as a Type II Item 18 study. Much like IP’s proposed two-week test, the Niagara test burn protocol includes stack testing parameters as well as specific triggers for halting testing if certain emission parameters are exceeded during the trial burn. The existing Title V permit for the Niagara facility already allowed up to 30% TDF in the fuel mix. The authorized test examines several higher proportions of TDF, added in gradual increments over several days. The test was designed to determine the maximum percentage of TDF which could be present in the fuel mix and still allow the facility to maintain stable boiler operation. As with IP’s pending application to modify its Title V permit to permit a two-week test, the Niagara test burn protocol includes specific stack test standards to detect emissions parameters. Also, as with IP’s application to conduct a two-week test at the Ticonderoga mill, the air emissions limits of the existing permit for the Niagara facility continue in effect throughout the test burn period.

Comment 5: Exemption of the test burn from SEQRA review constitutes impermissible segmentation of the environmental review process.

Response to Comment 5: By classifying the test burn as Type II under 6 NYCRR 617.5(c)(18), DEC has explicitly acknowledged the existence of a potential link between the information to be generated by the test burn and any possible future application for the

permanent use of TDF at the Ticonderoga mill. However, consistent with 6 NYCRR 617.5(c)(18), that nexus does not foreclose or presuppose the outcome of any future environmental review of such a possible future application, nor does approval of the test burn commit DEC to approving any possible future application for further use of TDF at the mill. On the contrary, the results of the short-duration test burn would substantially inform and improve the environmental and technical reviews of any future application, should one be submitted by IP.

DEC's SEQRA Handbook sets forth a number of factors based on accumulated case law that can help determine if proposed environmental reviews of separate projects are actually segmented reviews of a larger action. These factors include: (1) whether there is a common purpose for each project; (2) the timing of the projects; (3) the location of the projects; (4) whether the projects (although each insignificant) will together have significant cumulative impacts; (5) common ownership; (6) inclusion in an overall plan; (7) independent usefulness of each project or element; and (8) whether approval of one project induces or commits the reviewing agency to approve the other project.

Application of these factors confirms that no segmentation took place here. First, the two-week test has a separate purpose from any future action by IP. Its objective is to collect air emission data, rather than to provide an alternative fuel to power the manufacturing of paper products on a medium or long term basis (*see* IP Application at pp.1-2). Second, any possible future action by IP will not occur at the same time as the two-week test, particularly where the possible permit modification involved in this case will not address any future actions beyond the two-week window. Third, the impacts of the test would not be common with those of any possible future action. The impacts of the test will be temporary, and IP has committed that the emissions from the test shall not violate any Vermont or New York air quality standard. Therefore, the results of the test are different from that of any future activity in both time and scope. Similarly, any future action is not "functionally dependent" on the test. The one-time, two-week test, and any emissions resulting from it, will long be over before any future activity occurs. Fourth, the test is not a component of an overall plan, but merely provides information for International Paper to consider in making a determination as to whether to add TDF to its fuel mix, and to assist in any future permit application should it decide to do so. Likewise, the test will provide information to DEC, EPA, and Vermont essential to evaluate a potential future application should IP later elect to seek approval for using some amount of TDF in the mill's fuel mix. Finally, the approval of the permit for the test in no way "commit[s] the agency to approve other phases." This is a limited test that is not determinative of any future action by either IP or DEC.

Equally important, the frequently stated policy concern regarding segmentation, i.e., that both aspects of an alleged overall project may fall below the threshold necessary for any review under SEQRA, is simply not present in this proceeding (*see generally Matter of Concerned Citizens for the Env't. v Zagata*, 243 AD2d 20, 22 [3d Dept 1998]; *Matter of City of Buffalo v New York State Dept. Env'tl. Conservation*, 184 Misc2d 243, 254-55 [Sup. Ct. Erie County 2000]). Approval of the two-week test will not curtail review of any further applications. It is quite likely that any

future application by IP for permission to add TDF to the mill's fuel mix will be subject to review under SEQRA (as well as other statutes). Here, the information gathered from the one-time, two-week, rigorously-controlled test burn will be used by DEC, EPA, and perhaps Vermont to make an informed, scientifically-objective decision on any such future application.

DEC's classification of the two-week test as a Type II study under 6 NYCRR 617.5(c)(18) certainly is not "practically determinative" of any regulatory action regarding any subsequent proposed action – a second policy concern informing the judiciary's analysis of segmentation claims (*see generally Matter of Concerned Citizens for the Env't. v Zagata*, 243 AD2d at 22; *Matter of City of Buffalo v New York State Dept. Env'tl. Conservation*, 184 Misc2d at 254). Authorization to conduct a one-time, two-week test burn does not inexorably commit International Paper to requesting authorization to use TDF at some unspecified future time at the Ticonderoga paper mill. International Paper may ultimately decide not to use TDF at the mill. Nor would such an authorization obligate DEC to authorize the permanent use of three tons – or even one pound – of TDF at the Ticonderoga mill should International Paper ultimately submit an application for such authorization.

Comment 6: DEC has failed to properly evaluate and minimize the adverse environmental and potential public health impacts, especially on children, of PM2.5. DEC must evaluate PM2.5 impacts as required by law.

Response to Comment 6: The Department has properly evaluated the environmental and potential public health impacts of PM2.5. In April 2005, EPA designated PM2.5 attainment and non-attainment areas. The area around Ticonderoga where the IP facility is located was deemed to be in attainment of the PM2.5 standards. Federal and State regulatory programs for implementing the PM2.5 standard, along with source specific PM2.5 pollution control requirements, are still in development. There are presently no federal regulations which impose specific requirements with respect to PM2.5 emissions on sources located in attainment areas. EPA's regulations and policy currently only require for proposed and modified sources the assessment of PM10 impacts as a surrogate for PM2.5 until such time as EPA finalizes its PM2.5 Implementation Rule.

Pending the implementation of the federal PM2.5 standard and the promulgation of source specific regulations, DEC adopted Commissioner's Policy CP-33: *Assessing and Mitigating Impacts of Fine Particulate Matter Emissions*, on December 29, 2003, to provide interim direction to Department Staff for evaluating the impacts of fine particulate matter from proposed facilities that require a permit from the Department. CP-33 establishes procedures for the project-specific assessment of fine particulate matter impacts and when mitigation of such impacts may be necessary. As a threshold matter, a project specific assessment is required only if the proposed project will result in emissions of fine particulate matter (or PM10 as a surrogate) in an amount greater than 15 tons per year. The 15 tons per year threshold corresponds to the existing *de minimis* threshold under the Prevention of Significant Deterioration (PSD) program

for PM10 in attainment areas and the significant source project threshold in non-attainment areas under current 6 NYCRR Part 231-2 (New Source Review in Non-attainment Areas and Ozone Transport Regions). According to CP-33, if primary PM2.5 or PM10 emissions from the project do not equal or exceed 15 tons per year, the PM2.5 impacts shall be deemed insignificant and no further assessment is required.

It is important to emphasize that the test burn will not result in significantly increased levels of PM2.5 emissions. The proposed permit does not authorize IP to increase its emissions above maximum allowable levels. The PM emission limitations in the current Title V permit will remain in effect during the test burn. In fact, the proposed permit restricts the emissions of particulates to the current maximum allowable level of 0.1 lb/mmBtu at all times. Moreover, during the first week of the test burn, IP will be monitoring PM emissions after each addition of TDF to the boiler to determine the amount of TDF the boiler can handle, and still operate in compliance with emission limits and standards contained in the Title V permit. The second week of testing will be conducted using the amount of TDF that was shown during the first week not to have caused a violation of a permit term or condition. Thus, there are several safeguards in place to ensure that IP will continue to comply with its existing particulate emission limit in the Title V permit during the test burn. Since the IP test burn is only two-weeks long and the emissions of particulates are limited by the existing Title V permit, the potential increase of PM2.5 emissions is far below 15 tons per year. The PM2.5 impacts from test burn are, therefore, insignificant and do not merit further review under CP-33.

With respect to ambient air quality impacts associated with the two-week test burn, IP's permit application included an air dispersion modeling analysis which was conducted using conservative worst case assumptions to predict the potential maximum impacts. The analysis took into account PM emissions from the entire facility (four other sources in addition to the boiler) and a regional background level of PM10. The PM10 impacts were compared and showed compliance with the corresponding 24-hour national ambient air quality standard. In addition, the impacts of zinc oxide (including in particulate form) were compared to both New York State and Vermont short-term guideline concentrations and standards, respectively, to demonstrate compliance. These comparisons did not indicate a violation of air quality standards or guidelines in either Vermont or New York as a result of a two-week test burn.

On the issue of health impacts, the available monitoring data in the vicinity of the IP facility in Vermont shows that current levels of PM2.5 in the area surrounding the IP facility are well within the PM2.5 National Ambient Air Quality Standards (NAAQS), greatly minimizing the potential for adverse health consequences. The State of Vermont has operated PM2.5 monitors in Addison County - across Lake Champlain from the IP facility - for almost 2 years. These monitors have indicated compliance with the NAAQS and have, in fact, consistently measured levels at less than half of the corresponding 24 hour NAAQS of 65 ug/m<sup>3</sup>, and are well below the 15 ug/m<sup>3</sup> annual standard. The 24 hour PM2.5 standard is based on the 98% of the observed values which means that the daily observations can exceed the 65 ug/m<sup>3</sup> level seven times, if observations are taken every day, and still meet the standard. NYSDEC uses these and other

ambient air quality standards to determine the regulatory acceptability of potential health effects associated with observed levels or predicted impacts of PM<sub>2.5</sub> from individual or combined projects. These observed levels of PM<sub>2.5</sub> provide an indication of the regional concentrations to which persons downwind of the IP facility and other sources of pollution are exposed. Based on its careful evaluation of the data, the Department does not expect the brief, rigorously controlled test burn, to significantly affect these levels. Accordingly, there should be no adverse health impacts from the two-week test burn.

Finally, with respect to the comment that the test burn would violate ambient air guidelines, we note that the referenced July 2000 DEC Division of Air Resources Air Guide 1 tables for toxic air contaminants contained an error. In December 2003, the Department revised Air Guide 1 to include the NAAQS for PM<sub>2.5</sub> as a criteria pollutant instead of a toxic air guideline concentration level.

Comment 7: Conversion to burn TDF will result in violations of the NAAQS for sulfur dioxide and particulate matter.

Response to Comment 7: Burning TDF during the two-week test burn, as described in the proposed permit, will not cause a violation of the NAAQS for sulfur dioxide and particulate matter. Sulfur dioxide is controlled by the wet scrubber to ensure emissions do not exceed the authorized pounds per hour emission rate. If there is an increase in sulfur dioxide in the exhaust gas, the caustic concentration of the scrubber liquid is increased to treat the gas. Therefore, there will be no increase in sulfur dioxide emissions.

Under the proposed permit, particulate matter emissions cannot exceed the permit limit of 0.10 pounds per million BTU contained in the current Title V permit. For the PM<sub>10</sub> standard, the test burn application has conservatively modeled the PM<sub>10</sub> emissions from the whole facility, including four other sources than the boiler (assuming the power boiler emits PM<sub>10</sub> at the 0.10 lb/mmBtu limit) and has conservatively added a regional background level, to demonstrate that the impacts of all emission sources at the facility will be within the corresponding standard.

Comment 8: With respect to modeling of PM<sub>10</sub>, the Guideline for Air Quality Models (Appendix W of 40 CFR Part 51) requires that boilers should be modeled at 100% of load. If this modeling was performed with design heat input, the modeled concentration would likely exceed the NAAQS for PM<sub>10</sub>.

Response to Comment 8: As correctly noted, EPA and NYSDEC modeling guidelines require the modeling of maximum allowable emissions, in addition to other possible operating loads to assure that maximum expected impacts have been calculated. The Air Dispersion Modeling Analysis in Appendix B of the July 2005 revised application notes that, although the maximum boiler capacity is 855 mmBtu/hr, the expected loads during the test burn range from 452 to a maximum of 748 mmBtu/hr. Six scenarios covering this range were modeled as noted in Table 3-1 of the modeling report and showed compliance with all applicable standards and thresholds, including the PM10 standards. To assure that the maximum heat input rate will not be exceeded, the proposed permit limits the boiler operations to 748 mmBtu/hr, corresponding to the maximum allowable emission rate modeled for particulate matter.

Comment 9: The scrubber does not efficiently remove particles equal to or smaller than 2.5 microns so the emissions will endanger the health of Champlain Valley residents.

Response to Comment 9: See Responses to Comments 6, 10 and 21.

Comment 10: How will burning TDF affect PM2.5 emissions and how will PM2.5 be measured?

Response to Comment 10: IP is performing the two-week test burn to help determine the emissions profile of adding TDF to the mill's overall fuel mix. It is important to recognize that the IP facility currently uses an effective wet scrubber which removes a significant amount of particulate matter and that during the test burn, IP is not allowed to exceed the limits for PM that are in the facility's existing Title V permit. To assure compliance with its existing permit requirements, during the two-week test burn IP must stack test for PM emissions while it gradually increases the TDF feed to the boiler. IP must test at baseline conditions, when the feed rate reaches 1 ton per hour (tph), then again at 2 tph and then again at 3 tph. Those stack tests will measure PM emissions using EPA Method 5, which measures filterable PM emissions, and the test results will be made available within 24 hours of the time that the stack test samples are collected. Once IP has reached the maximum feed rate at which it can demonstrate compliance, total PM emissions will be measured using EPA Methods 5 and 202, which will measure both filterable and condensable PM. This includes all PM2.5 plus any larger PM. Following the testing using TDF as part of the fuel mix, testing will be done using only oil/wood. This will allow a comparison between the worst case TDF and baseline emission conditions. This data will then be used to inform any future permitting decisions, if IP submits an application to burn TDF as fuel on a permanent basis.

Comment 11: Emissions of fine particulate matter, known as PM2.5, will increase and there is no method to monitor for PM fines during the test.

Response to Comment 11: See Responses to Comments 6 and 10.

Comment 12: Off-Site monitors are needed for PM<sub>2.5</sub> and other air contaminants.

Response to Comment 12: The State of Vermont has operated two (2) ambient monitoring stations directly across Lake Champlain from the Ticonderoga Mill for the past two years. Vermont has indicated that they intend to operate at least one of these stations during the test. Vermont has collected background/baseline data for the past two years and will collect data during the test for comparison to baseline. See Response to Comment 6.

Comment 13: There may be health impacts from short term exposure of PM fine on children, seniors, and persons with respiratory illnesses.

Response to Comment 13: See Response to Comment 6.

Comment 14: EPA has proposed regulatory changes which would reduce by half the allowable background levels of PM<sub>2.5</sub>. The test burn may not meet the background limits for PM<sub>2.5</sub>.

Response to Comment 14: EPA proposed revisions to the PM<sub>2.5</sub> and PM<sub>10</sub> standards (coarse particles in the 2.5 to 10 micron range) on January 17, 2006 and provided an opportunity for public comment beginning on February 9, 2006. These proposed changes are to the allowable ambient levels of PM<sub>2.5</sub> and will lower the 24 hour standard to about half of the current value. Notably, EPA's adoption of these revisions will take considerable time. The public comment period closed very recently on April 17, 2006. Even if EPA does promulgate a final rule, the implementation of the revised PM standards is expected to take several years. EPA only published an Advance Notice of Proposed Rulemaking for implementing the fine PM standards on March 29, 2006. The comment period on that notice was extended to July 10, 2006. EPA and DEC will continue to implement the current PM<sub>2.5</sub> standards until such time as EPA promulgates final rules with revised standards and a schedule for implementation of those standards. It is important to recognize that the test burn is not expected to alter the currently monitored PM<sub>2.5</sub> levels since the emissions during the test burn will be limited to the particulate emission limits authorized in the current Title V permit. It is noteworthy that under the existing permitted PM levels imposed on the Ticonderoga Mill, the PM ambient air levels observed at two air monitors in Addison County Vermont have always been well below EPA's current 24-hour standard.

Comment 15: The test burn is flawed for the following reasons: 1) It is not designed to test for the PM that would be removed by an ESP and 2) PM<sub>2.5</sub> will not be monitored, but will be emitted. The test should be redesigned to better assess PM<sub>2.5</sub>.

Response to Comment 15: See Responses to Comments 6 and 10.

Comment 16: NYSDEC needs to fully evaluate options that would decrease emissions of PM2.5 during the Test.

Response to Comment 16: Testing for particulate matter (PM) must be performed when the TDF feed rate reaches 1 ton per hour (tph), 2 tph and 3 tph. During this “ramp up” period PM emissions test results will be available within 24 hours. If any of the results show PM emissions in excess of the current permit limit, the feed rate of TDF must immediately be reduced to a level that has been tested and shown to comply with the existing permit limit. Stack opacity must be monitored by a certified visible emissions evaluator. If opacity exceeds 20% the facility must stop adding TDF until the situation is corrected. In addition, a slightly more stringent SO2 limit for the boiler will be imposed, to provide a means to more quickly detect any scrubber malfunction should one occur. See Responses to Comments 6 and 10.

Comment 17: It can be expected that hourly emissions of particulate matter and SO<sub>2</sub> will increase and trigger NSPS regulations.

Response to Comment 17: See Overview and Response to Comment 1.

Comment 18: It is probable that a change in operations would be necessary to burn TDF in the IP boiler.

Response to Comment 18: No change in operations is authorized by this modification. Firing TDF chips will not require a modification to the boiler. The TDF chips will be added to the wood and fed to the boiler with the same pneumatic conveyor feed system that currently feeds wood to the boiler.

Comment 19: The control efficiencies in the modeling appear to be greater than values given in previous tests of the unit.

Response to Comment 19: The control efficiency in the modeling is not higher than was demonstrated in previous stack tests. The commenter is using a control efficiency (86% for particulate) from the original submission and that information is obsolete. The current modeling is based on a control efficiency of 73%.

Comment 20: Based on information that the powerhouse boiler is a dry bottom, wall fired design, it is uncertain if the boiler is capable of handling semi-volatile materials such as polycyclic aromatic hydrocarbons (PAH), which is one of the major components of TDF.

Response to Comment 20: PAHs are a group of naturally-occurring substances formed during the incomplete burning of coal, fuel oil, gas, wood, or other carbon-containing compounds. The exact concentrations and identities of PAHs vary among petroleum products. Softeners and extender oils used in processing tires may include a wide variety of oils, tars, resins, pitches, and synthetic organic materials. PAHs are found in the oils, tars, resins and pitches used to manufacture tires.<sup>3</sup> However, residual fuels, including Fuel Oil No. 6 currently being used in IP's power boiler, also contain appreciable concentrations of PAHs.<sup>4</sup>

As stated, incomplete burning or poor combustion leads to the formation of PAHs. Previous stack tests conducted at IP indicate the power boiler is well-maintained and operated and achieves good combustion. The combustion of TDF is not expected to be largely different from Fuel Oil No. 6; both fuels have adequate Btu content. Fuel Oil No. 6 will be fired from nozzles along the walls of the boiler above the bottom grate where most of the TDF and wood combustion will occur. Although TDF will be temporarily replacing some of IP's Fuel Oil No. 6 usage on a heat input basis, during the two-week test, adding TDF chips directly to the wood should enhance the combustion of the wood which has a lower Btu and higher moisture content than TDF and Fuel Oil No. 6.

As demonstrated in a previous, limited test, the IP power boiler is capable of adequately combusting TDF. The proposed test burn will further evaluate the boiler's operational ability to use different TDF amounts or feed rates within the current permit limits. In addition, stack tests for PAH emissions will be conducted to compare to the baseline conditions (wood/bark/oil firing) conditions. Measures of adequate combustion and boiler operating parameters will also be recorded. Since both fuels (TDF and Fuel Oil No. 6) contain PAHs, the test burn will provide the essential data to determine, at the maximum TDF feed rate attained, if there is a significant difference in PAH emissions during baseline and TDF firing conditions.

Comment 21: The test burn application did not include the values necessary to determine the efficiency of the scrubber unit for removing particles such as zinc oxide which measure less than 3 microns in size.

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<sup>3</sup>Lawrence Livermore National Laboratory/Department of Energy (UCLLNL/DOE). 1996. Effects of Waste Tires, Waste Tire Facilities and Waste Tire Projects on the Environment. (Under contract for California Integrated Waste Management Board; <http://www.ciwmb.ca.gov/Publications/default.asp?pubid=433>)

<sup>4</sup>Irwin, R.J., M. VanMouwerik, L. Stevens, M.D. Seese, and W. Basham. 1997. Environmental Contaminants Encyclopedia. National Park Service, Water Resources Division, Fort Collins, Colorado. Distributed within the Federal Government as an Electronic Document (Projected public availability on the internet or NTIS: 1998).

Response to Comment 21: The control efficiency for zinc oxide is estimated at 73%. This is the control efficiency achieved for metals during a previous stack test. As was explained in the overview, stack testing will be conducted at different feed rates, which will provide data on the emissions profile that results from using different TDF percentages in the fuel mix. During the test burn, IP must comply with the existing limit in the Title V permit for PM, and results from the stack testing will be provided within 24 hours of each increase in the amount of TDF, so that any increase in emissions that do occur will be measured, and known almost immediately, for comparison to that permit limit. Emissions would only be expected to exceed the existing permit limit if the control efficiency achieved is significantly less than 73%. In that event, the TDF feed rate will be reduced immediately to the level at which IP can operate in compliance with the limit in its permit. See Responses to Comments 6 and 22.

Comment 22: The State of Vermont has recommended a new annual exposure standard for zinc oxide within the State. This standard would most likely be violated during the test. The current air pollution control equipment will allow these contaminants to pass through during the TDF test.

Response to Comment 22: The predicted, short-term ambient impacts did not exceed either Vermont's or New York's existing short-term ambient guideline concentrations. The proposed test burn at IP is only two weeks in duration, of which the first week will be an incremental increase of the tons of TDF chips, fed until the maximum (not to exceed three [3] tons/hr) is reached. This two-week period does not involve chronic exposure, and comparison of the predicted ambient impacts to the current Vermont short-term standard of 12 µg/m<sup>3</sup> (24-hr) or the NYSDEC SGC of 380 µg/m<sup>3</sup> (1-hr) is a more appropriate approach for assessing the potential public health impacts of the test burn. Use of the TDF will cease after the two-week period. If further evaluation of the usage of TDF on a long-term basis is necessary, the Department will use appropriate annual ambient guideline concentrations to assess the public health impacts of any such project.

The Vermont Health Department's proposed zinc oxide standard is an *annual average* of 1 µg/m<sup>3</sup>. The current Vermont 24-hr standard for zinc compounds will be vacated when the proposed annual standard for zinc oxide is final. The Vermont proposed, annual HAAS (Hazardous Ambient Air Standard) for zinc oxide may be classified as overly conservative because the occupational syndrome of metal fume fever is considered the critical health endpoint of concern for the derivation.

The derivation of a standard or guideline should be representative of the exposure that is expected to occur. Metal fume fever is an *acute* allergic condition mainly experienced by welders and foundry workers who suffered occupational overexposure to zinc/zinc oxide fume from welding, burning or brazing galvanized steel. To derive their annual standard, Vermont referenced the 1997 study by Fine et al. that demonstrated mild fever, but not a significant increase in symptoms, in a controlled inhalation exposure to zinc oxide for two (2) hours at

2500 µg/m<sup>3</sup>. Exposure to 5000 µg/m<sup>3</sup> for two (2) hours produced fever and symptoms. The zinc oxide was furnace-generated fume and the subjects were 13 healthy, nonsmoking volunteers who inhaled zinc oxide while at rest for two (2) hours *through a snugly fitted mask around their face*.<sup>5</sup> Vermont used uncertainty and modifying factors totaling 3000 to derive an annual standard of 1 µg/m<sup>3</sup> from the 2 hour exposure period at 2500 µg/m<sup>3</sup>. These factors are used to account for information gaps and usually range from 10 to 1000. The use of higher values reflects a lower degree of confidence in the information used to derive the guideline or standard. The DEC contends that Vermont's development of an annual standard for zinc oxide based on an acute health endpoint induced after a short (2 hours) high concentration exposure is overly conservative. In any event, the occupational conditions experienced by the welders and foundry workers, as well as the subjects in the Fine study, differ markedly from the conditions during the two-week test burn of TDF.

Currently, the NYSDEC short-term or 1-hr guideline concentration (SGC) of 380 µg/m<sup>3</sup> for zinc oxide is an equivalent standard derived from the Federal 24-hr PM<sub>10</sub> standard of 150 µg/m<sup>3</sup>. While NYSDEC recognizes metal fume fever in the occupational setting, in the ambient air zinc oxide fumes are rapidly altered to form aggregates which do not produce the same symptoms that are associated with freshly generated, zinc metal fume inhalation in the work place. In the ambient air, the respiratory effects elicited by particulate matter containing zinc and/or zinc oxide are the same as those elicited by particulate matter which does not contain zinc. Therefore, control of particulates in ambient air should adequately protect the public health from exposure to zinc and zinc oxide.<sup>6</sup>

Zinc oxide is inherently bound in the rubber of the tires and is the main metal compound found in TDF. Zinc metal is also found in the coating of the steel belts and bead wire which are mostly removed during TDF chip processing. However, some residual zinc metal from the steel belts and bead wire may remain in the TDF. Based on the melting points of zinc and zinc oxide, the boiler chamber temperature, and the exhaust gas temperature, most of the zinc from TDF should be emitted in the air in the form of insoluble zinc particles. With a melting point of 3587° F, zinc oxide will not become a metal fume in IP's boiler chamber. When TDF is combusted at 2000° F (IP's maximum boiler temperature), zinc oxide will be emitted as a particulate. As a particulate, some of the zinc oxide may also be entrained in the fly ash and bottom ash. The residual zinc with a melting point of 787° F will become a metal fume when subjected to high, boiler chamber temperatures (2000° F). As combustion gases cool, zinc fume forms zinc oxide. Based upon the above melting points of zinc and zinc oxide and the IP boiler chamber temperature, most of the zinc from TDF should be emitted as zinc oxide, not zinc fume.<sup>7</sup>

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<sup>5</sup>Fine, J.M.; Gordon, T.; Chen, L.C.; Kinney, P.; Falcone, G.; Beckett, W.S. Metal fume fever: characterization of clinical and plasma IL-6 response in controlled human exposures to zinc oxide fume at and below the threshold limit value. JOEM, Vol. 39, No. 8. (August 1997).

<sup>6</sup>New York State Department of Health (NYS DOH), Bureau of Toxic Substance Assessment. Ambient Air Criteria Document: Zinc (August 1989).

<sup>7</sup>CRC Press. Handbook of Chemistry and Physics, 80<sup>th</sup> ed, 1999-2000.

In conclusion, there are multiple mechanisms involved in the formation of particulate matter from combustion sources like the IP boiler. The design and operation of a source can result in significant changes in the particles generated. The formation mechanisms that generate these particles govern both size and composition.<sup>8</sup> Some residual zinc metal from the bead wire and steel belt coating may be present in the TDF chips, but the majority of the zinc measured in TDF is zinc oxide in the rubber which, given its physical properties, is not expected to vaporize, condense and combine with other chemical compounds like sulfates. Some of the zinc oxide may be entrained in the fly ash and bottom ash. The larger particles of fly ash will be controlled by the multi-clone and wet scrubber. The stack testing conducted during the test burn will indicate the amount of total particulate that is emitted with TDF. During the proposed test burn, IP must meet the current particulate permit limits. If the particulate limits are exceeded, the test burn must stop. Also, continuous emissions monitoring for sulfur dioxide (SO<sub>2</sub>) will be conducted as an overall indicator that the power boiler and scrubber are performing properly during the test burn. Based on DEC staff's review of the application, the public comments, and staffs' extensive experience the Department believes that the test burn can be conducted safely with the conservative ambient guidelines and monitoring requirements that are currently in place.

Comment 23: The fly ash reinjection process which is employed at the powerhouse boiler increases the particulate load on the scrubber which is likely to reduce the control efficiency of the scrubber and cause increased particulate emissions.

Response to Comment 23: See Response to Comment 21.

Comment 24: Although IP is authorized to burn biosolids, clarifier solids, digester wood knots and non-condensable gasses, these fuels will not be used during the trial burn. Not including these wastes during the trial raises questions concerning the ability to burn them with TDF and remain below permitted emission levels or hazardous air pollutant levels.

Response to Comment 24: The proposed permit does not allow the facility to burn digester wood knots or clarifier solids (biosolids) during the two-week test burn of TDF. These alternative fuels may be burned under IP's current Title V Air Permit, but are not burned on a regular basis. Since they are not consistently fed to the boiler, use of these fuels during the test would introduce variables which may lead to inconclusive results. The primary purpose of the trial is to determine the effects of adding TDF to the normal fuel mixture (No. 6 fuel oil and wood/bark), on the boiler's operation and emissions profile. To accomplish this, it is best to eliminate as many variables as possible. Non-condensable gases will be burned during the trial, as these are always fed to the boiler for odor control and are considered a constant.

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<sup>8</sup>United States Environmental Protection Agency, Office of research and Development, National Risk Management Research Laboratory. Primary Particles Generated by the Combustion of Heavy Fuel Oil and Coal. EPA-600/R-02-093. (November 2002).

Comment 25: The refined modeling analysis did not use five consecutive years of meteorological data as required by air quality guidelines.

Response to Comment 25: The comment correctly noted that EPA and NYSDEC modeling guidelines recommend the use of the consecutive years from the most recent, readily available 5 year period in the analysis. The comment also references the EPA webpage where data up to 1992 is noted to be available, but it fails to recognize that more recent data is also noted at the webpage to be available from National Climatological Data Center (NCDC). In fact, the original May 2004 modeling protocol submitted by ENSR consultants for the test burn proposed to use data from 1987-1991. However, based on DEC and EPA comments to ENSR to update the database, the most recent available years were used, in addition to the 1991 data which was associated with modeled maximum impacts in a previous permit action. As noted in Section 2.4 of the Modeling Analysis report (Appendix B of the June 2005 revised application), the years 1999 to 2003 were originally obtained for use, but the year 2001 did not meet the required 90% data recovery and was therefore replaced by the year 1998. The recommendation to use a consecutive 5-year period is to assure a long enough meteorological data record, in addition to avoiding the selection of individual data years by consultants. The modeling analysis performed by ENSR met and exceeded the DEC recommendation for the choice of the meteorological data.

Comment 26: In support of Vermont's opposition to the proposed permit, Vermont relies on a private Consultant's report entitled, "Quantitative Assessment and Emissions Estimation of TDF Burning Operations of the Ticonderoga Mill," which projects hourly emissions increases over an annual period, and concludes that there could be significant increases in SO<sub>2</sub>, PM, PM<sub>10</sub>, and zinc emissions from the project, triggering the need for PSD permitting.

Response to Comment 26: The "project" which was evaluated by Vermont's consultant involves the *permanent* use of TDF at the IP facility. In reality, the test burn is of a limited, two-week duration. Moreover, IP's Title V operating permit will remain in effect during the test burn, and emissions during the test burn cannot exceed permitted limits. The report, therefore, is based on a flawed set of operating parameter and permitting assumptions and is not appropriate to address the emissions impacts of a two-week test burn, that will occur under the strict operating conditions that will be imposed here. The Department disagrees with Vermont and the conclusions of Vermont's consultant that the potential emissions increases from the two-week test burn will be significant and will trigger the need for PSD permitting. See Overview and Response to Comment 1.

Comment 27: Key toxic chemicals are not adequately addressed. The draft permit is inadequate in that it does not adequately address testing of contaminants such as PM<sub>2.5</sub>, dioxin compounds, zinc and other toxics including aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, selenium, silver, thallium, and vanadium.

Response to Comment 27: IP's risk analysis relied on two well-established tools developed by the DEC Division of Air Resources (DAR) to assess potential public health risks from air pollution. These sources are commonly known as "Air Guide-1" or "DAR-1"<sup>9</sup> and "DAR-3".<sup>10</sup> DEC developed DAR-1 in the early 1980's and it was updated in the 1990's. The risk assessment screening procedures and concepts used in DAR-1 are also used by EPA and other State governments to evaluate the public health impacts of air pollution. It involves a comprehensive evaluation of the predicted emissions and modeled impacts of those emissions, which are compared to guidelines and standards that were developed to be protective of public health. A DAR-1 analysis is a conservative public health risk screening tool created and used by the DEC for the assessment of the risk posed from the inhalation of ambient air toxics. The DAR-1 process involves the identification and determination of the emission rates of air toxics from the source under review, the air dispersion modeling of the air toxic emissions to predict annual and short-term impacts, and the comparison of these predicted impacts to numerical guidelines which were developed to be protective of public health. These numerical guidelines are termed health based guidelines and are published in DAR-1.<sup>11</sup>

As part of the review for the proposed two-week test burn and related Title V permit modification, IP conducted a DAR-1 analysis to assess the potential for adverse public health impacts specifically related to the proposed two-week test. IP made assumptions that, based on the available information, are conservative. Conservatism is one way to generate risk estimates that allow risk management decisions to be made under conditions of uncertainty and variability.<sup>12</sup> As reflected in IP's application, the air dispersion model included conservative factors and assumptions with respect to the compounds cited by the commenter. For example, with respect to the metals cited by the commenter, since there is limited data regarding the amount of metals in TDF, IP used data from several TDF samples, and data from literature sources. In each case IP assumed that the metals in the TDF were at the highest levels found in samples or, when the metals were not detected in the samples, assumed that the metal was present in TDF at the maximum detection limit. In some cases the result of these conservative assumptions may be to significantly over-predict the metal content of the TDF fuel. Other conservative assumptions made in IP's modeling included boiler operations at very near to the

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<sup>9</sup>New York State Department of Environmental Conservation, Division of Air Resources. DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants (formerly Air Guide-1). Issued November 12, 1997. Available on-line at <http://www.dec.state.ny.us/website/dar/boss/dar1.pdf>.

<sup>10</sup>New York State Department of Environmental Conservation, Division of Air Resources. DAR-3 Solid Alternatives Fuels Permitting. Issued January 5, 1998. Available on-line at <http://www.dec.state.ny.us/website/dar/boss/dar3.pdf>.

<sup>11</sup>New York State Department of Environmental Conservation, Division of Air Resources. DAR-1 AGC/SGC Tables. Issued December 22, 2003. Available on-line at <http://www.dec.state.ny.us/website/dar/boss/agcsgc03tables.pdf>.

<sup>12</sup>National Research Council (NRC). Science and Judgment in Risk Assessment. National Academy Press. Washington, D.C. (1994).

potential maximum boiler capacity, worst-case meteorological conditions, a 73% removal efficiency rate for the scrubber, and the evaluation of worst-case scenarios for air dispersion modeling.

The DAR-1 analysis is conducted in accordance with DAR policy, DAR-3 Alternative Fuels Guidance, to assess the potential public health impacts associated with the proposed test. The DAR-3 Alternative Fuels Guidance is used for making permitting decisions involving contaminants that might not be present in conventional fossil fuels.

Using the DAR-1 and DAR 3 analyses, together with the highly conservative assumptions described above, resulted in a very conservative estimate of ambient impacts of the proposed two-week test - in other words, an over-prediction of the impact of emissions. Predicted short-term, ambient concentrations or impacts were calculated for aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc and zinc oxide. The largest impacts were predicted for zinc/zinc oxide. Notably, however, DAR-1 modeling results for any of these compounds, including zinc/zinc oxide, did not exceed either DEC's or Vermont's health-based guidelines (short-term guideline concentrations or Hazardous Ambient Air Standards Category III).

In sum, the test protocol has thoroughly and adequately addressed all potential contaminants of concern that are expected to be emitted as a result of the two-week test burn. See Responses to Comments 31 and 35.

Comment 28: According to unnamed IP officials, the test will utilize a higher grade of TDF than would be used on a long term basis.

Response to Comment 28: The Department cannot respond to unsubstantiated hearsay. In any event, the permit modification at issue is limited to the one-time, two-week test of TDF and not the permanent or long-term use of TDF as fuel.

Comment 29: Burning low grade TDF will affect the quality of emissions and ash because it contains more metal than higher grade TDF.

Response to Comment 29: See Response to Comment 28.

Comment 30: The metals removal efficiency for the scrubber is falsely based on 1999 stack test results for nickel removal (73%) from fuel oil.

Response to Comment 30: The expected control efficiency for metals based on past testing is 73%. Further, permit condition 5-22 requires that the facility perform stack testing for particulate matter during the period when the amount of TDF being fed to the unit is gradually being increased. The control devices must achieve approximately 73% control to stay below the permit particulate emission limit (0.10 pounds per million BTU). If the particulate emissions exceed the permit limit they must immediately reduce TDF feed rate to a level that has demonstrated compliance with the permit limit.

Comment 31: There is speculation that burning TDF will cause incomplete combustion, resulting in more dioxin emitted and public health being affected. Toxic chemicals that can form from the combustion of TDF include chlorobenzenes, chlorophenols, PCBs, and PAHs. Incompletely combusted organics (PICs) may form on or adsorb onto, and volatile metals (e.g., mercury or lead) may become attached to, fine zinc oxide or other particles. The emissions of PIC's should be measured during the test burn. Temperature in the post-combustion region of the boiler should be measured frequently and at several locations during the test to help determine the potential for PIC formation.

Response to Comment 31: There are several mechanisms and variables affecting combustion and boiler operating conditions that influence dioxin and furan emissions. Good combustion performance is a key element for reducing dioxin formation. Poor combustion conditions with lower oxygen concentrations lead to the formation of high levels of precursors, such as chlorinated benzenes and chlorinated phenols, and other products of incomplete combustion (PIC) such as fly ash carbon and PAHs. Stack testing performed in 1999 at IP measured dioxin emissions (TCDF toxic equivalents) during baseline (wood/bark/oil firing), while firing biosolids with the wood/bark/oil and while firing rejected wood knots with the normal fuels. The test results showed lower emissions of dioxins when firing the alternative fuels than during baseline operations. This shows that the unit is well maintained and operated and achieves good combustion.

Low temperature mechanisms in post-combustion zones and stack temperature are also contributing variables and high temperature combustion alone will not necessarily result in low dioxin emissions.<sup>13</sup> The specific temperature range for dioxin formation is between 392 and 842° F with maximum dioxin formation occurring around 662° F. Previous stack testing conducted at IP indicated the maximum boiler temperature was 2000° F with a stack exhaust temperature of 150° F. This significant reduction of temperature, caused by the rapid quenching

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<sup>13</sup>Leclerc D., Duo W., and Vessey M. (PAPRICAN). Effects of Combustion and Operating Conditions on Dioxin Emissions from Power Boilers Burning Salt-Laden Wood Waste.

Uloth V., Duo W., Leclerc D., Karidio I., Kish J., and Singbeil D. (PAPRICAN). Investigations into the Variability and Control of Dioxins Formation and Emissions from Coastal Power Boilers.

effect of the wet scrubber on the boiler, is a beneficial factor in minimizing dioxin formation.<sup>14</sup>

Overall, PAH, dioxin and furan emissions test data, specifically for pulp and paper mills using TDF, are very limited and variable. A study by the Pulp and Paper Research Institute of Canada (PAPRICAN) of power boilers at eight different mills burning salt-laden wood waste concluded that the extent of the effects of combustion on stack dioxin emissions appears to be mill-specific, particularly at low temperatures. Dioxin/furan and PAH emissions were found to generally increase with lower oxygen concentrations at the boiler exit. Higher oxygen concentrations (four to six percent at the boiler exit) facilitated carbon burnout whereas lower oxygen concentrations favored the formation of PICs. PAPRICAN research also indicated that, “the additional sulfur from TDF co-firing helps suppress the formation of dioxins/furans by reducing chlorine (Cl<sub>2</sub>) to hydrogen chloride (HCl) even when poor combustion conditions favor the formation of PAHs and dioxin/furan precursors.”<sup>15</sup>

While the introduction of TDF is expected to improve combustion in IP’s power boiler, note that the draft permit contains provisions to help assure rapid detection of upsets relative to the combustion process and to assure that the scrubber is operating properly. For example, continuous monitoring of SO<sub>2</sub> and NO<sub>x</sub>, stack testing of PM emissions as the 1, 2 and 3 tons per hour TDF feed rates are reached, and periodic monitoring of stack opacity are required by the draft Title V Air Permit.

Finally, although stack testing does not include measurements of dioxin precursors, such as chlorobenzene and chlorophenol, measurements of dioxin/furans, PCBs and PAHs emissions, will be performed while burning TDF at the maximum feed rate attained and at the baseline (wood/bark/oil firing) conditions. Also, measures of adequate combustion (CO, CO<sub>2</sub>, and O<sub>2</sub>), filterable and condensable particulate levels, stack opacity, steam flow from the boiler, boiler steam pressure, boiler steam temperature, generating bank oxygen, wind box oxygen and other parameters will be recorded. This data will help monitor boiler operating conditions and determine the potential for increased PIC and dioxin formation with TDF usage. As stated, the proposed trial burn will not be allowed to have increased emissions exceeding the currently permitted particulate levels.

Comment 32: During the test, zinc emissions may increase 17 times.

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<sup>14</sup>Duo, W., Leclerc, D. Thermodynamics and kinetic studies of dioxin formation and emission from power boilers burning salt-laden wood waste. PAPRICAN. Thermal Process. Organohalogen Compounds. Vol. 66, pp. 1008-1016 (2004).

<sup>15</sup>Leclerc D., Duo W., and Vessey M. (PAPRICAN). Effects of Combustion and Operating Conditions on Dioxin Emissions from Power Boilers Burning Salt-Laden Wood Waste.

Uloth V., Duo W., Leclerc D., Karidio I., Kish J., and Singbeil D. (PAPRICAN). Investigations into the Variability and Control of Dioxins Formation and Emissions from Coastal Power Boilers.

Response to Comment 32: It is misleading to discuss potential increases in terms of multiples of the baseline. The issue of concern is the actual emission rate of zinc/zinc oxide while burning TDF. Worst-case zinc/zinc oxide emission rates for this test burn have been estimated using acceptable methods and impacts from these emissions have been conservatively modeled. Those impacts fell below NYSDEC's short-term guideline concentration and Vermont's Hazardous Ambient Air Standards. Therefore, zinc emissions during the test have been fully evaluated using the most conservative methodology and have been found to be acceptable as measured against applicable environmental and health-based standards.

Comment 33: NOx emissions might increase.

Response to Comment 33: IP will be held to the terms and conditions of its existing Title V permit. That permit contains an emission limit for NOx and a condition which requires IP to operate and maintain a CEMS to assure compliance with those limits. These conditions will continue to be in effect during the test burn, and the CEMS will continue to operate. Permit condition 5-16 requires IP to stop adding TDF if the NOx limit is exceeded, providing an additional safeguard to ensure compliance with the Title V permit.

Comment 34: IP should switch from # 6 fuel oil to # 2 fuel oil because it is lower in sulfur.

Response to Comment 34: Comment noted. However, it should be noted by the commenter that there is no such requirement under the regulations, and the facility has a scrubber to control SO2 emissions.

Comment 35: Some medical experts including William Bress, Vermont State Health Department Toxicologist, and Jack Mayer, MD, MPH, have said that the TDF test will create human health hazards, especially in children. Fine particulates and zinc are cited as hazards, with specific reference to a University of Washington study that correlated increased hospital visits and asthma, with exposure to particulates, and in particular to zinc.

Response to Comment 35: The Department has evaluated the potential public health impacts associated with the test burn. Contrary to the conclusions of Dr. Bress and Dr. Mayer, emissions cannot be construed to have adverse impacts on public health unless a risk assessment evaluation, as described below, is performed. The potential adverse impacts of chemicals released into the air depend on a number of factors, including the amount of the release, the manner in which the chemicals move and transform in the environment, the length of time people are exposed, and the toxic properties of the chemical. All of these factors need to be considered if one wishes to conduct an objective assessment of the risk of exposure to chemicals,

and this critical analysis is absent from the analysis of Dr. Bress. Both Dr. Bress and Dr. Mayer overlook the fact that the one-time, two-week test burn was subjected to an extremely conservative risk assessment analysis prepared by IP and reviewed by the DEC.

Further, the circumstances surrounding the University of Washington study that is referenced in Dr. Bress's comments, have no relevance to the circumstances of the IP test. The association between emergency room visits for asthma and zinc particulate air pollution are more strongly associated with air stagnation events in Spokane.<sup>16</sup> Stagnation episodes are characterized by low wind speeds and thermal inversions, which limits the dispersion of air pollution. These stagnation episodes occur in densely populated areas where air pollution sources are abundant. At the time of the cited study, Spokane had a population of 300,000, and the major sources of particulate air pollution include motor vehicles, unpaved road dust, wood burning, wind blown dust storms, agricultural burning, a municipal waste incinerator, an aluminum smelter and numerous other smaller air pollution sources. Stagnation of the ambient air was shown to be a surrogate for the accumulation of products of incomplete combustion, including carbon monoxide and fine particulates of organic and elemental carbon, and was more strongly associated with asthma aggravation than any one of the measured pollutants.<sup>17</sup> The study also indicated that it was not known if the fine particulate zinc associated with agricultural burning represented a health risk, or whether zinc served as an indicator for other pollutants that build up during air stagnation episodes in Spokane. In addition, during the study period Spokane was classified by the USEPA as a "non-attainment area" for PM-10 and carbon monoxide. This means the area has exceeded the NAAQS on one or more days. In contrast, the Essex County, NY and Addison County, Vermont area has long been in compliance with the NAAQS standards for PM-10 and carbon monoxide.

IP's risk analysis relied on two well-established tools developed by the DEC Division of Air resources (DAR) to assess potential public health risks from air pollution. These sources are commonly known as "Air Guide-1" or "DAR-1"<sup>18</sup> and "DAR-3".<sup>19</sup> DEC developed DAR-1 in the early 1980's and it was updated in the 1990's. The risk assessment screening procedures and concepts used in DAR-1 are also used by EPA. The risk assessment process embodied in DEC's DAR-1 is used by the Federal and State governments to evaluate the public health impacts of air

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<sup>16</sup>Claiborne, C., Larson, T., Sheppard, L. 2002. Testing the metals hypothesis in Spokane, Washington. *Environmental Health Perspectives*, Volume 110, Supplement 4, August: 547-552.

<sup>17</sup>Norris, G., Larson, T., Koenig, J., Claiborne, C., Sheppard, L., Finn, D. 2000. Asthma aggravation, combustion, and stagnant air. *Thorax*, (June) 55: 466-470.

<sup>18</sup>New York State Department of Environmental Conservation, Division of Air Resources. DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants (formerly Air Guide-1). Issued November 12, 1997. Available on-line at <http://www.dec.state.ny.us/website/dar/boss/dar1.pdf>.

<sup>19</sup>New York State Department of Environmental Conservation, Division of Air Resources. DAR-3 Solid Alternatives Fuels Permitting. Issued January 5, 1998. Available on-line at <http://www.dec.state.ny.us/website/dar/boss/dar3.pdf>.

pollution. The process of inhalation risk screening is well documented, and embodied in numerous risk assessment guidance documents prepared by the EPA, as well as the States.<sup>20</sup> This process, as described below, involves a comprehensive evaluation of the predicted emissions and modeled impacts of those emissions, which are compared to guidelines and standards that were developed to be protective of public health.

A DAR-1 analysis is a conservative public health risk screening tool created and used by the DEC for the assessment of the risk posed from the inhalation of ambient air toxics. The DAR-1 process involves the identification and determination of the emission rates of air toxics from the source under review, the air dispersion modeling of the air toxic emissions to predict annual and short-term impacts, and the comparison of these predicted impacts to numerical guidelines which were developed to be protective of public health. These numerical guidelines are termed health based guidelines and are published in DAR-1.<sup>21</sup> As part of the review for the proposed two-week test burn and related Title V permit modification, IP conducted a DAR-1 analysis to assess the potential for adverse public health impacts specifically related to the proposed two-week test burn. IP made assumptions that, based on the available information, are conservative. Conservatism is one way to generate risk estimates that allow risk management decisions to be made under conditions of uncertainty and variability.<sup>22</sup> As reflected in IP's application, the air dispersion model included the following conservative factors and assumptions:

1. **Metals:** Since there is limited data on the amount of metals in TDF, IP used data from several samples of TDF that were analyzed for metals and data from literature sources. In each case, IP assumed that the metals in the TDF were at the highest levels found in samples or when the metals were not detected in the samples, assumed that the metal was present in TDF at the maximum detection limit. In some cases, this may over-predict the metal content significantly.
2. **Heat Input/Steam Output:** IP assumed that the boiler heat input rate, the amount of energy in the fuels fed to the boiler, and the steam output rate (*i.e.*, the amount of energy the mill requires from the boiler), were very near to the potential maximum boiler capacity. The draft permit includes a condition that prohibits the operations of the boiler

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<sup>20</sup>National Research Council (NRC). Risk Assessment in the Federal Government: Managing the Process. National Academy Press. Washington D.C. (1983a); National Research Council (NRC). Science and Judgment in Risk Assessment. National Academy Press. Washington, D.C. (1994).

<sup>21</sup>New York State Department of Environmental Conservation, Division of Air Resources. DAR-1 AGC/SGC Tables. Issued December 22, 2003. Available on-line at <http://www.dec.state.ny.us/website/dar/boos/agcsgc03tables.pdf>.

<sup>22</sup>National Research Council (NRC). Science and Judgment in Risk Assessment. National Academy Press. Washington, D.C. 1994.

from exceeding the assumed maximum rate(s). Air dispersion modeling was performed to evaluate the predicted emission impacts over the entire range of expected boiler loads.

3. **Weather Conditions:** In order to calculate the impacts of stack gases emitted from the boiler stack (and other stacks on site) the range of meteorological conditions that effect the dispersion of the gas need to be known. Usually this information is obtained from climatological data collected at National Weather Service stations at representative nearby airports. The modeling guidance required hourly data for 5 consecutive years to assure all expected conditions are represented. IP used 6 years of data from Burlington, Vermont which included all necessary meteorological parameters. The additional year was used because it was associated with maximum impacts previously modeled for a permit application per EPA requirements. When the calculations are performed the air concentrations for each hour in the 6-years are calculated and the highest concentrations at any location are averaged for a given time period associated with the ambient standard or guideline level. There is a level of conservatism in this modeling analysis because the test burn will only occur for 14 days and it is more than likely that the worst-case meteorological conditions (from 6 years) will not occur during the testing.
4. **Pollution Control Efficiency Rate:** IP used a removal or efficiency rate (73%) that is representative of the low end of the removal range for PM control by the caustic wet scrubber. This figure is based upon past stack testing performed on this source.
5. **Worst-Case Emissions Impact Analysis:** IP used all of the above conservative assumptions and considered 6 possible burning scenarios by varying the relative amounts of TDF/oil/bark to be combusted. Each scenario has a different emissions profile because each fuel has a different metal content. IP assessed the maximum air concentration impacts for each of these 6 burning scenarios. IP then chose the 4 worst-case burn scenarios to be used in a refined air dispersion model to assess risk. This was done to ensure that the worst-case scenarios were evaluated. This is conservative because some metal impacts could be higher for some scenarios than others.

This DAR-1 analysis was conducted in accordance with the Division of Air Resources (DAR) policy, DAR-3 Alternative Fuels Guidance, to assess the potential public health impacts associated with the proposed one-time, two-week test burn of tire derived fuel at the Ticonderoga mill. The DAR-3 Alternative Fuels Guidance provides guidance for making permitting decisions involving contaminants that might not be present in conventional fossil fuels. These two combined analyses resulted in a *very conservative estimate* of ambient impacts of the proposed two-week test. In other words, the DAR-1 and DAR-3 analyses tend to over-predict the impact of the emissions.

Using those analyses, predicted short-term, ambient concentrations or impacts were calculated for aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc, and zinc oxide (*see* IP Application at pp. 1-3 to 1-5). The largest impacts were predicted for

zinc/zinc oxide. Notably, however, DAR-1 modeling results for any of the above parameters, including zinc/zinc oxide, *did not exceed either* DEC's or Vermont's health based guidelines (short-term guideline concentrations or Hazardous Ambient Air Standards (HAAS) Category III) (see IP Application at pp. 1-3 to 1-5).

In sum, the test protocol has adequately addressed any potential for human health risks due to emissions from the two-week test. See Responses to Comments 27 and 31.

Comment 36: There were a variety of comments submitted regarding concerns over: whether the test adequately addresses dioxins and fine particulates; the effects of those compounds on children, pregnant women, and adults with asthma or heart disease, immune disorders or other health problems; the potential for the test to result in a violation of an air pollution standard recommended by the State of Vermont for zinc oxide, if carried out without an ESP; the lack of any requirement to install an ESP prior to conducting the test; and the concern that IP's application does not consider the potential effect of TDF on water quality.

Response to Comment 36: The issues raised in this comment have been largely addressed in the responses to other comments, in particular Responses to Comments 6, 10, 21, 22, 27, 30, 31, and 35. It is important to understand, however, that the existing IP operating permit is being modified only to allow IP to conduct a one-time, two-week test, for the purpose of gathering data and making technical determinations regarding the feasibility of the use of TDF as a fuel source. The terms and conditions (i.e., pollutant emission limits, etc.) of the existing operating permit remain in effect and applicable to IP's operations during the test burn. On this basis, the Department has evaluated the potential public health impacts associated with the trial burn and found no potential for human health hazards and no need for additional or alternative control equipment. This evaluation included an air dispersion analysis using conservative worst case assumptions, coupled with facility-specific information, to predict the potential maximum impacts. These impacts were compared to health based guidelines used by New York and the EPA to assess the potential for public health impacts. In addition, the impacts were compared to health-based standards developed by Vermont to assess the potential for public health impacts. While it may be possible to find data from other facilities that have burned TDF to contradict this conclusion, the use of such data is highly speculative due to the many variables involved (e.g., boiler size and configuration, emissions control system, fuel mix, test methods employed, etc.). For these reasons, absent data from this two-week test burn of TDF at this facility, it is premature to draw conclusions regarding the predicted performance of the current controls at the plant relative to other control systems, or to require the installation of an ESP.

Comment 37: There is concern about the potential for burning TDF along with sludge.

Response to Comment 37: The permit will not allow this. See Response to Comment 24.

Comment 38: The applicant requests that the draft permit be revised so that the term “two week” test be clarified to reflect 14 operating days in a twenty one day period. The request is made so that in the event of an equipment failure, the entire test could be completed.

Response to Comment 38: Agreed. Condition 37 in the Proposed Permit has been changed to reflect the comment.

Comment 39: The applicant requests changes in the SO<sub>2</sub> monitoring outlined in Item 5-11.2 of the draft permit. Specifically the emission rate limit for SO<sub>2</sub> during the test, of 309 pounds per hour, based on a one-hour average, should be changed to 435 pounds per hour based on a one- hour average. This is in line with the mill’s current three hour limit of 435 pounds per hour, and would allow IP power boiler operators to most closely maintain normal scrubber operations during the test. The mill will continue to meet its 24-hour rolling average of 309 pounds per hour of SO<sub>2</sub> throughout the test.

Response to Comment 39: The condition as written in the draft permit represents good scrubber performance and will remain unchanged.

Comment 40: Are the cost savings at the mill worth the increases in potential risks to human health?

Response to Comment 40: The Department does not believe there will be adverse impacts to human health as a result of this two-week test burn. See Responses to Comments 6, 31, 35 and 36.

Comment 40-B: Installation of an ESP or other control represents a long-term investment at the facility which could mean the plant would be less likely to close.

Response to Comment 40-B: It is premature for the Department to make any determination with respect to requirements for new pollution control equipment at this time. Following the completion of the one-time, two-week test of TDF, IP will evaluate the test results. Thereafter, if IP decides to submit an application seeking authorization to add TDF chips on a permanent basis to the mill’s fuel mix, DEC will undertake the required regulatory reviews and make the findings and the determinations required by law, and will take into account all applicable requirements and guidelines as well as the results from the facility- specific two-week test.

Comment 41: Some commenters stated that there could be unknown future health effects from PM<sub>2.5</sub> and other air contaminant emissions which may take years or decades to manifest in people. Examples include respiratory illnesses in Veterans of the Gulf War, and ailments in Veterans who were exposed to Agent Orange in Vietnam.

Response to Comment 41: This two-week test burn is not equivalent to the examples presented by the commenter. Rather, the proposed TDF test burn is a limited duration, heavily regulated test, at a facility which has modern air pollution control equipment and emissions monitors. See Responses to Comments 6 and 35.

Comment 42: Contaminant fallout from air emissions, especially heavy metals, will have long-term environmental effects on several receptors including Lake Champlain, and crop land including organic farms and apiaries.

Response to Comment 42: The Department does not expect any long-term environmental effects from the test burn. If necessary, the Department will evaluate any long-term effects from heavy metal deposition if IP submits an application to modify its Title V permit to allow the permanent use of TDF. See Responses to Comments 27, 35 and 63.

Comment 43: Dioxin emissions to air will increase during the test and, as a result, public health will be affected.

Response to Comment 43: See Response to Comment 31.

Comment 44: Zinc emissions to air will increase during the test and, as a result, public health will be affected.

Response to Comment 44: Zinc oxide is used as a rubber curing agent in the manufacture of tires and zinc is found in the steel belts and bead wire which are mostly removed during TDF processing. Tires contain approximately 1.5% zinc by weight. The concentration of zinc in fuel oil is less than this amount. Therefore, the available data indicate that zinc emissions will increase with the use of TDF. Some of the zinc is expected to be entrained in the fly and bottom ash. In 1997, IP conducted a limited, two-day test burn to investigate the potential for using TDF as a supplemental fuel, but a comprehensive air emissions test was not included. Fly ash, grate ash, and scrubber blowdown were tested for metals and the results indicated an increase in zinc. Zinc oxide is inherently bound in the rubber and may be emitted as a fine particulate, but actual quantification of the fine particulate emissions can only be estimated during the test burn by stack testing for total particles. See Responses to Comments 10 and 11.

Although zinc emissions will increase, the ambient impacts are not expected to present adverse public health effects. As stated, the predicted, short-term ambient impacts meet both Vermont's (12 µg/m<sup>3</sup>) and New York's short-term ambient guideline concentrations (380 µg/m<sup>3</sup>) (*see* Response to Comment 22). A recent human inhalation study comparing inhaled ultrafine (<0.1 µm) versus fine (0.1 to 1.0 µm) zinc oxide particles concluded that healthy subjects inhaling, (by mouthpiece), 500 µg/m<sup>3</sup> for 2 hr showed *no* measured response in symptoms or

physiologic, hematologic, or cardiac electrophysiologic parameters, 24-hr post-exposure. This exposure was below the threshold for acute systemic effects previously demonstrated in other human inhalation studies.<sup>23</sup>

Comment 45: If the TDF burn proposal was for a new facility, an ESP would be required.

Response to Comment 45: The Department cannot agree with this conclusion without undergoing a full and complete permit review. However, this test involves an existing power boiler at an existing facility. Department staff have determined that a carefully controlled test burn, like the one proposed by IP, provides a reasonable means for testing the performance of existing equipment.

Comment 46: An ESP must be installed prior to the test because it is the best technology and most other plants burning TDF at the proposed volume have them. The test burn is acceptable only with the ESP in place.

Response to Comment 46: The emissions information currently available for facilities burning TDF represents a wide variety of boiler size and configuration/fuel mixture/control system combinations, none of which are the same as the boiler size and configuration/fuel mixture/control system combination being proposed at the IP Mill. It is, therefore, premature to determine the appropriateness of the current controls or to require the installation of an ESP prior to having the data from the test burn.

Comment 47: Would an ESP make PM emissions more acceptable?

Response to Comment 47: See Responses to Comments 40 and 46.

Comment 48: The results of the 1997 TDF test burn have never been publicly released.

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<sup>23</sup>Beckett, WS; Chalupa, DF; Pauly-Brown, A; Speers, DM; Stewart, JC; Frampton, MW; Utell MJ; Huang, LS; Cox, C; Zareba, W; Oberdorster, G. Comparing inhaled ultrafine versus fine zinc oxide particles in healthy adults; a human inhalation study. American Journal of Respiratory and Critical Care Medicine, Vol. 171:1129-1135 (2005).

Response to Comment 48: A report containing the results of the 1997 TDF test burn is on file with the Department, Region 5, Division of Air Resources. This report was released to the State of Vermont in late 2003 in response to a Freedom of Information Law request by the Office of the State Auditor, Elizabeth Ready. It was also sent to the Adirondack Council as a result of a FOIL request. No stack testing was performed during that test.

Comment 49: Two weeks is not long enough for an effective test.

Response to Comment 49: The TDF testing will be conducted over a two-week period, which the Department believes is an appropriate length of time to obtain meaningful data. Since the current configuration of the boiler will accommodate the fuel without the need for modifications, one week should be ample time for the facility operators to optimize combustion. The testing during the second week is comprehensive and thorough, and is designed to provide the information Department staff need to evaluate the emissions from the use of TDF at the facility. The schedule has been approved by both NYSDEC and EPA after extensive discussion and review of IP's proposal.

Comment 50: A paper mill boiler does not burn at consistent temperatures necessary for clean combustion of TDF.

Response to Comment 50: The Department disagrees with this comment. Prior stack tests results conducted at the Ticonderoga mill indicate the facility's power boiler is well-maintained and operated, and achieves good combustion. The results obtained from the two-week test will allow DEC to determine whether TDF can achieve clean combustion. DEC expects that IP will maintain relatively stable and constant combustion temperatures during the one-time, two-week test. IP's staff has extensive experience in closely monitoring and controlling the operation of the mill's boilers to ensure complete combustion is achieved, and will do so during the test.

Comment 51: A Chester, Pennsylvania paper mill experienced a 40-fold increase in dioxin emissions when burning only 8% TDF.

Response to Comment 51: The commenter has provided no data to support this assertion other than a link to a website (*see* [www.energyjustice.net](http://www.energyjustice.net)). Research by Department staff have not produced enough information about that facility to allow comment on the emissions of TDF that the commenter claims occurred there. However, dioxin and furan emissions are variable and may depend upon several variables including facility-specific fuel mix, boiler configuration, operating parameters and post-combustion temperature zones. However, the boiler type and fuel mix at the Chester facility is very different from that of the IP facility. The Chester facility has a fluidized bed boiler and was permitted to burn mainly waste anthracite coal with 8 percent tire-derived fuel during a very limited three day test burn. As such, the Chester facility is not

comparable to that of IP. Given those significant differences, a 40-fold increase in dioxin emissions at the Chester facility (assuming that is what occurred), does not mean that the same emissions increase will occur at IP. It is only through conducting a test at the IP facility that the Department can conclusively determine what emissions scenario will result from the use of TDF at the specific power boiler located at IP's Ticonderoga Mill. See Response to Comment 31.

Comment 52: IP's proposal represents 10 times the TDF that is burned anywhere else in the United States.

Response to Comment 52: The Department disagrees with this comment. The proposed two-week test does not represent the highest amount of TDF burned anywhere else in the country. For example, the WPS Niagara Generation in Niagara County, New York is permitted to burn up to 8.5 tons/hour or 204 tons/day of TDF. The Bucksport, Maine IP facility is capable of using 3.5 tons/hour or 84 tons/day. By contrast, IP is proposing to burn up to a maximum of 3.0 tons/hr or 72 tons/day of TDF for a period of time not to exceed 14 days. In addition, if stack testing reflects that by using 3 tons/hour of TDF, IP would exceed any of its existing permit limits, IP will stop increasing the amount of TDF in its fuel mix. Therefore the proposed maximum of 3 tons/hour at the IP facility, during the two-week test, may not be reached.

Comment 53: Burning TDF may decrease PM emissions.

Response to Comment 53: Comment noted.

Comment 54: TDF has not been sufficiently analyzed to allow accurate predictions of the emissions that will result from its combustion.

Response to Comment 54: It is unclear whether this comment is directed at the chemical analysis of the TDF performed in support of the test or the analysis of burning TDF in general. To the extent that it is the former, it should be noted that the analysis performed in support of this test was extensive. IP collected seven samples of TDF from two different suppliers and had five of them analyzed for heavy metals. In addition, they conducted a literature search and obtained several more sets of data relative to metals concentrations in TDF. Average metals concentrations in the TDF from each supplier were developed and evaluated along with data they had gathered from their literature search. The highest of all of these concentrations was taken for each metal and used to develop the metals emissions estimates contained in the permit application.

With respect to other contaminants of concern, and to the extent that this comment was directed at the analysis of burning TDF in general, the Department has carefully evaluated the application and other available information relative to emissions from burning TDF. As described in Responses to Comments 27 and 31, and in the Overview, Department staff acknowledge the difficulties involved in attempting to predict the emissions from combusting TDF. It is for this reason that Department staff believe the test burn is necessary prior to considering any application to burn TDF permanently. The extensive stack testing planned during the test will provide actual measured emission rates both with and without TDF being fed and enable any future permitting decisions to be based upon emissions data obtained from the test.

Comment 55: IP's air pollution limits are outdated.

Response to Comment 55: The emission limits contained in IP's current Title V Air Permit reflect current New York State and Federal applicable requirements. The Department disagrees with the statement that the permit is outdated.

Comment 56: This action represents a segmentation issue relative to NSR.

Response to Comment 56: The Department disagrees with this comment. See Overview.

Comment 57: The test burn is a fair test.

Response to Comment 57: Comment noted.

Comment 58: The DEC is in violation of SPDES (State Pollutant Discharge Elimination System) regulations and Clean Water Act because it did not require a modification of IP's SPDES Permit for discharges of new or increased pollutants.

Response to Comment 58: DEC consulted with the State of Vermont Department of Environmental Protection (DEP) and incorporated Vermont DEP's suggestions regarding the protocol for the wastewater component of the test. While the *loading* levels of zinc to the waste water system may increase, there is no indication that the *discharges* will exceed the 17.0 lb/day action level (AL) contained in the mill's SPDES permit. In fact, the level of zinc in IP's Wastewater Treatment Facility (WWTF) discharge is not expected to exceed the AL's in IP's existing SPDES permit. This determination is based on DEC's review of available data regarding zinc levels in the scrubber wastewater and other conditions, including enhanced wastewater monitoring, proposed by the mill during the two-week test burn. IP's August 17, 2005 letter served as the required notification under ECL § 17-0815, as specified in 6 NYCRR 750-1.2 and 750-2.6, that the wastewater treatment system may accept additional

pollutant loading. The same IP letter also committed to undertake extensive analysis of the wastewater stream as it proceeds through the facility. Following a review of that letter and the conditions for increased monitoring of the discharge from the IP wastewater treatment system during the two-week test burn on September 14, 2005, the Department determined that the proposed activity does not require a SPDES permit modification. The existing SPDES permit terms and conditions along with the requisite notification from the permittee provide the regulatory authorization for the wastewater discharge during the proposed two-week test burn. Also, in October 2005 Vermont made additional suggestions regarding the wastewater testing protocol, which were accepted by IP.

Comment 59: Water pollution is not adequately addressed in the application, and testing of wastewater discharge will be inadequate. Zinc mass balance calculations are alluded to but not included in IP's correspondence. It is essential to have priority pollutant and whole effluent toxicity testing before, during and after any test burn in order to be able to relate any observed changes in the water quality due to the test burn.

Response to Comment 59: The Department does not agree with these comments. Water pollution is adequately controlled by IP's wastewater treatment permit in accordance with a valid, effective SPDES discharge permit. Also, the zinc levels in IP's discharge are well under the 17.0 lb/day action level, and during the test burn it is expected that the zinc levels should remain below the SPDES permit action level. For these reasons, the two-week test burn can be authorized under the existing SPDES permit.

The Department accepted the mill's proposed monitoring plan as being adequate to provide the necessary data for such a zinc mass balance calculation. The proposed monitoring plan will generate zinc data that will establish the baseline conditions in the wastewater treatment system prior to the test, determine the actual impact of the test on the wastewater treatment system and account for the time lags associated with the residence times in the different parts of the wastewater treatment system. The zinc data from this comprehensive sampling will be used to perform mass balance calculations to determine the wastewater treatment zinc inputs, accumulation and discharges during the test. A complete acute and chronic whole effluent toxicity (WET) test will be performed during the second week of the test when TDF is being burned at the maximum test rate. The mill is currently required to perform monthly chronic WET testing.

The August 17, 2005 letter from IP indicates a priority pollutant scan will be performed during the period when TDF is being burned at the maximum 3 ton/hour rate. This scan includes testing for all the priority pollutant metals. The mill's SPDES permit requires that an annual priority pollutant scan be performed. See also Response to Comment 58.

Comment 60: Impacts on wastewater and solid waste management have not been

adequately addressed in the Title V application. The wastewater treatment plant monitoring is only going to address zinc. There is no discussion about the increased ash disposal from burning TDF.

Response to Comment 60: See Responses to Comments 58 and 59 for information regarding wastewater issues. With respect to solid waste, IP operates an on-site landfill permitted in accordance with 6 NYCRR Part 360 Solid Waste Management regulations. The maximum additional amount of ash that may be generated during the two-week test burn will total about 123 tons (372 cubic yards). This can easily be handled at the landfill which currently handles over 330,000 cubic yards/year. As stated in a September 2, 2005 letter by Christopher Mallon and Stephen Regan of IP, the ash will be tested for zinc and to determine that it is non-hazardous. All of the fly and bottom ash generated during the TDF test burn will be deposited in separate locations in the landfill isolated from other waste disposal operations. These ash will be covered with sand to prevent fugitive air emissions. The isolation will remain in effect until testing results are completed and show the waste materials to be non-hazardous. If the wastes were to be found hazardous, the material will be disposed of in an appropriate manner as required by the relevant regulations.

Comment 61: IP Ti's environmental record is poor, odors from the plant are offensive, the sight of the stack and plume and other visual impacts are an eyesore on the area.

Response to Comment 61: Over the past decade, the mill has been the subject of five enforcement actions brought by the DEC. Two of these actions involved air emissions, one involved a fuel spill and two involved the mill's industrial landfill. The problems that led to all five enforcement actions have been resolved. Department staff continue to conduct routine inspections of the mill's landfill, air emissions sources, chemical and petroleum bulk storage tanks and wastewater treatment facility. The visual issues raised by the commenter will not be affected by the proposed two-week test burn.

Comment 62: IP should consider other alternative sources of energy such as biofuel combustion and wind energy.

Response to Comment 62: Comment noted.

Comment 63: As pollinators, honeybees are critical to our ecosystem. Honeybee populations are in decline, in part due to an increase in airborne contaminants. The test will exacerbate this situation.

Response to Comment 63: The domestic honeybee population has declined by approximately 50% over the past 50 years. This decline has been attributed primarily to diseases spread as a

result of mites and other parasites as well as the spraying of crops with pesticides.<sup>24</sup> With respect to honey bees, the primary emissions of concern would likely be metals. There are very few data available regarding the toxicity of metals to terrestrial insects. Low metal toxicity levels for other insects also suggest that metals are not highly toxic to honeybees. The limited availability of data in this area reflects the limited concern that air emissions contribute in any significant way to this population decline.

Little, if any, support can be found in the scientific literature attributing the decline of honeybees to an increase in the presence of airborne contaminants. In fact, during the period of honeybee population decline (1950s to present), air quality throughout the United States has generally improved because of requirements of environmental legislation such as the Clean Air Act. This inverse relationship suggests that the honeybee decline is not associated with conventional air pollutants. Alstadt et al., describes only one documented incident of an impact related to honeybees.<sup>25</sup> In Poland, industrial source emissions of sulfur dioxide (SO<sub>2</sub>), sulfur trioxide, and sulfuric acid reduced the number of pollinated blossoms in orchards because of reduced efficiency of pollinating bees. However, sulfur emissions are not considered to be an issue with the test burn because IP has a caustic scrubber for SO<sub>2</sub> control. It should also be noted that both New York State and Vermont are in attainment for SO<sub>2</sub>.

In summary, given that: 1) the decline in honeybees is attributed primarily to parasitic mites and to a lesser extent, pesticides; 2) the inverse relationship between honeybee population trends and overall air quality trends; and 3) the low levels of emission rates and contaminant deposition likely from this two week test burn, it is highly unlikely that the emissions released by IP during the test will have any adverse impact on honeybees.

Comment 64: If IP is granted long term approval, will system performance be as good as during the test?

Response to Comment 64: It is premature to address this question at this time.

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<sup>24</sup>EHP, The truth about the birds and the bees. Environmental Health Perspectives 106 (9), September 1998. National Institute of Environmental Health Sciences, National Institute of Health (1998).

National Geographic. Bee Decline May Spell End for Some Fruits, Vegetables, John Roach, National Geographic News, (October 5, 2004), [http://news.nationalgeographic.com/news/2004/10/1005\\_041005\\_honeybees.html](http://news.nationalgeographic.com/news/2004/10/1005_041005_honeybees.html).

<sup>25</sup>Alstadt, D.N., G.F. Edmunds, Jr., and L.H. Weinstein. Effects of Air Pollutants on Insect Populations. Ann. Rev. Entomol. 27:369 - 384 (1982).

Comment 65: Vermont and New York have a long history of working together to oppose air pollution originating in upwind states.

Response to Comment 65: Since IP first contacted NYSDEC about burning TDF, the Department has cooperatively included Vermont's regulatory agencies in every stage of the review process. In fact, the proposed permit resulted from this collaboration with Vermont's Department of Environmental Conservation and Department of Health. Therefore, the Department does not believe that its action on this permit application is at odds with this history of cooperation with Vermont on issues of common concern. As has been set forth in both the overview and the responses to other comments, the basis for the decision to require that IP submit an application to modify its Title V permit, and subject the proposed permit change to public review and comment through the process provided for by the Uniform Procedure regulations (6 NYCRR 621.6, 621.7), as well as EPA review, was the recognition of Vermont's concern with air pollution originating in upwind states. As has also been fully set forth in the responses to other comments herein, the Department has taken Vermont's concerns into consideration by carefully analyzing the potential impacts of emissions from the test burn in relation to established health-based guidelines, applicable in both New York and Vermont, and imposing stringent monitoring and reporting requirements during the course of the test burn. IP may not exceed its current limits during the test burn, and stack testing, opacity monitoring, and the use of continuous emissions monitoring will assure compliance with those existing limits. The data generated as a result of the test burn will provide information that will enable both the Department and the State of Vermont to fully and accurately evaluate any potential future application by IP to modify its Title V permit, to allow the permanent use of TDF as fuel at the facility, should one be submitted. The Department believes that throughout this entire process it has demonstrated its commitment to cooperation between the two states. Finally, New York's efforts with other states, including Vermont, have always focused on conditions that prevent attainment of a National Ambient Air Quality Standard in the states. There is no such issue with IP's permit application.

Comment 66: Governor Douglas extended an offer to share cost of control equipment which was summarily rejected by IP officials.

Response to Comment 66: This is not a factor upon which the Department may base a determination whether to approve or deny the proposed permit modification. However, with respect to the concern over IP's installation and use of control equipment for the test burn, see Responses to Comments 40 and 46.

Comment 67: Why has there been no Response to Comment from Governor Pataki to the Senator Jeffords and Governor Douglas comment letters?

Response to Comment 67: The Department of Environmental Conservation is New York

States's principal environmental regulatory agency. As it functions within the Executive Branch, the Department is the appropriate agency to respond on behalf of the Governor to the technical and policy issues that have been raised by representatives of the State of Vermont. On April 21, 2005 and again on November 1, 2005, the Department responded to the inquiries of Senator Jeffords concerning the proposed test burn at the IP facility. On December 5, 2005, the Department responded to the inquiry of Governor Douglas. Copies of those letters are available through the Freedom of Information Law to anyone who submits a written request.

### **Notification Requirements**

The Proposed Permit contains revisions from the Draft Permit in Condition 37 as explained in Response to Comment 38.

At this time, the Department is notifying the EPA Administrator and the State of Vermont of its declination to accept certain recommendations for the proposed permit that the State of Vermont submitted during the public or affected state review period. The reasons for the declination to accept the State of Vermont's recommendations have been stated in this Responsiveness Summary.

The Proposed Permit is being forwarded to the EPA for its review in accordance with 6 NYCRR 201-6.4 (a) for a review period of 45 days. In accordance with 6 NYCRR 201-6.4 (d), if the EPA Administrator does not object in writing, any person may then petition the EPA Administrator within 60 days after the expiration of the administrator's 45-day review period to make such objection. Any such petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period. The EPA Administrator contact name and address is:

Steven Riva  
EPA Region 2  
25<sup>th</sup> Floor  
290 Broadway  
New York, NY 10007-1866