

SUPPORT DOCUMENT - 1/2007
(PTSUPA20.DOC)

for the Air Operating Permit No. WA 000092-2 issued to

Port Townsend Paper Corporation
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Port Townsend, Washington 98368

State of Washington
DEPARTMENT OF ECOLOGY
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TABLE OF CONTENTS

INTRODUCTION 3

STATEMENT OF BASIS 4

I. Assuring Compliance With All Applicable Federal Requirements 4

 A. Recovery furnace - federally enforceable limits 5

 B. Smelt Dissolver Tank - federally enforceable limits 6

 C. Lime Kiln - federally enforceable limits 8

 D. Power Boiler #10 - federally enforceable limits 10

 E. Package Boiler - federally enforceable limits 11

 F. Power Boiler #2 - federally enforceable limits 12

 G. Digester, Multiple-effect Evaporator, Condensate Stripper System - federally
 enforceable limits 12

 H. Millwide Limits - federally enforceable limits 12

 GR1. Permit Condition 8 13

 GR2. Permit Condition 10 14

 GR3. Permit Condition 11 14

 GR4. Permit Condition 22 14

II. Insignificant Emission Units 14

III. Regulatory Orders 15

APPENDIX A - CALCULATIONS 16

APPENDIX B – RESPONSE TO COMMENTS 18

REFERENCES for Health Effects Information 73

INTRODUCTION

This Operating Permit Support Document fulfills the operating permit rule "Statement of Basis" requirement and explains particular portions of the air operating permit (AOP) for the Port Townsend Paper Corporation mill (PTPC). The initial AOP was issued to PTPC on November 11, 2000 and expired on November 14, 2005.

This Support Document corresponds to the first renewal of the Title V permit issued to PTPC. As a renewal, new regulatory limitations which became effective subsequent to the first Title V issuance date have been incorporated. The regulatory citation for these new requirements is set forth throughout the permit under the column titled "Applicable Requirement". The reader is referred to the regulation cited if seeking more specific information about a particular limitation.

The proposed renewal permit is largely the same as the initial permit in structure and content. Where variation does occur, it is attributed to what would constitute administrative changes intended to correct errors, incorporate new limitations, acknowledge completed activities or present information in a clear and more concise manner.

This document is not part of the operating permit for the PTPC mill. Nothing in this document is enforceable against the permittee, unless otherwise made enforceable by permit or order.

Comments on the permit and this Support Documents as well as the Ecology response to comments are included with this Support Documents as Appendix B.

Highlights of PTPC's 2005-2009 Permit Renewal:

The current permit renewal effort has focused on clarifying the basis of authority for the applicable requirement. This currently means that some of the underlying orders are being modified. The basis of authority for monitoring and reporting is being transferred to WAC 173-401-615 from the former orders where this transfer makes sense. No change to the monitoring or reporting requirement itself is taking place. This simplifies the outstanding orders. The reason the monitoring and reporting had initially been established in orders was because the orders predated the Title V Program.

Ecology is implementing EPA's 40 CFR Part 64 Compliance Assurance Monitoring (CAM) regulation in this 2005-2009 permit renewal effort. CAM applies to a "pollutant-specific emissions unit" per 40 CFR Part 64.2(a). A unit is exempt from CAM per 40 CFR Part 64.2(b)(vi) if a Title V permit specifies a, "continuous compliance determination method as defined in Sec. 64.1. Continuous compliance determination is defined in Sec 64.1 a follows: "continuous compliance determination method means a method, specified by the applicable standard or an applicable permit condition, which: (1) Is used to determine compliance with an emission limitation or standard on a continuous basis, consistent with the averaging period established for the emission limitation or standard; and (2) Provides data either in units of the standard or correlated directly with the compliance limit."

The permit writer considers the “gap filling” requirement of WAC 173-401-615 (1)(b), as implemented where necessary throughout this permit, to be equivalent to the continuous compliance determination required for exemption from CAM. As such, the pollutant-specific emissions units addressed in this permit are considered exempt from CAM implementation within the permit itself. CAM applicability consideration is initially necessary for specific emission units but once an exempt status is determined no further reference to CAM is made. This last train of reasoning is presented because the argument was made that units exempt from CAM implementation for reasons previously set forth still trigger CAM applicability.

STATEMENT OF BASIS

When the Department of Ecology issues a draft operating permit, it is required to provide a statement that sets forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions. [WAC 173-401-700(8)]

Copies of the state Regulatory Orders and Prevention of Significant Deterioration (PSD) Permits that impose limitations and requirements on the permittee are listed in Appendix C of the permit. The Orders/Permits establish source-specific limitations. The Orders/Permits are not intended to be a separate legal source for default limitations that are based in state and federal regulations.

I. Assuring Compliance With All Applicable Federal Requirements

Ecology has preferentially relied on direct source testing as the most robust and accurate method of determining compliance and, through frequency of testing, assuring compliance. Source testing is resource and time intensive. More frequent monitoring requires the use of some sort of indirect surrogate parameter. The frequency of direct source testing has been stipulated through Orders/Permits. Ecology has attempted to reconcile frequency of monitoring with accuracy of monitoring by relying on both direct periodic source testing and more frequent indirect monitoring using surrogate parameters. Acknowledging the surrogate monitoring parameters as compliance indicators but not necessarily compliance determinants addresses the qualitative concerns regarding surrogate monitoring parameters. Where surrogate monitoring parameters have been employed, the Permit has been structured such that noncompliance with the surrogate limitation requires corrective action. Failure to take corrective action and bring the surrogate parameter within bounds constitutes noncompliance with the need to follow good operation and maintenance as required by WAC 173-405-040(10). The Permit thus combines periodic direct source testing which definitively determines compliance with surrogate monitoring requirements indicating compliance to achieve an overall monitoring program intended to meet the Title V requirement of monitoring sufficient to assure compliance.

The frequency of both direct source testing and the application of surrogate parameters intended to indirectly infer compliance with the underlying applicable requirement is based on best professional judgment of the historical probability of exceeding the imposed limitation and the potential magnitude of an exceedence.

A. Recovery furnace - federally enforceable limits

Particulate limit compliance is monitored in two ways. A monthly source test using modified EPA method 5 is required (A.2a). The modification, designed to reduce time invested for source testing, allows for one test run of at least an hour rather than three test runs of at least one hour. Provision for frequency reduction to quarterly is made if emissions are <75% of the limit for six consecutive months. Less frequent source testing is allowed only as long as source tests continue to demonstrate emissions are <75% of the limit (footnote 2). Between source tests, opacity will serve as a compliance indicator. Corrective action is required when opacity excursions occur (A.4). Table 1 shows opacity and particulate data for source tests from 10/97 through 9/98.

Opacity limit compliance is continuously monitored with a COM (A.3). Additionally, visual tests using EPA Method 9 can be run.

SO₂ limit compliance is monitored monthly with a modified Method 6 source test (A.6a). The modification, designed to reduce time invested for source testing, allows for one test run of at least an hour rather than three test runs of at least one hour. Provision for frequency reduction to quarterly is made if emissions are <75% of the limit for six consecutive months. Less frequent source testing is allowed only as long as source tests continue to demonstrate emissions are <75% of the limit (footnote 2). Table 1 includes SO₂ data for source tests from 10/97 through 3/04. The low concentration of SO₂ compared to the limit (all test results average 21% of the limit and none is higher than 81% of the limit during the time period), along with the composition of the black liquor being burned adequately assures compliance between source tests.

Table 1 - Recovery Furnace Data

Month	Particulates (gr/dscf @ 8% O ₂)	Opacity (%)	SO ₂ (ppm)
Limit	0.08	35	200
10/97	0.030	11	17.5
11/97	0.010	13	2.7
12/97	0.012	12	11.2
1/98	0.007	13	0.4
2/98	0.009	8	0.9
3/98	0.022	13	1.3
4/98	0.015	8	0.9
5/98	0.004	-	35.1
6/98	0.006	5	13.9
7/98	0.007	7	0.4
8/98	0.006	5	76.9
2/01	.006	5	122
6/01	.004	1	142
8/01	.012	3	2
12/01	.008	12	131
2/02	.02	10	162
6/02	.01	3	56
7/02	.01	4	5
10/02	.01	6	104
3/03	.03	13	1.4
4/03	.036	19	28
9/03	.014	9	0
11/03	.01	12	9
3/04	.02	3	94

A lower state limit on the recovery furnace is not federally enforceable. The lower limit was originally issued under authority of WAC 173-400-131 which is not part of the federally approved SIP. WAC 173-400-131 addresses emission reduction credits.

B. Smelt Dissolver Tank - federally enforceable limits

This permit iteration incorporates MACT requirements which establishes HAP limitations using PM as a HAP surrogate. Where wet scrubbers are used to control PM emissions, MACT requires monitoring of scrubber flow and scrubber pressure drop. Scrubber flow is now used as the surrogate monitoring parameter for all the PM limitations. A monthly source test using modified EPA method 5 or modified Ecology Method 8 is still required (B.2) but opacity for B.2 is no longer used as the surrogate monitoring parameter. The RM 5 modification, designed to reduce time invested for source testing, allows for one test run of at least an hour rather than

three test runs of at least one hour. Provision for frequency reduction to quarterly is made if emissions are <75% of the limit for six consecutive months. Less frequent source testing is allowed only as long as source tests continue to demonstrate emissions are <75% of the limit (footnote 2). Between source tests, scrubber flow will serve as a compliance indicator. Corrective action is required when scrubber shower flow rate falls below a set level (B.3). Table 2 shows particulate data for source tests from 10/97 through 9/98 with the scrubber shower flow rate meeting the permit requirement. Table 2a shows PM data correlated with scrubber flow establishing the relationship between the two parameters and the adequacy of the scrubber flow minimum setpoint of 80 gpm.

Table 2 - Smelt Dissolver Tank Data

Test Date	Particulate (.3 bs/ton BLS limit)
10/97	0.178
11/97	0.141
12/97	0.164
1/98	0.211
2/98	0.155
3/98	0.211
4/98	0.231
5/98	0.236
6/98	0.176
7/98	0.269
8/98	0.151
9/98	0.247

Table 2a - Smelt Dissolver Tank Data after MACT performance testing.

Month	Particulates (.2 lbs/ton BLS limit)	Scrubber Flow Rate (gpm)
2/5/04	.11	82
2/6/04	.15	82
2/6/04	.22	70
2/6/04	.23	64
2/9/04	.20	75
2/9/04	.25	75
2/17/04	.18	80
2/17/04	.20	80
3/9/04	.18	83
4/1/04	.14	88

Condition B.1. Source emission testing was conducted by Port Townsend Paper Corporation on 9/10/04 to demonstrate compliance with 40 CFR Part 60 Subpart MM (NESHAPs). Source

emission testing of particulate matter was conducted as a surrogate for hazardous air pollutant metals. This initial performance test (IPT), in conjunction with engineering studies performed in February, March, and April 2004, was intended to determine a setpoint for wet scrubber operation that, if maintained at or above the setpoint, would indicate ongoing compliance with the surrogate particulate limit. Results of the test are summarized below and results of the engineering studies are summarized in table 2a. The setpoint chosen was scrubber flow equal to or greater than 80 gpm averaged over 1 hour.

Time	Flow rate (dscf/min)	Firing rate (lb/hr BLS)	Solids content (%)	Dry solids rate (lb/hr)	Particulate (gr/dscf)	Particulate (lb/T BLS)	Scrubber Flow (gpm)
3:40-5:05 PM	7,482	131,286	71.4	93,738	0.109	0.15	89.3
5:33-6:59 PM	8,340	125,664	71.3	89,598	0.104	0.17	89.2
7:20-8:42 PM	8,340	123,891	70.4	87,219	0.108	0.18	89.2

Condition B.3. The surrogate compliance indicator for opacity is scrubber flow. During the 2000-2005 Title V permit term, the scrubber flow setpoint for corrective action was 50 gpm as an hourly average. This level is still appropriate to indicate compliance with the opacity limit (WAC 173-405-040(6)). MACT II for HAPs, using PM as a surrogate, is being implemented during the 2005-2009 permit term. MACT II required an initial performance test to determine what scrubber flow rate was appropriate to indicate ongoing HAPs compliance. The scrubber setpoint was determined to be 80 gpm as an hourly average. This is a higher scrubber flow than was previously set as an alternative particulate compliance indicator. As such the previous permit term condition B.3 is no longer necessary and is not carried forward into the 2005-2009 permit term.

C. Lime Kiln - federally enforceable limits

Particulate limit compliance is monitored in two ways. A monthly source test using either modified EPA Method 5 or modified Ecology method 8 is required (C.2). The modification, designed to reduce time invested for source testing, allows for one test run of at least an hour rather than three test runs of at least one hour. Provision for frequency reduction to quarterly is made if emissions are <75% of the limit for six consecutive months. Less frequent source testing is allowed only as long as source tests continue to demonstrate emissions are <75% of the limit (footnote 2). Between source tests, opacity will serve as a compliance indicator. Corrective action is required when venturi pressure drop falls below a set level (C.6). Table 3 shows particulate data for source tests from 10/97 through 9/98 with the scrubber pressure drop meeting the permit requirement.

This permit iteration incorporates MACT requirements which establishes HAP limitations using PM as a HAP surrogate. Where wet scrubbers are used to control PM emissions, MACT requires monitoring of scrubber flow and scrubber pressure drop. Scrubber flow is now used as the surrogate monitoring parameter for all the PM limitations. Corrective action is required

when scrubber shower flow rate falls below a set level (C.11). Table 3 shows particulate data for source tests from 10/97 through 9/98 with the scrubber shower flow rate meeting the permit requirement. Table 3a shows PM data correlated with scrubber flow and scrubber pressure, thus establishing the relationship between the parameters and the adequacy of both the 3-hour scrubber flow minimum average setpoint of 90 gpm and the 3-hour scrubber pressure drop average minimum of 8”.

Condition C.4. Table 3a also summarizes SO₂ stack test history and allows a comparison to scrubber operation. The 2000-2005 permit required periodic SO₂ source testing. As indicated by the results below, scrubber performance is a reasonable indicator of SO₂ emissions which are well below the 500 ppm limit. Because of the continuous scrubber monitoring and the historic low nature of the SO₂ emissions, no ongoing discrete source testing for SO₂ is proposed for the 2005-2009 permit.

Table 3 - Lime Kiln Data

Month	Particulates (gr/dscf @ 10% O ₂)
Limit	0.13
10/97	0.042
11/97	0.028
12/97	0.035
1/98	0.021
2/98	0.030
3/98	0.030
4/98	0.019
5/98	0.043
6/98	0.025
7/98	0.024
8/98	0.036
9/98	0.056

Table 3a – Lime Kiln Data after MACT performance testing.

Month	Particulates (.13 gr/dscf limit)	Scrubber Flow Rate (gpm)	Scrubber Pressure Drop (“ of H ₂ O)	Opacity (%)	SO ₂ (ppm)
10/17/03	.036	734	28		

2/24/04	.035	550	28		
2/27/04	.020	438	28		
2/27/04	.021	433	20		
3/8/04	.028	616	28		
3/10/04	.031	377	11		
4/2/04	.056	216	8	12	
4/26/04	.045	712	18		
7/12/04	.034	95	4		
9/20/04	.085	427	12		
9/20/04	.046	426	11		
11/9/04	.03	668	26		
12/17/04	.063	53	9		
1/27/05	.026	1034	20		
6/9/05	.106	142	8.2	11	10.2

Opacity limit compliance is continuously monitored and indicated by maintaining the scrubber pressure drop greater than 8" H₂O (C.3). Visual tests using EPA Method 9 can also be run.

TRS limit compliance with a New Source Performance Standards (NSPS) limit is continuously monitored with a CEM (C.5a). Although the lime kiln was built before the NSPS cut-off date, the NSPS limit applies because NCGs from units constructed after the NSPS cut-off date are burned in the lime kiln. Other lime kiln TRS limits are not federally enforceable because the applicable portions of the state regulations which serve as a basis for the limits are not part of the federally approved SIP (C.14a and C.14b).

D. Power Boiler #10 - federally enforceable limits

Particulate limit compliance is monitored in two ways. A monthly source test using modified EPA method 5 is required (D.1). The modification, designed to reduce time invested for source testing, allows for one test run of at least an hour rather than three test runs of at least one hour. One year after permit issuance, provision for frequency reduction to quarterly is made if emissions are <75% of the limit for six consecutive months. Less frequent source testing is allowed only as long as source tests continue to demonstrate emissions are <75% of the limit (footnote 2). Between source tests, opacity will serve as a compliance indicator. Corrective action is required when scrubber parameters do not meet specified criteria (D.6). A one year study of source test data collected with the alternative opacity parameter limits in effect was required to assure opacity serves as an adequate indicator of particulate compliance (D.6a). The results of this study are summarized below:

Run	1	2	3
Steam rate (klb/hr)	200	200	200
Scrubber air flow (cfm)	1325	1339	1356
Quench water flow (gpm)	101	101	102
Scrubber water flow (gpm)	103	103	102

PM (lb/mmBtu)	.11	.072	.085
PM (gr/dscf)	.048	.031	.034
Opacity			
1-minute avg maximum	18	10	9
6-minute avg maximum	13	8	7

Opacity limit compliance is continuously indicated by monitoring that the scrubber quench water flow, scrubber water flow, and air flow are adequate (D.2). Requiring both air and water flow monitoring is unusual, but necessary in this case due to the unique pollution control device used. The device requires water injection for particulate capture and air injection to assure proper liquid/particulate contact. The cited basis of authority for the alternate opacity monitoring parameters has been changed during this permit renewal. This is to accurately reflect the actual basis of authority which is the cited EPA letter of approval. The previous Title V permit cited Order 00AQIS-131 as the basis of authority. The Order just reflected what Ecology knew was forthcoming in the EPA letter. The monitoring program included in the permit is an EPA approved alternative monitoring program for NSPS compliance. Additionally, visual tests using EPA Method 9 can be run.

SO₂ limit compliance is continuously monitored by monitoring sulfur content of fuel (D.3). Only fuel with a sulfur content less than a set maximum is fired. The monitoring program included in the permit is Ecology approved. EPA has not yet approved a monitoring program. PTPC submitted their request for EPA approval on 2/27/98. The Ecology approved program will be modified as necessary to conform to the EPA approved program at such time when EPA approves a program (D.8). Calculations provided in Appendix A demonstrate that the NSPS SO₂ limit is most stringent and is met by meeting the fuel requirement.

NO_x limit compliance is continuously monitored with a CEM (D.4).

E. Package Boiler - federally enforceable limits

Particulate and particulates <10 microns in diameter limit compliance is monitored in two ways. A monthly source test using EPA method 5 is required. Because of the intermittent operation of the unit, a month is defined as 216 hours of operation in any one month or cumulative operation of 720 hours since the last monthly test (Facility-Wide General Requirement 22). The title 5 permit also includes calendar year annual mass PM and PM10 limits as specified in the package boiler PSD permit.

Opacity limit compliance is continuously monitored with a COM (E.3). Additionally, visual tests using EPA Method 9 can be run.

SO₂ limit compliance is continuously monitored by monitoring sulfur content of fuel (E.4b). Only fuel with a sulfur content less than a set maximum is fired. The monitoring program included in the permit is as specified by NSPS requirements. PTPC submitted their request for EPA approval of an alternative monitoring program on 12/23/97. The permit provides for acceptance of an EPA approved alternative monitoring plan should EPA approve the PTPC

request. A performance test requirement that has been satisfied is not included in the Title V permit.

NOx limit compliance is continuously monitored with a CEM (E.5).

Condition E.5a. The current NOx limit of .24 lb/mmBtu is derived per the algorithm detailed in PSD 96-01A condition 11. Condition 11 stipulated a reevaluation of the initial NOx limit set in PSD 96-01A condition 2. The reevaluation was based on actual emission history and resulted in the current NOx limit of .24 lb/mmBtu.

Fuel consumption limit compliance is continuously monitored with a fuel meter (E.6).

Fuel supply limit compliance is continuously monitored by analyzing each fuel shipment received (E.7). In accordance with reduced monitoring requirements specified in Order No. 97AQ-I030, the permit specifies calcium and copper monitoring of one fuel shipment per permit cycle rather than monitoring all fuel shipments.

CO and VOC limit compliance is continuously monitored with proper unit operation and maintenance (E.8 & E.9). The appropriate sections of the PTPC operation and maintenance program are included in the permit (appendix B).

F. Power Boiler #2 - federally enforceable limits

PB2 is no longer operational. Ecology was officially notified by PTPC on 10/1/2001. Work on disconnecting the oil supply line and removing the gas supply line to PB2 was completed on September 13, 2001.

G. Digester, Multiple-effect Evaporator, Condensate Stripper System - federally enforceable limits

TRS limit compliance is monitored by continuously monitoring lime kiln TRS emissions (F.1a). TRS emissions from units not covered by NSPS are not federally enforceable because the applicable portions of the state regulations are not part of the federally approved SIP. (F.2).

H. Millwide Limits - federally enforceable limits

Millwide limits compliance is demonstrated by calculations for daily and yearly emissions as required in the permit (G.1 - G.6). Data for those calculations comes from continuous monitoring, source tests, production rates, and emission factors.

Compliance with the particulate, VOC, and CO daily limits is demonstrated by compliance with the annual limits. Daily maximum emissions were estimated using annual emission and

production data (Table 4). The daily maximum emission estimates are 47% or less of the daily limit. For particulate, VOC, and CO; demonstration of compliance with the annual limits serves as demonstration of compliance with the daily limits as long as annual emissions are less than 60% of the annual limit.

Table 4 – Mill-wide Emissions

	Annual emissions				Limit
	1996 (tons/yr)	1996 (% of limit)	1997 (tons/yr)	1997 (% of limit)	
Particulate	225	31	247	34	729
VOC	48	26	51	28	182
CO	1733	28	1797	29	6204

	Maximum daily emissions*				Limit
	1996 (lbs/day)	1996 (% of limit)	1997 (lbs/day)	1997 (% of limit)	
Particulate	1825	41	2111	47	4500
VOC	389	39	435	43	1010
CO	14053	41	15362	45	34500

	Kraft Production			
	1996 (tons/day)	1996 (% of max)	1997 (tons/day)	1997 (% of max)
Average	513	70	496	67
Maximum	728		742	

* maximum daily emissions are estimated using the ratio of maximum kraft production to average production multiplied by annual production in pounds per year and divided by 350 operating days per year.

Facility-Wide General Requirement Condition 8

Permit Condition 8 is the generic opacity limitation from WAC 173-405-040(6) which applies to kraft mills. Permit Conditions 9 and 12 work together to assure compliance with Condition 8 by requiring, first, that facility equipment be maintained and operated “in a manner consistent with good air pollution control practice” and, second, that the permittee record and promptly respond to complaints received or possible noncompliance noticed by facility staff. Ecology believes that this is a practical and effective way to assure compliance because the emission units covered by this condition do not have control devices that can be monitored and they have very low risk of producing visible emissions except during process upsets. The mill is staffed around the clock and all staff are trained to notice and report unusual conditions, such as those associated with upsets. It is a violation of the permit to fail to take corrective action when an instance of possible noncompliance has been reported and found to be valid. Ecology believes that imposing

additional monitoring such as a weekly visual inspection would have little value in identifying noncompliance and would, by presence, possibly convey a false sense of compliance.

Facility-Wide General Requirement Condition 10

Permit Condition 10 is the generic SO₂ limitation from WAC 173-405-040(11) which applies to kraft mills. SO₂ emissions are a concern from combustion sources. At PTPC, combustion sources include power boiler 10, the package boiler, the recovery furnace, and the lime kiln. SO₂ emissions from each of these units are addressed in the appropriate subsection for each individual unit. Ecology has not imposed monitoring for units unlikely to have a reasonable potential of exceeding SO₂ emission limits.

Surrogate monitoring for intervals between direct SO₂ testing was not imposed because in practice mills do not adjust operating parameters to minimize SO₂ emissions. There are no control devices or control strategies to allow this. Instead, SO₂ emissions are largely a function of equipment and process design. Production based on a kraft process is optimized by system stability and continuity. Ecology has no professional basis to believe that process parameters fluctuate to a degree that results in SO₂ emissions approaching the 1000 ppm limit and thus warranting surrogate monitoring.

Facility-Wide General Requirement Condition 11

Condition 11 has been discontinued in the Industrial Section Title V permits based on arguments raised by EPA. Specifically, former Condition 11 was interpreted to be too broad and inclusive of circumstances to which it was being improperly applied.

Facility-Wide General Requirement Condition 19 (formerly Condition 22)

Because of the intermittent nature of package boiler unit operation and possible down time of other units, monthly and quarterly monitoring is further defined in this condition. The condition specifies when monitoring is required during periods when unit operation is less than continuous.

II. Insignificant Emission Units

The facility-wide general requirements apply to the whole facility, including insignificant emission units and activities (IEUs), as required by the operating permit rule. The rule states, however, that IEUs are not subject to monitoring requirements unless the generally applicable requirements in the State Implementation Plan (SIP) impose them. [WAC 173-401-530(2)(c)]. The Washington SIP does not impose any specific monitoring-related requirements for the facility-wide requirements for IEUs at this source. The permit, therefore, does not require any testing, monitoring, reporting, or recordkeeping for insignificant emission units or activities.

III. Regulatory Orders

The permittee is currently subject to several regulatory orders. Copies of the orders are provided in Appendix C of the Title 5 permit.

An important issue regarding any Title V permit is the basis of authority for the applicable requirements. This is particularly true regarding monitoring and reporting requirements. The basis of authority is used to determine federal or state-only applicability. Many of the applicable requirements come from orders issued by Ecology. With the permittee's agreement, the issue of state-only or federal applicability was put aside as it was agreed to rely entirely on WAC 173-401-615 as the basis of authority for the type and frequency of monitoring. WAC 173-401-615 requires monitoring and recordkeeping sufficient to assure compliance with the terms and conditions of the permit. This regulation is federally enforceable. Monitoring and recordkeeping requirements based on this regulation are federally enforceable. Some of the outstanding orders were also amended as part of the 2006 Title V renewal effort. The monitoring and reporting requirements were in large part removed from the orders and based on WAC 173-401-615. This results in the Title V Permit itself as the basis of authority. No change in the monitoring or reporting requirements themselves took place as a result of the transfer of basis of authority.

APPENDIX A - CALCULATIONS

Formulas

from 40CFR Part 60.45(e)(1)

$$E \left(\frac{lb}{mmBtu} \right) = C \left(\frac{lb}{dscf} \right) \times F \left(\frac{dscf}{mmBtu} \right) \times \left(\frac{20.9}{(20.9 - \% O_2)} \right)$$

$$C \left(\frac{lb}{dscf} \right) = \{ conc (ppm) \times [(2.59 \times 10^{-9}) \times M \left(\frac{lb}{lb-mole} \right)] \left(\frac{lb}{dscf \cdot ppm} \right) \}$$

$$E \left(\frac{lb}{mmBtu} \right) = \{ conc (ppm) \times \{ [(2.59 \times 10^{-9}) \times M \left(\frac{lb}{lb-mole} \right)] \left(\frac{lb}{dscf \cdot ppm} \right) \} \times F \left(\frac{dscf}{mmBtu} \right) \times \left(\frac{20.9}{(20.9 - \% O_2)} \right)$$

F Factors

from 40 CFR, Part 60, App. A, Method 19

$F_d = 9600$ dscf/mmBtu for wood bark

$F_d = 9240$ dscf/mmBtu for wood

$F_d = 9190$ dscf/mmBtu for residual oil

Power Boiler #10 - SO₂

NSPS limit (0.8 lb/mmBtu) < WAC limit (1000 ppm @ 7% O₂).

$$E \left(\frac{lb}{mmBtu} \right) = \{ conc (ppm) \times \{ [(2.59 \times 10^{-9}) \times M \left(\frac{lb}{lb-mole} \right)] \left(\frac{lb}{dscf \cdot ppm} \right) \} \times F \left(\frac{dscf}{mmBtu} \right) \times \left(\frac{20.9}{(20.9 - \% O_2)} \right)$$

$$0.8 \left(\frac{lb}{mmBtu} \right) = \{ conc (ppm) \times \{ [(2.59 \times 10^{-9}) \times 64 \left(\frac{lb}{lb-mole} \right)] \left(\frac{lb}{dscf \cdot ppm} \right) \} \times 9190 \left(\frac{dscf}{mmBtu} \right) \times \left(\frac{20.9}{(20.9 - 7)} \right)$$

$$conc (ppm) = 350 ppm @ 7\% O_2$$

$$so, [0.8 \left(\frac{lb}{mmBtu} \right) \cong 350 ppm @ 7\% O_2] < [1000 ppm @ 7\% O_2]$$

Note: the F factor for oil was used since the oil is the source of most of the S.

Compliance demonstration meeting 0.8 lb/mmBtu limit using fuel ≤0.76% sulfur by weight

$$\text{conc (ppm)} = \frac{0.0076 \left(\frac{\text{lb S}}{\text{lb oil}}\right) \times 2 \left(\frac{\text{lb SO}_2}{\text{lb S}}\right) \times \frac{385 \text{ dscf SO}_2}{64 \text{ lb SO}_2}}{0.0189 \left(\frac{\text{mmBtu}}{\text{lb oil}}\right) \times 9190 \left(\frac{\text{dscf}}{\text{mmBtu}}\right)} \times 10^6 \times \left(\frac{20.9-7}{20.9}\right) = 350 \text{ ppm @ 7\% O}_2$$

so, [0.76% S by weight ≅ 350 ppm @ 7% O₂] = [350 ppm @ 7% O₂ ≅ 0.8 lb/mmBtu]

Note: assumes all S comes from the fuel and all S in the fuel becomes SO₂.

Compliance demonstration meeting 1000 ppm @ 7% O₂ limit using fuel ≤2% sulfur by weight

$$\text{conc (ppm)} = \frac{0.02 \left(\frac{\text{lb S}}{\text{lb oil}}\right) \times 2 \left(\frac{\text{lb SO}_2}{\text{lb S}}\right) \times \frac{385 \text{ dscf SO}_2}{64 \text{ lb SO}_2}}{0.0178 \left(\frac{\text{mmBtu}}{\text{lb oil}}\right) \times 9190 \left(\frac{\text{dscf}}{\text{mmBtu}}\right)} \times 10^6 \times \left(\frac{20.9-7}{20.9}\right) = 980 \text{ ppm @ 7\% O}_2$$

Note: assumes all S comes from the fuel and all S in the fuel becomes SO₂.

Lime Kiln - SO₂

Compliance demonstration meeting 500 ppm @ 10% O₂ limit using fuel ≤0.5% sulfur by weight

$$\text{conc (ppm)} = \frac{0.005 \left(\frac{\text{lb S}}{\text{lb oil}}\right) \times 2 \left(\frac{\text{lb SO}_2}{\text{lb S}}\right) \times \frac{385 \text{ dscf SO}_2}{64 \text{ lb SO}_2}}{0.0189 \left(\frac{\text{mmBtu}}{\text{lb oil}}\right) \times 9190 \left(\frac{\text{dscf}}{\text{mmBtu}}\right)} \times 10^6 \times \left(\frac{20.9-10}{20.9}\right) = 180 \text{ ppm @ 10\% O}_2$$

so, [0.5% S by weight ≅ 180 ppm @ 10% O₂] < [500 ppm @ 10% O₂]

Note: assumes all S comes from the fuel and all S in the fuel becomes SO₂.

APPENDIX B. RESPONSE TO COMMENTS

Response to Comments
Port Townsend Paper Corporation's
2006 Title V - Air Operating Permit Renewal
Permit No. WA 000092-2

This document is our (Department of Ecology) formal response to comments received about our proposed renewal of the "Title V" Air Operating Permit for Port Townsend Paper Corporation (PTPC). The response to comments was written collaboratively by Ecology staff.

The Permit Processing/Review Sequence

The initial public comment period began April 5, 2006. Given the level of public interest, we extended the formal comment period through June 7, 2006 to allow time for a formal public hearing (May 31) in Port Townsend. During the two months we received comments in the form of e-mails, postal letters, and written and spoken comments collected at the public hearing.

After considering the merits of each comment we received, we revised the proposed Air Operating Permit (AOP) where appropriate.

The next step in the process includes placing this revised proposed permit on the permit register, as prescribed by WAC 173-401-805. Then Ecology must submit the revised proposed permit to the EPA for a 45-day review.

During this time, if EPA objects to any permit condition the EPA's permit reviewer must give us written reasons for her objection. Ecology has another 90 days then, to revise the AOP to the EPA's satisfaction.

If the EPA's AOP reviewer does not object within the 45-day review period, then the process moves forward:

1. Within 60 days after EPA's 45-day review period expires, any person who submitted a formal comment objecting to a permit condition may petition EPA to veto the permit. (The petitioner must have commented on the issue and lodged the objection during the public comment period.)

Deliver a petition to the EPA care of:

Ms. Laurie Kral
U.S. EPA, Region X
OAQ-107
1200 Sixth Avenue
Seattle, WA 98101

2. The EPA must respond to the petitioner by granting or denying the petition, within 60 days of receiving the filing.

3. If EPA denies the petition, that decision is subject to judicial review in the Federal Court of Appeals.

If neither the EPA permit reviewer nor a qualified petitioner objects, Ecology will issue the AOP renewal (as revised) to Port Townsend Paper Corporation.

1. Within 30 days of state permit issuance, any person who has standing may appeal the permit to the Pollution Control Hearings Board.
2. Any appeal must identify: (a) the petitioner; (b) the section of the proposed AOP to which you object, (c) Ecology's error of law, (d) the harm to your interest that would result if PTPC is granted the permit as written; and (e) the relief the appellant seeks.

Send a appeal to the PCHB at:

Pollution Control Hearings Board
P.O. Box 40903
Olympia, WA 98504-0903

Public Comments and Our Responses to Them

This document contains Ecology's formal responses to written and spoken comments received about our proposed renewal of the "Title V" Air Operating Permit for Port Townsend Paper Corporation (PTPC). The comments we received during the formal comment period arrived in the form of e-mails, postal letters, and as written notes and oral remarks offered at the public hearing (our text processing service transcribed the tape-recorded comments).

We organized the document by topic, though all matters interrelated.

Similar Comments of General Interest

Topic I: Opinions favoring permit renewal	page 2	page 20 of SupDoc
Topic II: Correlation between odors and human health effects	page 6	page 23 of SupDoc
Topic III: Ecology's Regulation of the mill	page 12	page 29 of SupDoc
Topic IV: Roles and powers in community relations	page 18	page 35 of SupDoc

Specific Emission Release Events

Nancy Dorgan	page 24	page 40 of SupDoc
Cynthia Knudsen	page 25	page 41 of SupDoc
Nora Regan	page 25	page 42 of SupDoc
Sheila Smith	page 26	page 42 of SupDoc

Permit-Specific Comments

Rita Cirilis	page 26	page 43 of SupDoc
Citizens for Environmental and Economic Health	page 28	page 44 of SupDoc
Matt Kite	page 34	page 50 of SupDoc
Olympic Region Clean Air Agency	page 37	page 52 of SupDoc
Carolyn W. Salmon	page 39	page 55 of SupDoc

Narrative Comments from Industry Operators and Managers

John Begley	page 40 page 56 of SupDoc
Kristin Marshall	page 41 page 56 of SupDoc
Llewellyn Matthews	page 42 page 57 of SupDoc
Alice McConaughy	page 42 page 58 of SupDoc
Eveleen Muehlethaler	page 43 page 58 of SupDoc

PTPC's Permit-Specific Comments page 44 page 59 of SupDoc

--Similar Comments of General Interest--

Given the number of comments we received about topics *not* governed by the permit, we've combined similar topics and addressed them in a common response section.

- In some cases we edited or paraphrased these comments for brevity.
- We tape-recorded comments made during the public hearing and a text processing service transcribed them for inclusion in the legal file, along with written letters and printed e-mail messages.
- We chose not to include similar comments verbatim in this formal response, but you may read them from PTPC's AOP file.

In all cases where we combined similar comments, we follow them with an alphabetical listing of the names of those who commented on the theme. Finally, at the end of each of the four topic sections, we post our responses.

Topic I: Opinions favoring renewal of PTPC's Air Operating Permit

Many comments urged the Department of Ecology to renew Port Townsend Paper Corporation's Title V - Air Operating Permit:

- A. We support Ecology's approval of this Air Operating Permit because of the positive relationship between the PTPC mill and the local community.
1. Ecology should look at the positive economic and cultural role the mill plays in the community when considering permit renewal.
 2. PTPC confers on the community as both an employer and as a funding supporter of local charities, scholarships, and the arts.
 3. We wouldn't be the community we are, if it wasn't for the mill. This is a viable enterprise. They are doing their best – they do better than most – and they constantly try to improve. Things are getting better. I advise Ecology to approve this permit as soon as possible.
 4. You need to face the fact that the mill is the economic backbone of this community. It's the largest employer, providing: good paying jobs, summer employment to college students, scholarships, and donations to school fund raisers and local festivals.

5. Since moving here in 2001 we have discovered all the ways the mill has been a partner to this community.
6. I've heard everyone wants to see the mill survive and sustain. A great way of helping is to unanimously support the permit renewal and ask Ecology to approve the application as soon as possible.

Comments above from: *James Andrews, Tim Baronfeld, and Tim Caldwell; and Joe and Cindy Finnie; from John Fischback* (Jefferson County Administrator); *Kendra Golden, John Hanby* (Washington Pulp and Paper Association), and *Maggie Kilmer; from Jim Little, Margaret Matheson, and Bruce McComas* (PTPC); from *Daryl Moegling, Bob Peden* (United Good Neighbors of Jefferson County), and *Dick Schneider; from Peter Simpson, and Mark Welch.*

B. As homeowners, business owners, a forum manager, and as members of the City Council and of the Planning Commission, we've dealt with the men and women of PTPC over the course of many years. Our interactions showed the mill operators to be responsible managers of our shared resource.

1. Together we've improved the water resource facility and in-stream flow, to ensure that both the mill and residents have access to needed water.
2. The mill's managers used good business practices and remained flexible, listening to our needs and our interests as citizens. Another critical resource – our air supply – is in good hands with our neighbor, the Port Townsend Paper Company.
3. In 40-some years of professional experience I have never seen a corporation that was more committed to the community. They truly represent the highest notion of good corporate citizenship.
4. The new management at the mill is fantastic. They work their fool heads off trying to keep their chins above water, while spending a lot of money to improve what used to be a pretty bad odor.
5. Some people discount the economic impacts of the mill to health in the community. But according to the National Institute for Environmental Health Sciences website, "The poor have worse health than other population groups—shorter life expectancy, higher cancer rates, more birth defects and greater infant mortality; and higher incidences of asthma, diabetes, and cardio-vascular disease." We need to support the mill.
6. I have seen an incredible difference in all of the ecological and environmental concerns that Port Townsend Paper has addressed. They deserve community trust and support.

Comments above from: *Joe Finnie, Gordon James, and Maggie Kilmer; from Dick Schneider, Craig Somes, and Joseph Wheeler*

C. PTPC mill employees live in this community, we raise our families here. We want a healthy environment, so we strive to do better than our permits require.

1. PTPC shouldn't be singled out for stricter requirements than other small businesses. We already pay a large proportion of our capital expenditures toward environmental compliance.

2. Mill personnel request a permit that is "...fair and equitable and doesn't put [PTPC] at a disadvantage to the competition."
3. When I was a kid the mill was intense in its aromas, but it was the only game in town then. Now the mill stands as the anchor in a more diverse economy. I completely trust the management of PTPC because of their visible work toward a cleaner environment. Over my lifetime the difference is night and day. You know, it's progress-not perfection.
4. Kraft mills, in general, offer potential for conversion to bio-refineries.
5. When I graduated from high school I worked a summer at the mill, then went off to college. For the next four or five summers I returned to work at the mill. The operators knew I wasn't going into the pulp and paper industry, but they invested in me and in my future by giving me a job to earn my way through college. And I learned a lot, while I was there back in the sixties- I learned about reuse and recycling and alternative uses for waste products. Not only was the mill far ahead of the recycling curve, positive changes in the way the mill operates have been relentless. The mill virtually built (and maintains) the water system for us, and protects the watershed... I support Ecology's proposal to issue this permit.
6. The mill began operating just before the Great Depression. At that time the mill operators agreed with the community on a plan to keep people employed. That same type of commitment carried over, rolling into the decades of an environmental ethic. I hear from peers around the country that Washington requires more of our industry than is typical. Washington State was pushing environmental improvements on our industry before federal efforts began along those lines. But we wanted to be pushed, and we wanted our competitors to adopt these kinds of environmental controls...

Comments above from: *Thatcher Bailey*, *Sam Bryant* (PTPC), and *Llewellyn Matthews* (Northwest Pulp and Paper Association); *Bruce McComas* (PTPC), and *Mark Welch* (Town Council/Mayor of Port Townsend)

Responses to Topic I:

- A. While the comments do not identify components or aspects of the permit, they describe the mill's value to the community's social fabric and economic structure.
- B. We applaud the mill's efforts to improve the facility, adding upgrades to keep pace with competitors and with more stringent pollution control requirements.
- C. Our staff engineer, toxicologist, and chemist fulfill Ecology's duty to apply fair standards and equitable treatment, when permitting the various mills across the state. We suggest no exception in the AOP renewal proposed for Port Townsend Paper Corporation.

Topic II: Correlation between odors and human health effects

A majority of comments focused on mill odors and ambient air quality, and their correlation to health affects. Some asked how Ecology would regulate the odors through conditions in the proposed Air Operating Permit.

- A. I am concerned about the negative impacts of mill odors on our community's economy and on our general quality of life.
1. I object to the odor apparently attributable to installation of the new diffuser system. The new diffuser system makes no difference; the mill should do more, using best available technology to eliminate the smell. Why can't we have both good jobs and clear air? There is technology. Canada now has a joint project with China; they are developing new paper mills which will use the kraft process in some cases, but they will be non-polluting mills. New technology can deal with emissions and the odors.
 2. The mill odor bothers me quite often at my home in Port Hadlock. It's especially bad on hot summer days with low clouds.
 3. I noticed a significant reduction in odors after completion of the lagoon diffuser upgrade, but I want continued vigilance in minimizing odors.
 4. The odors appear to be more noticeable at night, although they have abated recently. If technology is available that can solve the odor issue, as I have read, I wish it would be employed. The mill should install control technology employed by China in building clean industries. Also, other communities within the US have found ways to reduce or eliminate paper mill odors, so let's encourage the use of such control technology at PTPC.
 5. Port Townsend Paper is one of several mills participating in a nationwide study of mill odors. The National Council of Air and Stream Improvement study attempts to understand and better measure odor-causing chemicals in pulp and paper production.
 6. The odor is far less prevalent and less pungent today than in years past. But the community makeup changed with the recent influx of new retirees.

Comments above from: *Francis Andrews, Sondra Blair-Bond, and Stephen Boyd; Frances Campbell, Karen DeLorenzo, and Nancy Erica; Arthur Fine, Mickey Forbes, and Louise Frombach; Alan Henshall, Dori Lee, and Alice McConaughy (PTPC); Ann Murphy (PTMSC), Lois Ragsdale, and Jerry Schnell; from Peter Schwartzman, Peter Simpson, and Sheila Smith*

- B. How harmful are mill emissions? How do mill odors affect ambient air quality, and what's the impact on human health?
1. I'm concerned about the impacts of mill emissions on the ambient air quality. Ecology should not renew PTPC's permit until the mill puts more emphasis on the growing health problems they may be creating. Mill emissions have grown worse "year after year" and we've experienced symptoms such as itchy and watery eyes. Usually my asthma kicks up a little bit in the fall and a little bit in the spring, and my inhalers take care of it. But last fall when the mill started dredging the ponds my asthma got progressively worse. It lasted all winter long—which it's never done before—and hasn't let up yet. I'm concerned about that.

2. The mill should use the best available technology to avoid releasing pollution into the air. I came to the public hearing to express my concern about mill odor and its health effect. I understand there is technology capable of reducing mill odor to zero. The mill should implement such technology to make it safe for the community. I also believe dioxins are involved. Mill emissions may compromise plans to improve infrastructure near my home.
3. Can Ecology assure us that the mill's contributions to ambient air quality are not negatively affecting our health? You know, some of us are breathing more [pollution] than if we were standing over the stacks. Get that there are micro climates. I don't know why it's worse at night. It is worse at night. Raise your hand if you've found it to be worse at night. I don't know if it's because the mill emits different things at night or if the air currents are different. Ecology should not renew the permit until adequate testing accounts for all health risks.
4. Is information available concerning local public health? I would like to see a scientific study of the health effects. Instead of people just coming out and saying, "This is caused by that." I think that would help a lot.
5. I'm an asthmatic. Scotch Broom is my enemy, house dust, newly cut grass, and many other things trigger my asthma. We have to look at the overall issue. Many things that cause sickness we have never connected to the cause. I'm not saying that asthma won't be triggered by some emissions from the mill. But I would say there is no scientific proof of cause-and-effect saying all people who have asthma will be affected by the mill. Be careful about scientific connections here. It may affect people, but I'm confident that many asthmatics in this community have no reaction at all to mill emissions.
6. I was asked to read this quote from the National Institute for Environmental Health Sciences website: "The poor have worse health than other population groups, including shorter life expectancy, higher cancer rates, more birth defects, greater infant mortality, higher incidences of asthma and diabetes and cardio vascular disease." Also, EPA shows that for Jefferson County, industry represents less than 4 percent of health risks for respiratory illness, less than 1 percent for cancer, and even less for neurological disease.

Comments above from: *Peter Bahls; Steve Bailey, and Bill and Bonnie Brock; from Cindy Buxton, Marion Huxtable, and Andree Siu and Russ Johnson; "Kathleen" (no last name given), Jan Marquardt, and Brian Moon; Ann Mullin, Lynn Nadeau, and David Nichol; Jordan D. Pollack, David and Marcee Post, and Raven (no last name given); Johanna Rienstra, Jerry Schnell, and Craig Somes; Joseph Wheeler, and Denise Joy and Daniel Wilson*

- C. What conditions can the Department of Ecology include in the permit to ensure that the mill uses best available technology to protect human health?
 1. I'm concerned about the amount of toxins emitted from PTPC. Odor is the problem that many citizens consider top priority. But there is also concern for emissions that do not necessarily present themselves with strong odor, but nonetheless create unhealthy ambient air quality. Although the total reduced sulfur (TRS) odors have been reduced somewhat, thanks to the recent MACT upgrade, there have been many occasions when

TRS and other noxious odors provoked onsets of asthma, headache, nausea, burning in the nose and sinuses and upset stomachs to name a few of the difficulties reported to CFEEH. What can the citizens of Port Townsend do to help reduce these problems?

2. PTPC should use the best available technology to avoid releasing pollutants. I think it is a very unhealthy thing to burn oil, green house gases notwithstanding. It's unhealthy and the permit does not appear to regulate the quantity of oil they are allowed to burn. It should be addressed in the permit. The only thing that appears to be in item number 17 is that the oil itself meets certain standards that are identified in a particular RCW that is cited. and so I downloaded that one tonight after dinner. And it lists the allowable levels of cadmium, chromium, lead, arsenic, halogens, poly-chlorinated bi-phenyls, ash and sulphur. To me this is an archaic, excessive thing to be generating that has nothing to do with the economy of producing paper and it should be eliminated for global warming issues as well as health issues.
3. I object to the "ammonia" smell from the mill. The mill should be shut down if it is financially unable to meet environmental standards. I oppose renewal of the Title V Permit and request off-site ambient air monitoring.
4. Some people have unrealistic expectations. The kraft mill odors cannot be entirely eliminated, but they don't pose a health hazard at current exposure levels. Mill employees are exposed to the same emissions as other residents. I learned tonight that odors could be caused by many things, such as tree-cutting in the area and changes in climate patterns; the topic of micro-climates is an excellent thing to look into.
5. I'm concerned over the "load of chemicals the mill has been dumping into the air and water in the last six months" and I want tighter standards.

Department of Ecology staff mentioned EPA epidemiology studies. There haven't been any. Have there been any pertinent health studies done on the effects of combined pollutants on people? Have there been any Health Evaluations by the County Health Dept., the State Health Dept. or Ecology for the Port Townsend area? If not would Ecology help guide us to create such a study?

We need to see what the long-term health effects are and the only way we're going to find out is by doing the study. So I would urge whoever can do these studies to facilitate those studies of respiratory problems, asthma and neurological problems. To factor the long term health care, not just how much care costs, but what effect that has on people's lives going into that economic hole...it's not just jobs, it's our health.

6. My health problems started kicking up last August. I noticed a sticky substance on our car, and on the windows. I would be driving in the car and begin choking; I'd have to pull over until I could breathe again... I didn't connect the asthma problems with excess emissions ending up in our area. In the permit Ecology should lower or eliminate permissible emissions, to a level that does not make people sick.

Comments above from: *Francis Andrews, Tim Baronfeld, and Earl Boysen and Nancy Muir; Cindy Buxton, Citizens for Environmental and Economic Health, and Gary Engbrecht; Beth Lorber-Bonyun, Lynn Nadeau, and Johanna Rienstra; Lynda Rohrs, and Pat Thiel*

Responses to Topic II:

- A. We're sorry that we appeared to be unresponsive to these concerns. There is no absolute quick fix to the issue of kraft mill odor. The engineering, scheduling, and installation of equipment, or any other physical or process change takes time—particularly at older mills such as PTPC. This cannot always be done as fast as everyone would wish.

Ecology found no evidence of the mill changing its processes or releases at night. The kraft paper-making process works most efficiently when the equipment runs at a steady rate. The process becomes less stable if the operators “ramp” any components up or down, creating waste. So the mill serves its best economic interest by keeping its production rate steady.

State rules do not require paper mills to eliminate every odor—but to take all reasonable measures to lessen their severity.

- B. The Title V - Air Operating Permit statute does not establish or change existing limitations. It simply incorporates existing limitations into one document.

No further work is anticipated in the first lagoon cell. Any subsequent dredging will occur in lagoon cells located downstream from the new aerators so those aerators can remain on-line if any future work is necessary.

The PTPC mill has been in consistent compliance with the terms and conditions of the permit. If technology capable of reducing kraft mill odor to zero exists anywhere in the country, we are not aware of it. Mill odor can certainly be minimized, but all kraft mills emit odors occasionally (due to the nature of the process) regardless of the type of emission controls employed.

Ecology finds no regulatory basis for the denial of permit renewal or for changing, adding, or amending existing regulations cited as applicable requirements within the body of the air operating permit.

We found no record of specific health evaluation studies done in the Port Townsend area by either the local or the state Health Department. To conduct such a study requires that a sufficiently large population is being exposed in sufficient concentrations to the contaminants being investigated. The health endpoints must also be distinguished from other causes. Symptoms of the odorous compounds tend to be headache, sleep disturbance, nausea, vomiting, and worsening of respiratory symptoms and asthma. Many other exposures, and conditions can bring about these classes of symptoms, and studies would have to have distinctions between exposed and unexposed populations of sufficient size to be able to attribute effects to these gases.

The State Health department does keep track of cancer incidence and mortality, and those analyses are available from DOH. A preliminary look at cancer data by the State Epidemiologist for Non-Infectious Conditions reveals that Jefferson County has had higher cancer rates in the last couple of years for breast and prostate cancers than other counties in the state. However, she did not do an in-depth analysis to determine whether this is an on-going pattern. Also breast cancer is more common in women of

higher socioeconomic status (most likely due to delayed childbearing) and that may contribute to the high rates in the county. Additionally, prostate cancer is more common among men with good health insurance coverage who are screened for this disease. These cancers also have a long induction time, and those who moved to the county fairly recently are likely to have had any potentially related exposures elsewhere.

The emissions that most people are concerned about (reduced sulfur gases) are not known to be causes of cancer, and other known emissions such as the aldehydes, are not known to be associated with the two most prevalent cancers in the county.

Regarding concerns about dioxin emissions though, rest easy. PTPC has never been a bleaching mill, so it never used chlorine as a bleaching agent. There is no historical reason to associate dioxin with the mill's effluent. Chlorinated organic compounds such as dioxin may form as a by-product of combustion if chlorine is present in hogged fuel. But the permit prohibits PTPC from burning such salty hogged fuel.

The most unpleasant mill emissions consist of odors from reduced sulfur gases (also called "non-condensable" gases). Those gases include hydrogen sulfide, methyl mercaptan, methyl sulfide, and dimethyl sulfide. Hydrogen sulfide is the most toxic, followed by methyl mercaptan (about one-tenth as toxic), and the methyl sulfides (much less toxic).

We evaluate the potential for a substance to cause harm by weighing the amount and duration of exposure, against the general health (age, gender, any special susceptibility) of the person exposed. For exposures to concentrations in the range of thirty parts per million (30 ppm) and higher, a normal adult male exposed to hydrogen sulfide gas could get olfactory sense paralysis—so he could no longer smell the gas. At very high exposures—greater than 500 ppm during brief periods, or greater than 50 ppm during several hours—the exposed man could lose consciousness and stop breathing.

When non-condensable gas exposure levels are lower than those known to cause toxic effects, the odors might cause a person to experience headache, nausea, and disturbed sleep; non-toxic exposures could also cause eye irritation, and respiratory irritation in susceptible people such as persons with asthma. Even odors that people generally perceive as pleasant—such as perfume—can trigger asthma symptoms in those who respond to odor. See Table 1 on page 57 for odor thresholds.

Some residents perceive higher odor levels at night. Ecology's own investigation verified that the mill's reduced sulfur gases emission rates remain steady, day and night.

The natural behavior of air, related to water temperature, could explain the difference: Gases that rise from water warmed during the day, hang above the surface when water cools at night. The gases suspend when calm night winds exert little movement. But with the return of day, sunlight heats the land, stirring the air and diluting and dispersing the gases.

The topography of the area—the mountains, the Strait—funnels land or sea breezes unpredictably. At times, it can trap odorous, heavier-than-air gases beneath an inversion layer, forestalling ventilation along and near the water front. Neither Ecology nor PTPC can control those elements.

We found no record of health investigations or epidemiological studies performed in the Port Townsend area. The population is relatively small (providing a small sample) and people move in and out of the community with ease (defining no “control” group). The Health Department could not distinguish symptoms caused by the mill’s emissions from those caused by other air contaminants, by allergens, or by exposures at other locales.

We will take action as soon as the best available control technology becomes more effective against those irritants. But because we can’t define how the immediate environment affects any individual, or pinpoint which emission affects any one person, Ecology’s permitting goal is the continued decrease in the mill’s air pollution releases.

- C. Federal and state emission limits originate out of concern for predictable impacts on public health. Air pollution release limits continue to evolve based on our increased understanding of the content and health impacts of the emissions, and on improved air pollution control technologies. Contacting the mill is an important first step. Mill operators established an odor team that evaluates odor complaints-when and where they occurred, weather conditions, and what process operations were going on at the time. The mill and Ecology can use this information to identify processes and conditions that cause these odors.

The boilers at PTPC produce the steam used in making the pulp and drying the paper. Energy in many forms (wood chips, natural gas, and various forms of oil) is burned at all kraft mills to generate steam and electricity. The type of fuel used varies largely on availability and cost. EPA allows the use of various types of fuels and sets emission standards for various pollutant parameters. The parameter limitations are set forth in applicable requirements from EPA. The Title V Air Operating Program does not create or change applicable requirements. A Title V Air Operating Program simply compiles existing applicable requirements.

The Title V - AOP for PTPC includes every requirement already imposed by rule, permit, or order. But Title V does not allow Ecology (or any local Air Pollution Control Authority) to impose new requirements, other than those that demonstrate compliance, on the facility. We can adjust release limits to decrease emissions only: (1) after the mill changes its emission units, or (2) after the EPA or the state adopts more stringent standards during the five-year permit term.

The PTPC mill complied with the terms and conditions of its current AOP. And the mill complied in a timely fashion with both phase one and phase two “maximum available control technology” (MACT) standards for pulping systems, adopted by federal rule five years ago. Phase one required mills to collect low volume/high concentrations of hazardous air pollutants by mid-April 2001. Phase two required collection of high

volume/low concentration hazardous air pollutants by mid-April 2006. The mill complied with MACT 2, which addressed emissions from the recovery system.

We expect the mill to comply with the boiler MACT (national emission limits and work practice standards for hazardous air pollutants emitted from industrial boilers), as well. This requirement will affect the wood fired boiler at PTPC. The mill must comply with the new standards by mid-September 2007, for heat input from particulate matter, from hydrogen chloride, and from mercury. By definition, the mill's compliance with MACT meets the EPA's requirement that PTPC use the best available control technology.

Topic III: Ecology's regulation of the mill

Ecology compiles the rules and orders, and must enforce the AOP's air pollution control measures. Some people urged Ecology to exert greater control over the PTPC mill:

- A. Many residents asked that Ecology host a public hearing to receive comments from residents about the draft permit renewal we proposed to issue to the mill:
1. Citizen complaints to both Ecology and the mill seem to elicit no useful reaction. The complaint phone line system set up by Ecology and the hotline set up by the PTPC mill, don't work as advertised. We deserve a prompt and meaningful response.
 2. First, I appreciate holding the hearings here in Port Townsend. Second, I appreciate everything the mill has done and continues to do for this community. Third, I appreciate the respectful way in which people here are bringing up their concerns at this hearing.
 3. Citizen complaints should be included in Facility-Wide General Requirement # 12 (Good Air Pollution Control Practices). Citizen complaints about the AOP issued to K-Ply in Port Angeles resulted in mill improvements and this result should also occur at the PTPC mill.
 4. Ecology and the mill need to be more forthcoming with information about the mill's emissions and current activities.
 5. Please add my name to the mailing list to receive general information about the renewal of the mill's air operating permit and public comments.
 6. I thank Ecology for coming to listen to the community. There is a broad spectrum of opinions to hear. I hope the participants had a chance to get their questions answered and that they can better see that the mill is operating in full compliance with a comprehensive set of rules and regulations designed to safeguard the community.

Comments above from: *G. Maeve Aeolus, John Begley (PTPC), Cindy Buxton, Mayadelle Craig, Steven Evans, and John Hickman; Kim Hunt, Marion Huxtable, and Kees Kolff (University of Washington); Maria Lesan, Jan Marquardt, and Ann Mullin; Darlene Schanfald, and Jerry Schnell*

- B. Ecology needs to regulate the mill more vigorously.

1. Ecology should lower the amount and the concentration of emissions the mill may legally release (under the AOP). If the mill complies with all AOP conditions, why is mill odor still such a problem? Ecology should assess steep penalties against the mill if an odor period, similar to that associated with installation of the new lagoon diffuser system, arises again.
2. I want Ecology to impose “tighter standards” on the mill’s pollution releases to air and water. The permit should include continuous monitoring of all systems at the mill. I would like to see monitoring all over town not just at the mill. I would like to see mitigation of the night situation, whether it’s that the mill is doing something different or that the air is moving differently. It’s got to be attended to. And I would like people’s concerns to be taken constructively and respectfully because we are all in this together.
3. Why is the mill allowed to monitor its own sometimes illegal emissions? Because effective monitoring of ambient air quality in the town and surrounding area is not currently available, it would be helpful to have a way for the citizens to monitor air quality, especially for high-risk areas such as the hospital, the Grant Elementary School, Glen Cove business area, and other known pockets where odor/emissions are usually present and often extreme.
4. How can the mill be in compliance with total reduced sulfur limits (TRS) while individuals in the community suffer eyes, nose, and throat irritation? Either the total reduced sulfur limits are too high, or TRS testing by PTPC is inadequate to produce accurate results.
5. The mill’s control technology is equal to or better than the top twelve percent in the industry. And Ecology’s pollution prevention program makes us cohesively evaluate our chemical and resource uses each year. We’ve expanded our recycling, increased energy efficiency, and switched to less hazardous chemical use.
6. Clearly we all have concerns about our health, our water and our environment, the people we live with, and where we live. I don’t think any of us would deny that from time to time the smell bothers us. But I don’t think that is what we’re being asked to testify about. Far more relevant is to ask the Department of Ecology whose role it is to monitor compliance, monitor and test are these guys in compliance.

Comments above from: *Sondra Blair-Bond, Cindy Buxton, and Steven Evans; Matt Kite, Kristin Marshall (PTPC), and Lynn Nadeau; Raven (no last name given), Lynda Rohrs, and Dick Schneider*

C. Ecology should require the mill to install better equipment.

1. I’m a project manager at Port Townsend Paper responsible for the instrumentation and control systems that were installed in the aeration system that was recently started. I know from personal experience standing right next to the pond before and after we implemented our project, the odor changed a lot... we are constantly changing and improving the system--personally my own designs are incorporated in that process..

2. The mill has been slow to implement control technology improvements and Ecology has been slow in requiring them. It's not just one thing, it's the accumulation of things. Ecology should require the mill to install monitors off site, or require the mill to pay for an independent monitoring contractor. PTPC should set up monitoring stations all over town and should publish the monitoring results, on a regular schedule, in a public place such as the library.
3. The proposed permit does not clearly describe PTPC's control equipment. Please describe each emission unit and the respective pollution control equipment in the permit. Ecology should make the mill employ air pollution control equipment that "all but eliminates" odors. The new diffuser system made no noticeable difference in odors.
4. Did the mill file a current Environmental Impact Statement? If so, where and how can we read it? If not, Ecology should prepare one before issuing a five-year permit renewal. We also request that all future upgrades have complete Environmental Impact Studies done and that necessary steps will be taken to ensure the quality of emissions and effluence so that all due caution is taken to stay within accepted limits of emissions during retrofitting, upgrades, changeovers, startup, shutdown, and malfunction.
5. Port Townsend Paper is committed to continuous improvement and compliance with regulations. We're trying everything we can, to make things better—like the new aeration pond. Port Townsend Paper's latest environmental compliance spending is the Clean Condensate Alternative. This 3.1 million dollar project involved dredging the treatment pond and installing a diffuser to replace the first two aerators. We are pleased with the improved treatment efficiency and odor reduction. Every day we're working to upgrade the mill, because we have families here too.
6. The mill should not only prevent odors, it should also prevent emission residue. Many of the particulate source tests require the mill to sample one run, rather than averaging results from three runs. Neither the mill nor Ecology explained the cause or chemical make-up of this residue.

Comments above from: *Frances Andrews, John Begley (PTPC), Cindy Buxton, and Citizens for Environmental and Economic Health; Nancy Erica, Matt Kite, Kristin Marshall (PTPC), and David Nichol; Nora Regan, Carolyn W. Salmon, and Jerry Schnell; Scott Tennant, and Diane Thompson*

Responses to Topic III:

- A. We (Department of Ecology staff) were pleased to conduct a question and answer session before we heard and recorded public comments, on May 31. It gave all of us a chance to learn each others' priorities about the proposed renewal of PTPC's Air Operating Permit.

One point we heard: Ecology needs to do a better job of explaining the purpose, structure, and federal policies behind the U.S. Environmental Protection Agency's "Title V" AOP program:

- (1) One purpose is to avoid "transferring" pollution from one medium (such as water) to another (such as air). That's one reason that the Industrial

Section is a "multi-media" regulator. Note: the wastewater treatment results used to demonstrate the mill's compliance with MACT clean air requirements, are the same ones required in the mill's NPDES wastewater discharge permit.

A second purpose is to promote fair and equal treatment: The AOP brings all state and federal air emission control requirements for a mill into one document. The AOP defines a consistent way for the mill to demonstrate compliance.

A third purpose is to allow citizen oversight. Residents have the right to question both the limits of Ecology's role in protecting air quality and the PTPC mill's obligation to its neighbors.

(2) The structure addresses emissions released from defined types of industrial processes and equipment (emission units).

(3) The policy of gathering in one document all the rules and orders imposed on the mill by local, state, and federal authorities, promotes consistency throughout permit cycles. This allows Ecology to compare requirements to resolve any conflicting ones and to supersede outdated ones.

A second point we heard: Although we tried to be respectful of your time, we need to respond to your questions concisely, but fully. Ecology's staff professionals need to better express complete thoughts, rather than using jargon and acronyms as shorthand for legal or technical background.

A third point we heard: We need to outline the limits of our control over the mill, so we show that Ecology neither promotes nor impedes the business. We need to show all that we do to promote environmental protection.

- B. The Title V - AOP includes every requirement already imposed on PTPC by rule, permit, or order. But the Title V program does not allow Ecology to impose new constraints upon the plant's legal emissions. We can adjust release limits to decrease emissions only if either: (1) the mill changes its emission units or (2) the EPA or the state adopts more stringent standards.

We understand apprehensions about self-monitoring, that's why we perform unannounced inspections on-site. Our inspections verify the mill's monitoring data and performance reports. This practice also allows the mill's environmental manager to identify and correct any small glitch before it becomes a large problem.

Mill odor has continued to decrease over time. TRS emissions are less today than they were 10 years ago. PTPC recently completed work to implement the current MACT (maximum available control technology) standards addressing hazardous air emissions. All indications persuade Ecology that the mill is in compliance with the new, more restrictive standards.

It is difficult to know what parameters should be monitored. Funding for ambient toxics monitoring is not readily available. We are currently looking into some options and will pass what we find on to you.

The odor threshold (where people are able to perceive and distinguish the odor of these sulfide gases) is very low. For instance, exposure to hydrogen sulfide at a concentration of four parts per billion (noted 0.004 parts per million), can be detected by 30 % of the population, and 5% are annoyed by that level of exposure.

When total reduced sulfur (TRS) gases are burned, the result is the emission of sulfur dioxide gas. Sufficient exposure to the gas can irritate the upper respiratory system. The EPA designates sulfur dioxide gas an "air quality criteria pollutant" regulated under National Ambient Air Quality Standards (NAAQS), the health-based standards that apply to the entire nation. The six pollutants subject to NAAQS (Particulate Matter or PM, sulfur oxides or SO_x, nitrogen oxides or NO_x, ozone, carbon monoxide, and lead) are thought to be ubiquitous in air. So they must be regulated by national standards rather than by local source control, as the hazardous air pollutants are. The PTPC mill's emissions are regulated, and the mill meets its emissions criteria (releases no more than the maximum allowed by the AOP).

Federal (EPA) and state regulations impose limits on TRS emissions at the source. These limits are set at levels that kraft mills can attain, using the best available control technology. Compliance at the stack with these limitations and with related permit conditions (Facility-Wide General Conditions #9 and #12), show the mill's compliance with Facility-Wide General Requirement #2 as it pertains to TRS emissions.

C. Ecology has yet to see proof of the value of off-site monitoring:

- Land/sea breezes, tumble through the mountains and the Straits, air movement is very unpredictable. Topography also can trap contaminants in low lying areas.
- Technically it is very difficult to gain meaningful results even if chemicals were present in concentrations great enough to be detected.
- Our sense of smell already tells us that reduced sulfur compounds are occasionally present in concentrations measured in fractions of low parts per billion. Field detection equipment cannot consistently detect these low level gasses.
- Even if detected, the kinds of symptoms related to these emissions are also attributable to other exposures and conditions that may have nothing to do with the mill.

Given unpredictable air currents, temperature fluctuations, and wandering micro-climates, adding monitors offers no better chance of capturing and measuring pollutants than do those monitors located on-site. The best course is an on-going approach to source reduction (reducing emissions from the mill) whenever possible.

Ecology takes the long-term perspective on TRS emissions from the kraft mills in our state. The emissions have declined significantly statewide. And PTPC's recent lagoon diffuser modification is an example of an incremental change that improved both wastewater treatment efficiency and odor control.

"Clean industries" by design use the most efficient process equipment and, in the United States, are required to control emissions using the Best Available Control

Technology (BACT). Port Townsend Paper is an old mill. When the federal Clean Air Act and associated regulations took effect, the mill's existing emission units were grandfathered in; they didn't meet BACT standards, but all industries must employ reasonably available control technology (RACT) regardless of the age of the facility. As these grandfathered emissions units are replaced or significantly modified, the units are re-evaluated in a process called New Source Review (NSR). NSR requires the mill to install BACT on each "new" unit. Please refer to Responses to Topic II (beginning on page 9/26, above) concerning odor control technology.

Renewal of a Title V Air Operating Permit does not require the filing of an EIS because no "action" has occurred to change the mill's known impact on the community. Ecology follows the SEPA process as defined in regulation. SEPA primarily applies when the facility is modifying, replacing, or changing the method of operating a unit--when the New Source Review portions of the state or federal rules are triggered. All Title V air operating permits simply assemble various existing applicable requirements into one document.

The mill's compliance with the MACT standards is, by EPA's definition, "implementation" of maximum achievable control technology. PTPC complied with the MACT (phases 1 and 2), and will fulfill requirements of MACT 2, before the end of 2007. The federal statute creating the Title V Air Operating Permit program does not establish or change fixed emission limits.

Topic IV: Roles and Powers in Community Relations

The comments we heard were offered in a respectful manner, recognizing the interdependence between mill staff and non-employees in building Port Townsend's past, present, and future prosperity.

A. Many people want to establish a method and schedule for dialogue:

1. Funding is a responsibility for all of us. But Puget Sound's not getting any healthier; restrictions are going to get tighter. I think we ought to get tighter as a community and work with our mill, the industry here, to come up with some solutions.
2. Help facilitate citizens working with Ecology, with the mill, with the EPA, with whomever—to make this a better, healthier place, and to make the mill economically viable. I would love to see a public/ private partnership with Department of Ecology, the mill, local municipalities, and citizens, interacting in regular meetings (more often than once every 5 years).
 - Regular meetings would keep citizens generally informed about the regulatory process (Ecology), and what's happening at the mill.
 - We could develop ways to generate and record data about the health effects of the mill. We should get away from anecdotes and rely on real statistical data. We could get graduate students from the University of Washington to help design a study of facts about the health impacts.

- Our public/private partnership could explore ways we can work together to help the mill become greener. Having a broader coalition of people working on grants and other opportunities at the same time, might also lead to more economic vitality for the mill. We may identify processes that are not only greener, but also more efficient and more productive for the mill.
3. Does Ecology know of any programs that provide tax incentives, grants, or funding of any kind to assist the mill with research, equipment upgrading, and methods to reduce the impacts (of emissions) on our community? Can you tell how to reduce the mill's operating costs along with its pollution output? In these economically difficult times we need to support the mill as well as PTPC has supported us.
 4. Would Ecology provide funding to train a few local citizens to be smoke opacity readers so that they can be certified and assist in gathering data? Can you provide funding for training and equipment so citizens can perform bucket monitoring? Calling in when the air is stinky seems silly. To get an idea what's going on, maybe the mill can help sponsor air monitoring stations around town,
 5. To facilitate access by the citizens of Port Townsend and Jefferson County, we want Ecology to set up an information repository in our local library, and update it monthly with all the data that comes from the mill.
 6. I realize some financial situations need to be addressed. Personally I'd like to see an end to the concept of "jobs versus health". I know the Department of Ecology professionals are doing a great job. But since when do we determine what we do merely by what is legal? So what we want to do is encourage people to join us, working with the mill and Ecology, to find solutions.

Comments above from: *Peter Bahls, Elaine Bailey, and Steve Bailey; Matt Kite, Anne Murphy, and Carolyn W. Salmon; from Darlene Schanfald (Olympic Environmental Council), Citizens for Environmental and Economic Health, and Mark Welch*

- B. Some people wanted to receive "notice" from the PTPC before the operators began work on the new lagoon diffuser. They also wanted to see the mill operators, and Ecology, responding to complaints about odors:
 1. Over the past two years I contacted people at PTPC and people in the Department of Ecology. Chuck Madison suggested I send e-mail messages when odors were bad. I did that for about six weeks, but no one acknowledged them so I stopped doing that. I'm concerned about the lack of response from both the mill and Ecology when I called to register a complaint. I also want improved, timely communications between the mill and the local citizenry.
 2. The mill should take odor complaint calls more seriously. Both Ecology and the mill need to be more forthcoming with information about mill emissions and current activities. Changes in the mill's environmental footprint deserve better public communication.

3. Can Ecology post written answers to the questions we're asking tonight, on a web site? Where does Ecology keep information pertaining to the site? Are actual chemical releases monitored and recorded or are estimates used? If estimates are used what are they based upon? Moreover, what emissions are included in these estimates, and how are these estimates known to be accurate?
4. It would be helpful to have a way for the citizens to monitor air quality, especially for high-risk areas (the hospital, Grant Elementary School, Glen Cove business area, and other known pockets) where odor emissions are usually present and often extreme.
5. I worry about the \$150 million debt that they currently carry and whether the mill can actually-fiscally-put the money where we would all like it to go. But do I, as a businessman, have the right through this permit, to make my neighbors uncomfortable just because I can provide employment and make money? I would like to see the mill invest in buildings, like the hospital and the schools that lack adequate ventilation. What can the mill do to throw a little money in their direction so they can revamp? Can the building service staff put in high-speed fans to move the air in and out of a building very quickly, so the buildings don't lose so much heat? As children and adults arrive at school (or the hospital) on a day after "a mill night" can the people inside get fresh air instead of the same smell?
6. I've been in the community a long time. I spent 17 years on the hospital commission, attending two or three meetings a month. In all those years I never heard emergency staff say, "Uh-oh, mill emissions are up and we're seeing a rash of this, this, and this."

Comments above from: *Peter Bahls, John Begley, Cindy Buxton, and Citizens for Environmental and Economic Health; from Tim Lambert, Lynn Nadeau, and Jerry Schnell; and from Joseph Wheeler*

- C. A Citizen's Advisory Board could improve communications between the mill and the local community; and that may help build support and trust for both.
1. This isn't about "You're with us or you're against us." This isn't about appreciating what a good citizen the mill is, or not. We all breathe the same air. If somebody goes away, the people here are still breathing the same stuff. One who falls ill sooner is like the canary in the coal mine. Last winter was pretty bad. I mean for 40 nights and days straight it really stunk. I had to close the windows at night because of my kids who are 4 and 8. We're not right next to the mill, but we wonder about the health affects of the compounds released. So I guess if the community could get a little bit better information on that through this Citizens Advisory group and through working with the mill, that would be a great thing.
 2. You need more than one source from which to get your information about how the mill is operating and what should be in the permit. You can sit down at the table and talk about the specifics of the problems, and how the permit can better serve the whole community. We could place these problems before the new Economic Development Council, to spearhead this project to see what we can do in the next permit cycle.

3. We want the mill, and others, to decrease the impact of toxic emissions. We want to maintain economic diversity in Port Townsend. We want both Port Townsend and Jefferson County to be a healthy environment. And we believe we can all work together to attain this goal.
4. We would like to work as a community to “green” the mill—together as a team, Ecology included. If we sit down long enough and are willing to talk and appreciate each other’s viewpoint, we can solve any problem.
5. Does the Dept. of Ecology offer Public Participation Grants? Is Ecology aware of other grants available to help CFEEH be part of a solution that enables the mill to become a good neighbor, a cleaner facility, and an example to other facilities in the state of Washington? I’ve noticed a tremendous change in air quality since I moved here, eleven years ago. I sympathize with anyone with illness, but we need to look at all the sources—second-hand tobacco smoke, and smoke from wood-fired stoves, and air pollution associated with a ten-fold increase in traffic. We need to address a lot of sources, not just the mill.
6. Through the years I’ve seen the mill respond with integrity when sharing concerns about the health of our waters and about our environment in Port Townsend. I want to see the mill survive and I want to see the community heard. I think the Citizen Advisory group is a great idea. I know it would take some funding, but I also know about the mill’s generous contributions to this community. Maybe some of that money could be turned toward establishing this committee.

Comments above from: *Peter Bahls, Elaine Bailey, and Tim Caldwell; Citizens for Environmental and Economic Health, Gordon James, and Anne Murphy (PTMSC); Lynn Nadeau, Carolyn W. Salmon, and Darlene Schanfald (Olympic Environmental Council); and from Diane Thompson*

Responses to Topic IV:

- A. Ecology encourages the mill’s operators to be more transparent about the purpose, schedule, and likely impacts of planned physical plant or process changes. The lack of public awareness about installation of PTPC’s new diffuser system created needless stress—thus we advise the mill to notify/update the community about both anticipated and on-going activities. We urge the mill’s operators to establish a forum for communicating with residents (especially those who are not mill employees), Title V confers no authority on us to mandate it.

We will mail a copy of the Response to Comments to everyone who submitted comment. We will also post a copy on the Industrial Section web site which is: <http://www.ecy.wa.gov/programs/swfa/industrial/>

Ecology does conduct a Public Participation Grants (PPG) competition each biennium. The grant monies are available to nonprofit groups/ organizations to fund certain waste management awareness projects. The grant applications for 2007 were evaluated, scored, and ranked in September 2006. Visit Ecology websites for information about how to design conduct, and measure a PPG project.

For the 2005-07 Public Participation Grant Guidelines -
<http://www.ecy.wa.gov/biblio/0407013.html>;

For the 2005-07 Public Participation Grant Application Form -
<http://www.ecy.wa.gov/biblio/ecy070146.html>;

For the PPG website - <http://www.ecy.wa.gov/programs/swfa/grants/ppg.html>.

Contact Kathy Seel to discuss eligibility criteria for applicant-groups, and Ecology's waste management priorities for next year's PPG competition. Kathy's phone number in Lacey is 360/407-6061 and her e-mail address is ksee461@ecy.wa.gov.

Sampling and monitoring activities/equipment don't qualify for Public Participation Grants funding. Consider negotiating with your local Health Department. We have no experience with bucket monitoring, therefore we cannot offer training about it. Talk to your local Fire Department about smoke reader training—ask where to get it and how much it costs. Ecology must use EPA-approved methods for sample collection and analysis, and bucket monitoring is not EPA-approved.

(We did examine information about bucket monitoring on the internet and found it interesting. The sampling equipment is simple and inexpensive although the analytical expense is still relatively high. Some sites claim EPA found that the results compare well with samples collected using approved methods. Contact the EPA Region X office of Air Quality, in Seattle, to confirm or debunk the internet posting.)

Ecology's other grants or loans programs are only available to government entities, primarily for the purpose of hazardous waste site cleanup.

Some power companies offer incentives to commercial customers that pursue energy-saving changes. A better tactic might be for mill managers to contact Lynn Coleman at Ecology headquarters [phone 360/407-6738] to request services from a TREE team.

- A TREE (technical resource for engineering efficiency) team would come to the mill to conduct a production process/pollution prevention audit.
- Using TREE team results and recommendations, the mill could design an action plan (including priorities and performance timelines).
- Maybe the TREE plan could qualify for a pollution prevention grant from the EPA, or for funding coordinated through our state department of Community, Trade, and Economic Development.
- If the TREE team results/plan would improve the quality of the mill's wastewater discharge, consider talking with the Grants and Contracts officer at the Puget Sound Action Team.

B. We regret the difficulties with the complaint "hotline" and hope to solve them. Your input is essential to alerting the mill when problems arise, and to alerting us. We'll track your reports for any patterns that we need to address in the permit, to ensure PTPC corrects them at the mill.

Facility-Wide General Requirement Condition #9 requires the mill to assess the validity of complaints, to take corrective action, and to keep records of complaints received. Failure by the mill to fulfill this requirement of the permit could provoke enforcement action.

Ecology can compare citizen complaints it receives and conveys to the mill, against the mill's own records, to assess compliance with Condition #9. We would like to answer your questions or discuss your concerns about the mill. Ecology's representative to the PTPC mill is Robert Carruthers, who can be reached in Lacey at 360/407-6954.

Complaints that provide the most useful input to the mill accurately identify the time (hour and duration), date, and location of odor or smoke releases. The mill budgets resources and assigns certain persons to respond to complaints. Though the problem might not be solved immediately, making the mill aware of an unusual event has value for long-term future progress.

Emission inventories rely on both monitored and estimated emissions. Estimated emissions are generally based on emission factors which are historically derived from correlating mill emissions with some parameter such as mass or volume of fuel consumed or ton of pulp produced. Mill's use emission factors commonly accepted by industry and EPA. For example, emissions often found in the Toxic Release Inventory are based on emission factors. Estimated emissions are often on the high rather than low side because the liability lies in underestimating emissions rather than over estimating emissions

The amount of material submitted (by facilities the Industrial Section regulates) is extensive. Most of this material is not germane to the issues raised by the comments we received about PTPC. So, Ecology will not post the mill's monthly submittals in the local library.

All records pertaining to our regulation of PTPC's operations, including mill monitoring information, are kept on file at Ecology's Industrial Section located in Lacey, Washington. The material is publicly available thanks to the Freedom of Information Act.

- To request a copy of any small document (25 pages or fewer), call the Industrial Section's Public Information Officer (Kathy Vermillion at 360/407-6916). If your request is simple she will copy the material and mail it to you.
- More extensive requests involve a fee to cover administrative costs.
- You are welcome to review any documents on hand, at no cost, at the Industrial Section in Ecology's headquarters building. To arrange for access to the materials schedule an appointment through the staff at the phone number above.

- C. Mill staff asked us about methods of promoting dialogue, and ways to structure a functional Advisory Group. Ecology can offer suggestions and planning material, but we can't allow our staff to facilitate the group, nor recommend a contractor for that role.

The mill would have to estimate the costs and weigh them against potential benefits before deciding whether to take funds from another project budget to establish an Advisory Group.

In the mean time, PTPC may use other tools to gather community input and disburse timely information.

-- Specific Emission Release Events--

Commenter: **Nancy Dorgan**_____

At about six o'clock this evening [May 31] I looked out my living room window and saw a big plume of very dark smoke coming out of one of the stacks. Earlier tonight Harriet said she'd be more concerned -not about the gasses we came to talk about, but about smoke. The permit does not appear to regulate smoke. I need to know more about what you consider to be "smoke" and how it differs from "gasses" the mill's permit addresses.

Apparently the mill burns used oil. After changing the oil in your car, the dirty stuff is collected and sold to the mill by a vendor. The mill buys the used oil in bulk to burn to produce power that has nothing to do with papermaking. The permit addresses this type of fuel only as it pertains to a standard for allowable level of cadmium, chromium, lead, arsenic, halogens, polychlorinated bi-phenols, ash and sulfur.

Response: Kraft mills burn many forms of fuel to generate steam and electricity for the wood digestion and paper-making processes. The type of fuel burned varies, largely depending on availability and cost.

The EPA recognizes this fact so it set emission standards for various pollutants. The metals you cited are examples of parameter limitations associated with oil burning. EPA published those parameter limitations as "applicable requirements." The Title V AOP program doesn't create or change applicable requirements. The proposed permit merely compiles already existing applicable requirements. Opacity is the means used to regulate smoke. Opacity is measured by determining the amount of light transmitted through the stack emission. What you see as white "smoke" is steam condensation and that is not regulated. When the plum is dark it usually means that there is a regulated emission present. It is important to have the sun behind you when observing a plum. Often when the sun is more behind the plum even a steam plum will look dark.

Commenter: **Cynthia Knudsen**-----

On the morning of April 15, 2006, I saw a "huge plume of smoke, not coming from the tall chimneys." It had an acrid, unpleasant odor. What was being burned that night, and why?

Response: Ecology's investigation suggests you are referring to an upset condition that occurred on May 15, 2006 at the recovery furnace, as mill workers repaired the electrostatic

precipitator. Although they began this repair work on May 14, the opacity you observed probably occurred on May 15, 2006 while the precipitator was down to two of its three cells.

Records show an opacity excursion occurred on May 16, at Power Boiler #10. Darker plumes can be caused by incomplete combustion due to an imbalance of oxygen to fuel. Indeed the smoke was attributed to faulty software used to control oxygen distribution to the boiler. The mill called in the manufacturer of software, who corrected the glitch.

See the sections in the permit and in the Support Document to read about startup and shutdown procedures. EPA's MACT standards include "forgiveness" of occasional venting or excess emissions. EPA's regulation 40 CFR 63.443(e) defines excess emissions:

"Periods of excess emissions reported under Sec. 63.455 shall not be a violation of Sec. 63.443 (c) and (d) provided that the time of excess emissions (excluding periods of startup, shutdown, or malfunction) divided by the total process operating time in a semi-annual reporting period does not exceed the following levels:

- (1) One percent for control devices used to reduce the total HAP emissions from the LVHC system; and
- (2) Four percent for control devices used to reduce the total HAP emissions from the HVLC system; and
- (3) Four percent for control devices used to reduce the total HAP emissions from both the LVHC and HVLC systems."

Ecology is investigating why the repair work was not performed during the recovery furnace shutdown on March 21, 2006.

Commenter: **Nora Regan**-----

I object not only to mill odor, but also to mill emission residue. I want to hear answers from the mill or Ecology as to the chemical make-up of this residue.

Response: Both Ecology and PTPC investigated a residue fallout episode brought to our attention by local residents. The deposition was found to consist of sodium sulfate and potassium chloride which make up "salt cake" collected in the recovery furnace electrostatic precipitator. The salt cake is normally returned to the kraft mill chemical recovery process.

The fallout was attributed to startup problems after a planned annual safety test of the mill's emergency shutdown procedure.

Both Ecology staff and mill representatives met with nearby residents. Ecology staff tried to talk directly with persons inquiring about the incident. We apologize for missing you. Ecology staff considered placing a notice in the *Port Townsend Leader*. In retrospect this might have been a better method of getting the information to everyone. What would have worked better for you?

Commenter: **Sheila Smith**-----

I noticed the correlation between the dredging work in the lagoon last fall, and the more noticeable odor events. Similarly, the odor events diminished greatly in strength and frequency once the new diffuser system was brought on-line.

Response: Citizen input is valuable to the mill and effective over the long-term. Information is most useful if called in during an event, or as soon after as possible. Please contact the mill with such information first, then contact Ecology. Bit by bit these collective pieces of information help direct attention toward the source of the problem. This process takes time so we can't promise an immediate and dramatic effect. But nothing can change unless the mill is aware of a problem. Don't always expect to talk to a live person when phoning either the mill or Ecology, but still leave what information you have. It is in the mill's own best economic interest to minimize the time spent investigating complaints.

--Permit-Specific Comments--

Commenter: **Rita Cirilis**-----

1. Who will conduct and report results of the monthly modified Method 5 source tests for PM?
2. Will the monthly source testing data be available for the public's review?
3. If scrubber flow rate is to be used as the surrogate for PM monitoring, would you consider a specification for the scrubber solution recirculation rate?
4. If opacity is to serve as a compliance indicator between source tests, please explain the correlation between opacity and grain loading.
5. Is the wastewater treatment process at this facility exempt from testing, monitoring, reporting, and recordkeeping because it is considered an insignificant emission unit?

Response: Port Townsend Paper conducts source testing and reports the data for its existing emission units, as designed into Title V AOP procedures.

All records pertaining to our regulation of PTPC's operations, including mill monitoring information, are kept on file at Ecology's Industrial Section located in Lacey, Washington. The material is publicly available thanks to the Freedom of Information Act.

- To request a copy of any small document (25 pages or fewer), phone the Industrial Section's Public Information Officer (Kathy Vermillion, at 360/407-6916). If your request is simple she will copy the material and mail it to you.
- More extensive requests involve a fee to cover administrative costs.

You are welcome to review any documents on hand, at no cost. Visit the Industrial Section, located in Ecology's headquarters building. To arrange for access to the materials, schedule an appointment through the staff at the phone number above.

Only the lime kiln scrubber re-circulates scrubber medium. The MACT compliance test was performed after the scrubber re-circulation rate had achieved "steady state." Any re-entrainment from scrubber medium re-circulation was reflected in the MACT compliance tests.

Opacity can be affected by particulate, but opacity is not a perfect indicator of particulate; there is no direct, consistent correlation. While the relation between opacity and particulate varies among emission units, an increase in particulate emissions will manifest in an increase in opacity. Opacity is just an indicator, but it is the characteristic most readily noticed by mill employees and by the public. Where emission units have control technology or operating parameters that offer better surrogate options-such as wet scrubbers-we employ surrogates other than opacity.

Because the wastewater treatment process is used as part of MACT compliance under both the "hard piping" requirements of 40 CFR 63.446 and the "clean condensate" alternative requirements of 40 CFR 63.443, the mill's water treatment process is subject to testing, monitoring, reporting, and recordkeeping requirements in section F.4 and in section G of the mill's Air Operating Permit. That same wastewater treatment system is also subject to the monitoring, reporting, and recordkeeping requirements of Port Townsend Paper's NPDES wastewater discharge permit.

No further work is anticipated in the first lagoon cell. Any subsequent dredging will occur in lagoon cells located downstream from the new aerators, so the aerators can remain on-line if any future work is necessary.

Commenter: **Citizens for Environmental and Economic Health**-----
www.cfeeh.org email – cfeeh@yahoo.com

Section I – Collaborative Goals

The following questions and comments are posed with collaborative goals in mind. We believe that they relate directly and indirectly to the proposed Air Operating Permit for the Port Townsend Paper Corporation. We appreciate the Dept. of Ecology's listening to our concerns and are thankful for Ecology's willingness, where regulations allow, to make pertinent revisions or additions.

1. Please identify for us the specific emissions that are handled by each area of the mill's emission units, the holding ponds, and any other equipment that produces emissions.

Response 1: The Title V Permit itself identifies the primary emissions from the respective emission units. This is one of the intended purposes of the Title V permit program.

2. What monitoring equipment and pollution controls are in place regarding Dioxins? If there are not any, we would request that this be included in monitoring and upgrades required.

Response 2: Dioxin is primarily associated with wastewater discharges from operations where bleaching occurs. While dioxin may be a parameter of concern at kraft mills that once

bleached with elemental chlorine, PTPC has never been a bleaching mill. Dioxin in the effluent would not be expected.

3. Under the Federal "Clean Air Initiative" is the mill allowed to trade regulated amounts of toxins with other facilities in Washington State or elsewhere? If so what is allowed?

Response 3: No.

4. Are any regulations being changed that will affect monitoring or changes in the accepted levels, plus or minus, of toxic pollutants from Pulp and Paper Mills, such as the change in regulation of Hydrochloric Acid?

Response 4: Port Townsend Paper must comply with the Boiler MACT in September, 2007. This rule does address HCl emissions.

5. If the mill increases production could the increases negate the positive effects of the new aeration ponds or tax existing emission units? Are increases in production considered within the regulations of the Air Quality Permit? Are net emission increases part of the proposed Permit?

Response 5: Mill production increases are only physically possible up to the most limiting "bottleneck" within any kraft mill. Emission limitations set forth in approval orders are usually based on the maximum operating potential of the affected emission unit. Maximum production is already accounted for in the approval order limitations. Some emission units, such as the package boiler, have an annual fuel use limitation.

Production increases are not generally considered within air operating permits. They would be included in an air operating permit if established elsewhere as an applicable requirement. Net emissions increases are not part of the proposed permit.

Section II - *Regarding specific areas in the Permit: Questions and Requests*

1. Are there units that are not regulated because the equipment is pre-1976 or pre-regulation?

Response 1: No. All units are required to at least employ reasonably available control technology (RACT), no matter how old they are.

2. Regarding insignificant emission units--How does Item #2, page 27 apply? And how, if these units are not monitored, would Ecology or the citizens of Port Townsend know if they were malfunctioning or causing undue emissions detrimental to health, safety, or welfare?

Response 2: These units are designated as insignificant emission units in part because their emissions are below concentrations and flow that can be monitored. They are still covered under the facility wide limitations in the permit.

3. Why are the requirements in the proposed Air Permit for monitoring particulates reduced to one test of at least one hour in lieu of three 1-hour tests?

Response 3: One 1-hour run is actually a liability to the mill in that often it can take the averaging of three runs to get below the limit. However, PTPC is confident enough in its performance to take the risk of just one run to save the time and effort of performing three runs. The mill has the option of performing the three runs and averaging the results.

4. Page 27 #2 Detrimental Emissions - This should be enforced at all times.

Response 4: This requirement is in effect at all times. It is often the most difficult to demonstrate or prove when taking an enforcement action. One aspect of what constitutes detrimental emissions is the time duration. WAC 173-400-040 addresses general standards for maximum emissions. This same regulatory basis then addresses general interests such as fallout, visible emissions, detrimental emissions, odor, etc. No specific amounts, concentrations, set points, or time durations are noted for any of these. It is left as a subjective determination. An argument can be made that one would not want to tightly define set points because doing so establishes a point beyond which such activity is explicitly allowed. These situations are best addressed on a case-by-case basis.

Ecology attempts to take a balanced approach to minimizing all emissions to the extent reasonably possible. A long-term approach to emission minimization does not meet everyone's expectations but does serve the same ultimate objective.

All emission units are required to use reasonably available control technology (RACT).

5. Page 27 # 7 Odors - What is considered a "reasonable minimum"? A clearer definition of this is needed. This should be enforced at all times.

Response 5: Please see the response to the previous comment. This same approach applies to odor events. Not everyone responds to the same odor in the same way. Too much odor for too much time is a problem and it is reasonable to expect corrective action. However, zero odors at all times is not reasonable or frankly even achievable. The installation of the new diffuser system is considered by Ecology and EPA to be maximum achievable control technology (MACT) concerning the treatment of hazardous air pollutants from the condensate streams collected within the mill. While odors have been minimized, they still occur and will still occur in the future.

6. Page 28 #12 Good Air Pollution Control Practice -This should include responding to complaints from public citizens.

Response 6: Condition #12 is an existing regulation that is cut and pasted into the permit. Ecology chose to address citizen complaints in condition # 9.

7. Page 30 # 20 Unavoidable Excess Emissions - Please see references below to EPA amendment to SIPs and comments below.

Response 7: Ecology will be opening chapter 173-400 WAC in the fall and excess emissions (107) is on the table to make the state rule consistent with EPA requirements. When the state

rule has been changed Ecology will make the appropriate changes in Air Operating Permits.

8. In the SSM requirements outlined on Page 26/27 #2, "as soon as possible" needs to be defined with more clarity and specification. The cumulative health impact on the community and outlying areas should be considered.

Response 8: This condition has been removed entirely from the permit as the condition has been removed entirely from the federal register and no longer exists as an applicable requirement.

9. The Port Townsend Paper Corp. made a statement that they did not realize the processes required to shut down and dredge the ponds, to change over to the new system under MACT rules, would have the impact it had on the air quality for Port Townsend and the surrounding area. They indicated that this was a brief occurrence. However, due to the duration of months of intense odor above and beyond the usual constant odor, people became sick from the emissions and actually moved away, or decided not to reside in Port Townsend.

Response 9: We received no evidence to support either claim.

10. Before implementing these changes did the Mill determine the potential environmental impact of the proposed project? Did this project come under the SEPA process? If so, was an Environmental Impact Statement prepared so that it addressed the potential of the long term (Aug 2005 through mid March 2006) impact this would have on the ambient air for the surrounding area? Under these conditions doesn't the public have the right to know they are being exposed to excessive emissions?

Response 10: Installation of the new diffuser system would have benefited from better community communication. The work needed to be done. The problems that appear to have resulted from the installation are only apparent in retrospect. No, SEPA was not done; because the installation of the new diffuser system was a repair/remodel/maintenance activity categorically exempt from SEPA review. Even if we had done a SEPA review, it would likely have resulted in a determination of nonsignificance (DNS) at the time.

Everyone has a right to know what they are exposed to. Please refer to the exposure table attached to the Response to Comments concerning reduced sulfur compounds.

11. Because these emissions affected so many in the area we want to know how this was monitored and the results of that monitoring during the implementation of the recent MACT upgrade.

Response 11: We assume the comment refers to the general lagoon dredging and diffuser installation. No monitoring to determine impacts on the community occurred, nor was it required during the work changing the diffusers in the lagoon. The lagoon diffuser installation was in response to the Clean Condensate Alternative (CCA) to the MACT requirements concerning high volume low concentration HAP emissions. Note

that implementation of MACT and associated monitoring actually began in 2001. Overall reduction of mill HAP emissions has been ongoing for years. Refer back to a more detailed history of MACT implementation.

12. Because there are 15 holding ponds on the older aeration systems, when/if these ponds are upgraded, dredged and changed to a new system, will there be the same continued intensity of emissions? Is there another way to facilitate this kind of upgrade without such a detrimental impact? We request clarification and inclusion of protections regarding these events and that they are included in the Air Operating Permit.

Response 12: There is only one lagoon, which is divided into four cells. Effluent introduced into the first cell is the most actively aerated and maintained in an aerobic state. The second cell is aerated but transitions to a facultative state. The third and fourth cells in the lagoon facilitate final solids settling.

The new diffuser system is installed in the first cell. Since future dredging would occur in subsequent cells, the new diffuser system would not be affected and would not need to be taken off-line. There is no reason to expect a repeat of odors such as occurred in the fall through winter of 2005 to 2006. If future upgrades are necessary Ecology will require the mill to take appropriate steps to minimize emissions from the project.

See EPA memorandum State Implementation Plans (SIPs) Regions I-X:

Page 1, paragraph 2: "EPA views all excess emissions as violations of the applicable emission limitation".

Page 2, paragraph 1: "The main question of interpretation that has arisen regarding the old policy is whether a State may go beyond this "enforcement discretion" approach and include in its SIP a provision that would, in the context of an enforcement action for excess emissions, excuse a source from penalties if the source can demonstrate that it meets certain objective criteria (an "affirmative defense"). This policy clarifies that States have the discretion to provide such a defense to actions for penalties brought for excess emissions that arise during certain malfunction, startup, and shutdown episodes.

Page 2, paragraph 3: "Furthermore, this approach is appropriate only when the respective contributions of individual sources to pollutant concentrations in ambient air are such that no single source or small group of sources has the potential to cause an exceedance of the NAAQS or PSD increments. Where a single source or small group of sources has the potential to cause an exceedance of the NAAQS or PSD increments, EPA believes an affirmative defense approach will not be adequate to protect public health and the environment, and the only appropriate means of dealing with excess emissions during malfunction, startup, and shutdown episodes is through an enforcement discretion approach".

Page 3, paragraph 1: "The EPA is also taking this opportunity to clarify that it does not intend to approve SIP revisions that would enable a State director's decision to bar EPA's or citizens' ability to enforce applicable requirements...."

Page 3, paragraph 2: "Finally, EPA is clarifying how excess emissions that occur during periods of startup and shutdown should be addressed. In general, because excess emissions that occur during these periods are reasonably foreseeable, they should not be excused."

13. Because the Mill is an older facility we believe that extra guarantees need to be included to protect Port Townsend during startup, shutdown and malfunctions.

Response 13: Ecology will examine startup, shutdown, and malfunction requirements to determine if ways exist to make them more effective for the Port Townsend mill. The revision of WAC 173-400-107 (Excess emissions) in the fall of 2006 will probably affect the startup shutdown and malfunction provisions in the future. The fact that startup, shutdown and malfunction are acknowledged in federal regulation means that unintended events occur during these times.

14. What other upgrades will occur under the MACT rules, and when? When and how will the public be informed that these upgrades will be implemented? Advanced warning would give those who have asthma or other ailments that are aggravated by excess odor or emissions an opportunity to leave the area for the time being if that is a possibility for them and or prepare to have air cleaning systems for their homes and medications available. We request that a clause be contained in the Air Operating Permit to require notification to the public when disruptive upgrades will be implemented.

Response 14: The mill must comply with the federal Boiler MACT by September 2007. This MACT will affect combustion sources, primarily the wood fired boiler. There are no new state or federal requirements on the horizon.

15. What is Ecology's authority regarding the determination of fines for exceeding permitted limits? If fines are used to create a preventive structure, does DOE think it has been successful and if not what alternatives are there to insure a practice where the instances of excessive emissions are reduced?

Response 15: Ecology can levy penalties of up to \$10,000 per day for each violation (as set forth in RCW 70.94.431). We consider several criteria in setting the level of a penalty. Some of the criteria include:

- How responsive the source was in resolving the violation?
- Does the source have a history of violations?
- Did the violation result in a risk to human health, safety, welfare; or to the environment, public property, a business; or to an owner's enjoyment of personal property?

Ecology has imposed penalties, but judiciously. Working with the kraft mills in our state, rather than fighting with the mill industry, resulted in much better progress toward overall emission reductions. An eagerness to penalize is found to stifle communication, and create an atmosphere of mistrust and mutual suspicion that is of

little value to anyone. Ecology does take enforcement actions when other avenues have failed to get acceptable results.

16. Do times of emission exceedance records show recurring patterns for particular units? If so how can we work with DOE, the Mill and outside sources to implement ways to solve recurrent problems? If there are units that consistently malfunction can Ecology include in the permit requirements for upgrades within a specified timeline?

Response 16: Ecology reviews regularly submitted monitoring reports and looks for inappropriate trends. A trend by itself is not an exceedance of an applicable standard but when an emission trend approaches the limit Ecology initiates discussions with the facility to locate cause and take corrective action. Title V does not allow the creation of new applicable requirements, but if necessary Ecology would issue an administrative order requiring the mill to take necessary actions within a prescribed timeline.

17. Why on page 41 and 42 are many regulations superseded and repealed by Order DE OOAQIS-131, dated March 16, 2000? Where can we find the information on this?

Response 17: When Ecology began writing the first Title V permits, we realized some of the content of existing approval orders had become obsolete, incomplete, or redundant. We needed to consolidate and update the outstanding Approval Orders in preparation for inclusion in a Title V permit. The wording of the orders varied widely as the thinking evolved concerning content or approach. In many cases verbatim recitations of existing regulations were restated in the Approval Orders.

The advent of Title V resulted in rethinking Approval Order content. For example, an existing regulation may be applicable regardless of whether it is incorporated into a Title V permit. However, if a regulation recited verbatim in an Approval Order is later revised in the regulation, the permit now establishes two applicable requirements-- which was not our original intent.

Order DE OOAQIS-131 was the first consolidation/update effort. It did not go far enough and a second consolidation/update effort was undertaken coincidental to this permit renewal process. The information you request is available for review by contacting the Industrial Section's Public Disclosure Officer, Kathy Vermillion at 360/407-6916 in Lacey.

18. If Port Townsend Paper Corp is the top producer of polluting emissions and effluence for Jefferson County, are the regulations contained in the Air Operating Permit comprehensive enough and inclusive enough to fit within Governor Gregoire's agenda to clean up The Puget Sound and the Straights?

Response 18: The permits issued to PTPC are consistent with Governor Gregoire's objectives. Actually, the new diffuser system should improve effluent treatment and lower air emissions.

Commenter: **Matt Kite**-----

1. Facility-Wide General Requirement #2 says the mill shall not cause or permit emissions of any contaminant if it is detrimental to health, safety, or welfare, or causes damage to property or business. Ecology's interpretation appears to conflict with the regulation, allowing mill emissions which negatively affect members of our local community.

Response 1: Some people are sensitive to reduced sulfur compounds at concentrations measured in the parts per billion (ppb). State and federal limitations are expressed in the parts per million (ppm). The mill complies with allowable reduced sulfur limits, but concentrations much lower than permissible may still affect some members of the local community.

Ecology has modified a general fact sheet concerning TRS to include more epidemiological information concerning exposure to reduced sulfur compounds at various concentrations.

2. Facility-Wide General Requirement #7 requires any person causing odor which may unreasonably interfere with use and enjoyment of property, to use recognized good practice and procedures to reduce odors to a reasonable minimum. During the recent fall-to-spring months, the installation of the lagoon diffuser appears to have resulted in elevated community odors.

Response 2: The difference between our interpretations seems to turn on the question of what is reasonable and practical within a given timeframe. Our on-going objective is to continue to reduce emissions long-term whenever possible. Unfortunately during the window of time encompassing the new lagoon diffuser system installation, conditions intensified odors. But the new diffuser system seems to have finally reduced odors to a lower general level than before.

Port Townsend Paper Corporation uses recognized good practices and procedures to reduce odors to a reasonable minimum. PTPC implemented EPA's MACT requirements, addressing hazardous air pollutants, on schedule. This means PTPC is currently using maximum achievable control technology. We are aware of odor complaints related to the new diffuser installation, but odors were generally reduced as a final result. The long-term objective of reducing odors to a "reasonable minimum" will be achieved in increments.

3. Facility-Wide General Requirement #12 requires the mill to follow good air pollution control practices. Citizen complaints and citizen input should factor in to any determining of compliance.

Response 3: The Title V permit builds in the requested response to Facility-Wide General Requirement #12. Note that Facility-Wide General Requirement #9 requires the mill to investigate, evaluate, and keep records of complaints. This set up provides a communication channel between the local community and the mill.

4. The definition of “unavoidable emissions” in Permit Condition #20 is open-ended. It needs to be more stringent and err on the side of public safety.

Response 4. Each permit condition cites a basis of authority (in brackets). In this case you must read the rule, WAC 173-400-107, in its entirety to understand how excess emissions are evaluated.

Ecology will open Chapter 173-400 WAC in the fall; we will make the state rule on excess emissions (section 107) consistent with EPA requirements. Title V incorporates existing applicable requirements into air operating permits but does not provide a mechanism for changing the underlying requirement. It will probably take at least a year to complete the revision.

5. Permit Condition #37 (Need to Halt or Reduce Activity Not a Defense) should be enforced at all times –with reference to the lagoon diffuser installation, for example.

Response 5 Ecology knows the lagoon diffuser installation temporarily caused undesirable local odors. However, opinions differ concerning what permit condition was not met during that timeframe. Ecology considers PTPC to have used “best available technology” when it selected a centrifuge to expedite dewatering of material dredged from the lagoon. Installation of the new diffuser has both reduced the emission of air toxins and process odor, and improved general mill effluent (wastewater) treatment before discharge.

The mill installed the new lagoon aeration diffuser system to comply with EPA’s requirement that the mill employ maximum achievable control technology or MACT. Its purpose is to minimize hazardous air pollutants (HAPs). EPA’s efforts to minimize HAPs do not focus first on TRS or odor compounds. But one of the intended consequences, though not the primary reason for installing the new lagoon aeration system, was the ancillary minimization of odor.

The effort to minimize HAPs actually began several years ago.

- Kraft mills were first required to improve collection of emissions built up during chip digestion and cooking-chemical recovery. This phase of MACT implementation had a compliance deadline of April 16, 2001.
- The next phase of MACT required improved collection of mirrored emissions, also built up during chip digestion and cooking chemical recovery. This phase of MACT implementation had a compliance deadline of April 17, 2006.
- The third phase of MACT will require compliance with national emission limits and work practice standards for hazardous air pollutants emitted from industrial boilers. This will apply to the power boiler at PTPC. The mill must comply with new standards by September 13, 2007: PM limit of .07 lb/MMBtu, Hydrogen Chloride limit of .09 lb/MMBtu of heat input, Mercury limit of 0.000009 lb/MMBtu of heat input.

Commenter: **OLYMPIC REGION CLEAN AIR AGENCY (ORCAA)** -----

1. Emission Inventory. Condition # 31 in the permit does not accurately reflect the requirements under WAC 173-400-105 and should be amended by adding WAC 173-400-105 to the basis statement and replacing the second sentence with the following:
The permittee shall maintain records on the type and quantify of emissions from the source and other information deemed necessary by ecology to determine whether PTPC is in compliance with applicable emission limitations and control measures.

Response 1: The permit cites WAC 173-400-105 as the basis of authority. The basis of authority for each permit condition is included in brackets following the respective requirement. Ecology considered the suggested wording but chose to retain the existing wording. Note that the underlying regulation states, "The owner or operator of a source shall upon notification by the director of ecology, maintain records on the type and quantity of emissions..." We consider the wording currently in the proposed permit to be such notification by Ecology's director to keep those records.

2. A HAP emissions inventory is required under WAC 173-400- 105. PTPC is required under Permit Condition #31 to submit an inventory of emissions as specified in WAC 173-405-078. But WAC 173-405-078 simply points back to WAC 173-400-105(1), which requires the owner or operator of any air contaminant source to submit an inventory of emissions from the source each year, including stack and fugitive emissions of particulate mater, PM-10, PM-2.5, sulfur dioxide, oxides of nitrogen, carbon monoxide, total reduced sulfur compounds (TRS), fluorides, lead, VOCs, ammonia, **and other contaminants**. ORCAA contends that "other air contaminants" encompasses HAPs, and that HAPs should be required in PTPC's emissions inventory pursuant to WAC 173-400-105 since PTPC is subject to several applicable requirements that rely on a HAP, inventory to determine compliance.

PTPC is subject to several applicable requirements that rely on a HAP inventory to assure or determine compliance:

- Condition #2 under the Facility-wide General Requirements prohibits emissions of any contaminant if it is detrimental to the health, safety, or welfare of any person or causes damage to property or businesses. If there are health and/or nuisance impacts realized in the adjacent community, the only way to determine whether those impacts are being caused by PTPC is with a HAP inventory.
- Condition #D9 requires the power boiler to comply with the requirements in boiler MACT, which establishes requirements for controlling HAP emissions.
- All of the conditions in sections "F" and "G" contain requirements that relate to controlling HAP emissions.

Because there are applicable emissions limitations and control require-ments for HAP emissions, pursuant to WAC 173-400-105, a HAP inventory should be "deemed necessary" by Ecology and required in PTPC's emissions inventory.

We recommend that the Port Townsend Paper Company submit Hazardous Air Pollutant emissions (HAP) to the EPA National Emission Inventory (NEI). The NEI tracks emissions on an emission unit level, and provides the level of detail needed to model

emissions and correlate specific emission units with compliance and permit conditions. The company does report emissions to the TRI inventory, but the TRI is for plant wide emissions only. It should be noted TRI data does not satisfy the Emission Inventory Title V AOP requirements.

Response 2: We agree that accurate HAPs reporting is important, so Ecology is working on the issue. The Industrial Section will address HAPs reporting when Ecology revises the Standard Conditions. In the meantime, PTPC is required to submit the emissions inventory and that information goes into the NEI. PTPC is also required to submit a mill-wide HAPs emission estimate as part of the annual TRI report. The EPA uses TRI data to fill in data missing from the HAPS NEI database.

3. The credible evidence rule contains applicable requirements that need to be referenced by a permit condition. Suggest adding the following condition in the “Standard Terms and Conditions” section:

Credible Evidence. For purposes of certifying compliance or establishing whether or not the permittee has violated or is in violation of this permit, nothing shall preclude the use, including the exclusive use, of any credible evidence. [40 CFR 51.212; 40 CFR 52.12; 40 CFR 52.33; 40 CFR 60.11; 40 CFR 61.12]

Response 3: The federal credible evidence rule and emergency provisions in WAC 173-401-645 (our state rule) apply with full force regardless of whether the words appear in the Title V permit. Your suggested wording has not been added to the permit at this time. Ecology permit writers will consider including it as a permit condition during an upcoming review and rewrite of the boiler plate Standard Terms and Conditions.

4. WAC 173-401-645 provides that emergencies may be used as an affirmative defense to an action brought for non-compliance. It is a permit term since it establishes that an emergency may be used as a defense with respect to an enforcement action and the things a permittee needs to do to exercise this defense. Suggest adding the following condition to the “Standard Terms and Conditions” section of the permit:

Emergency as Affirmative Defense. An emergency, as defined in WAC 173-401-645(1), constitutes an affirmative defense to an action brought for non-compliance with a technology-based emission limitation provided the criteria and procedures of WAC 173-401-645(3) are met. This provision is in addition to the affirmative defense for unavoidable excess emissions found in WAC 173-400-107. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that demonstrates:

- a) An emergency occurred and that the permittee can identify the cause(s) of the emergency;
- b) The permitted facility was at the time being properly operated;
- c) During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and
- d) The permittee submitted notice of the emergency to the permitting authority &

within two working days of the time when emission limitations were exceeded due to the emergency or shorter periods of time specified in an applicable requirement. This notice fulfills the requirement of IVAC 173401 -615(3)(b) unless the excess emissions represent a potential threat to human health or safety. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.
[WAC 173-401-645(2); WAC 173-401-645(5)]

Response 4: Our response to your Comment #3 applies here as well.

5. Monitoring is not specified for any of the Facility-wide General conditions listed in PTPC's permit. The Facility-wide General conditions are applicable requirements. Therefore, monitoring should be identified for these conditions even if they are prohibitions or work practice standards.

Response 5: Ecology refers to WAC 173-401-615 for guidance on what is to be monitored in a Title V permit. All three subsections refer to emissions, operating parameters, or monitoring equipment itself. No reference is made to monitoring the facility-wide type of requirements. During a recent audit of the Ecology Air Operating Permit program, EPA made a similar comment. Ecology has found that these types of requirements do not lend themselves to monitoring in a way that is enforceable as a practical matter and Ecology does not believe they were intended to be directly monitored. The requested wording has not been added to the permit but Ecology will determine how to address the issue after the EPA audit report is completed.

Commenter: **Carolyn W. Salmon**-----

1. The proposed permit does not clearly describe the control equipment. I suggest you adding a description of each emission unit and the respective control equipment in the permit.
2. The data supporting surrogate parameter set points may be too old.
3. Many of the particulate source tests only require a minimum of one run rather than averaging three runs.
4. The Startup, Shut Down and Malfunction Plan (SSM) does not address the specifics of the SSM plan.

Response: A description of the emission unit and control equipment will be added to the Support Document during the next permit cycle in preparation for the mill's next application for renewal. While the inclusion of this information is not required by regulation, the request has been consistent enough to merit the action in future permit iterations.

We reviewed the data supporting the surrogate parameters when writing the permit. The surrogate parameter data was updated for this permit renewal where considered necessary for MACT implementation.

Using one run is a cost savings for the mill. Our experience shows that the average of three consecutive runs does not necessarily give better data. The mill is taking a risk by using one run because if the sample measured results in a high number, the mill can't offset it by averaging with two lower numbers.

The SSM plan is a publicly available document which we incorporated into the permit by reference. Incorporation by reference allows the SSM plan to be a "living" rather than "static" document. The SSM plan needs to be flexible. Anything incorporated into the permit requires direct permit modification if changes are necessary.

--Narrative comments from industry operators and managers--

John Begley (PTPC)-----

Port Townsend operates in a global market place. From a competitive standpoint it is not a level playing field. Many of our competitors are subsidized by their governments. Many operate under environmental regulations far more lax than those enforced by the state of Washington. And many operate a work force that is dramatically less compensated and that works in much more hazardous conditions. Yet with all of this we hold our own.

We are small by our industry sector standards, and we need to be adaptable. Port Townsend Paper is committed to operating this mill in compliance with the state and federal regulations. We've invested over \$10 million in environmental projects in the last 6 years alone. This mill has changed and will continue to change. That is the nature of the business and that is the nature of this company.

Kristin Marshall (PTPC)-----

I'm chairperson of the Jefferson County Solid Waste Advisory Committee. I'm a member of the Atmospheric Sciences Section of the American Geophysical Union. I'm a member of Union of Concerned Scientists, and I got my degree in atmospheric chemistry from U.C., Irvine with F. Sherwood Rolland who did Nobel Prize winning research in atmospheric science.

I'm the environmental manager at Port Townsend Paper. I bring my commitment (to the environment) to my job, where I join other people who are committed to continuous improvement and compliance with regulations.

One thing I wanted to talk about specifically was toxics. It's come up a little bit tonight and I wanted to just touch on a couple of points there:

- Unlike the federal Clean Air Act, Title V Program that we are here to discuss tonight, the EPA Toxics Release Inventory is probably not one of the most effective programs under which industries are regulated. It often becomes an exercise in accounting. Moreover it's one in which bookkeeping changes the computations annually.
- Since the laws were adopted in 1998, EPA has taken probably 35 actions that changed the way we have to calculate things. Twenty of those substantially changed the map. Chemicals

have been added to the list, dropped from the list, the thresholds have changed. The emissions factors that the EPA puts out have changed.

With a system where the metrics change so often, it's impossible to determine the benchmarks. That said, I want to now put the focus on some programs that are really effective: For example Ecology has a pollution prevention program, a P2 program that makes us cohesively evaluate our chemical and resource use each year, and in depth every five years. Through this and similar programs, we've expanded recycling, we've increased our energy efficiency, and we've switched to a program of less hazardous chemical use.

Despite the complexity of our mill, we actually are able to maintain the status of "small quantity [hazardous waste] generator". Also, one of the really important programs that you've heard some about tonight are the Federal Control Technology Rules. Those have resulted in real world change at Port Townsend Paper Mill. One, we have talked about a lot because it's recent is "Maximum Available Control Technology." Okay, that's Maximum "Achievable" not "Available."

"Best Available" has been thrown around tonight. That term is not actually a program, but "Maximum Achievable" is. And you know what that means? Now our control technology is equal to or better than the top 12 percent of control technologies in our industry. That's pretty good. That's real world change.

I'd also like to say the Title V program itself is effective. It's a summary list of the rules that apply to us, and as such is effective in making sure that those rules are applied consistently across the industry. Across regulated facilities. So I'd like to thank you for the focus on the Title V Permit tonight and its issuance. And finally I would like to submit as part of my testimony some information we've provided tonight on MACT and other things.

Llewellyn Matthews (NW Pulp and Paper Association)-----

I have some remarks to put this mill in context with the mills around the state: The federal requirements are a baseline. Washington state pushes more stringent requirements on the industry in the form of monitoring. And the industry is committed to continuous improvement. Air and water pollution have been reduced 90, 98, 99 percent from where we started.

New standards come from the federal government. The MACT standards that you've heard of are part of the most expensive rule every levied on a single industry, and we're still complying with that.

But the question I get most often is why can't we have some technology I've heard of in some other place? One factor is different now: Our industry faces a global competition, mostly from Pacific Rim countries whose pulp and paper industry does not have the same community or environmental ethic that we do in Washington.

China produces everything that we do. They can sell it for almost half the price we do. Washington corporations need to get through this difficult time. The reason really is that global competition.

I'm honored to speak tonight, in support of the mill's permit and hope to do so again in the future.

Alice McConaughy (PTPC)-----

First of all I wanted to thank the Department of Ecology for providing this opportunity tonight because a lot of people had interesting things to say and I think it's been a good opportunity for everyone.

Port Townsend Paper's first Title V permit was issued November 14, 2000 following permit development and review by both Ecology and the EPA. In compliance with this permit we submitted our Title V renewal application in May of 2005. Since that time Department of Ecology put a lot of hard work in refining the existing permit and incorporating federal and state rule changes into the permit. Port Townsend Paper made changes during this 6 year period, to comply with the MACT 1, Phase 2 rules. These are the rules under which Port Townsend Paper has upgraded the waste water treatment system. This program began in 2003 and required 3 years to design and engineer and install. The system was activated in March of 2006.

Since the system activation, sulfide concentrations in the new aeration section of the pond have been reduced by about 45 percent and BOD water pollutants are down by more than 10 percent. Other MACT projects included the MACT 1, Phase 2 where the high concentration odor gases were captured and sent to an incineration system. This system includes both primary and back up incineration and was implemented in early 2001.

MACT 2 resulted in upgrades to the smelt tank and recovery boiler particulate controls and in replacement of the particulate scrubber in the lime kiln. This project has been in place since early 2004.

These are just a few of the environmental projects we have undertaken during this permit period. Environmental improvement is an ongoing process at our mill. Port Townsend Paper has spent over \$10 million, since 2000, on various environmental projects. Some resulted in dramatic improvements like the waste water treatment upgrade. Others have been smaller but equally important.

The Department of Ecology prepared a good permit, incorporating changes to federal and state requirements into the document. Port Townsend Paper has already submitted in writing technical comments to the permit. The permit accurately reflects the changes in requirements and is consistent with permits issued to other pulp and paper mill in the state.

We urge the Department of Ecology to issue this permit, and I thank them for their time this evening.

Eveleen Muehlethaler (PTPC)-----

There are a couple of things I would like to point out and get into the official record:

- a. First, I appreciate the effort that Ecology put in to this hearing tonight. It's been quite good work. I also want to point out that Merley and Robert come from the industrial section and that's who we report to. The permit lists a very complex set of rules and regs we have to live with. Without the help of these experts who have been around a little while, we'd have a real tough time understanding what we are supposed to do.
- b. This is a very complex permit. It is accurate, and it lays out difficult tasks for the folks at the mill to follow. Yet we do a pretty good job of it. We've had over 99 percent efficiency on all the different programs.

I want to clarify other things that were mentioned tonight here:

- c. Someone said we shouldn't burn used oil - that it was a bad idea. I'm confused because I think there is a shortage of the good oil. We were the first industrial source in the state to use our ethyl effectively such that we are not as dependent on the "first time around" oils. Actually we're required to use that. And as a result we have "new source" performance standards set for our newest boiler (the package boiler).
- d. We are operating under Maximum Achievable Control Technology limits on most of the stacks now. Somebody asked why we can't do better at the pond, too. Right now the pond meets the air permit's definition of Maximum Achievable Control Technology. That's a big deal to us.
- e. Finally, someone asked how the standards got set and what did that mean for ambient air quality...Permit limits designed by the EPA and enforced by Ecology to meet the National Ambient Air Quality Standards, are created/calculated to protect public health and welfare. They're pretty tough standards but we work to try to meet those everyday and night. It would be very hard to do something different at night.

PTPC's Comments on the proposed Title V Permit.

REQUIREMENT	PROPOSED CHANGE	CLARIFICATION COMMENT
General Comment	Substitute "DE 05AQIS-2892" for "DE 00AQIS-131" where referenced in permit.	DE 05AQIS-2892 supersedes previously issued order DE 00AQIS-131
Response: The change has been made; DE 05AQIS-2892 supersedes DE 00AQIS-131.		
General comment	For all Monitoring and Reporting headings, add footnote 1.	Footnote 1 is applicable to all Monitoring and Reporting requirements and has been added to all headings
Response: Footnote 1 has been added to the Emission Unit Specific Requirements as requested.		
General comment	Throughout the permit, the abbreviation CA has been expanded to "corrective action"	Change requested for readability
Response: The requested change has not been made. The abbreviation is used to condense the permit. The acronym is defined in Appendix E.		
Page 4,	Delete entire paragraph.	This statement is obsolete as of April 18,

Paragraph just before A. Recovery Furnace.		2006.
Response: The paragraph has been deleted as the date has come and gone.		
A.1, Monitoring	Delete "except during SSM periods"	40 CFR 63.6(f) for the SSM allowance only applies to the limit and not the monitoring method.
Response: The requested change has been made.		
A.1, Monitoring	Delete "per A.7". Add "Refer to A.4 and A.5 for opacity surrogate monitoring requirements."	A.7 is about the applicable requirement WAC 173-405-040(10) which is a facility-wide applicable requirement (condition 12, Good Air Pollution Control Practice). A.4 and A.5 contain the MACT opacity surrogate monitoring requirements for the MACT particulate grain limit. Therefore A.4 and A.5 should be cited in the monitoring column for A.1.
Response: The requested change has not been made. A.7 has been modified to refer only to condition A.3 for interim compliance. This is consistent to the wording of the 2000-2005 permit.		
A.1, Monitoring	Delete last sentence.	40 CFR 63.6 subpart F does not exist. However there does exist 40 CFR 63.6(f) which is already properly cited in the Applicable Requirements column.
Response: The requested change has been made.		
A.2a, A.2c	Include in A.2a, reference to A.2c for the source test reporting requirements. Change parameter to "Source Test Reporting" in A.2c.	Provides clarification in A.2a about where to find the reporting requirements and what the reporting requirements are. Provides clarification in A.2c that these are source test reporting requirements.
Response: The requested change has been made.		
A.2a	Revise according to the redlined text.	Opacity and not O&M requirements are used as the surrogate compliance indicator for the PM limit. Therefore cite the WAC opacity limit (A.3) as the surrogate monitoring for A.2a.
Response: The requested change has been made, except opacity is cited at Condition A.7.		
A.3, Monitoring	Change CEM to COM.	A COM (continuous opacity monitor) monitors opacity, not a continuous emissions monitor (CEM).
Response: The requested change has been made.		
A.3, Applicable Requirement	Add citation WAC 173-405-072(3)	Add citation for monitoring requirement
Response: The requested change has not been made because WAC 173-406-072(3) states what information needs to be reported. It is not a basis of authority for requiring a COM.		
A.4, Monitoring	Delete the redlined text.	This appears to be a cut & paste typo-

		graphical error. Footnote 1a does not exist. "Refer to Condition A.4" is referring to itself. The last sentence is a word-for-word copy of the 4 th sentence.
Response: The requested change has been made.		
A.6a	Add redline text.	The additional text is required to clarify the monitoring requirement. DE 05AQIS-2892 needs to be revised to include the underlying SO ₂ monitoring requirement that was in DE 00AQIS-131 A.3.
Response: The requested change has been made except that WAC 173-401-615 is cited as the basis of authority for the test method and reporting requirements.		
A.7	Delete.	The applicable requirement in the A.7 wording is WAC 173-405-040(10) which is already listed as condition 12 in the facility wide requirements (Good Air Pollution Control Practice).
Response: The requested change has not been made. The cited basis of authority is WAC 173-401-615.		
A.8	Delete A.8 (and then re-number or reserve A.9 to A.7).	A.8 was DE 00AQIS-131 condition 8 which was carried over into DE 00AQIS-2892 as Condition A.6 which is already included in this Air Operating Permit as A.2c. Therefore A.8 is redundant to A.2c and should be deleted.
Response: The requested change has been made.		
B.1	Change "HAP (PM as surrogate)" to "Particulate and HAP (metals)"	Consistency of wording for all MACT II sources.
Response: The requested change has not been made as the degree of improvement would be negligible.		
B.2 Applicable Requirements and B.3 Applicable Requirements	Add citation WAC 173-401-615(b) for monitoring in both sections	Add citation for monitoring requirement
Response: The requested change has been made.		
B.4, Limit	<ol style="list-style-type: none"> 1. Change "recirculation " to "scrubbing liquid." 2. Delete the words in the limit column and move the last 2 paragraphs in the monitoring column into the limit column. 3. Add footnote 15. 	<ol style="list-style-type: none"> 1. 40 CFR 63.864 (e)(10) uses the words "scrubbing liquid flow rate" and not "recirculation flow rate." 2. The IPT already occurred (9/10/04) thus the minimum scrubbing liquid flow rate has already been established. Therefore it should be stated as the limit in the limit column. 3. Footnote 15 was added to allow for limit changes under 40 CFR 63.
Response: The requested change has been made.		
B.4, Monitoring	1. Delete reference to "pressure drop."	1. The PTPC scrubber is not a venturi scrubber and does not have a pressure drop

	2. Change “recirculation” to “scrubbing liquid.”	(and therefore a pressure drop cannot be monitored). Ecology has written a letter to PTPC stating that the pressure drop requirements are inapplicable to PTPC. 2. 40 CFR 63.864 (e)(10) uses the words “scrubbing liquid flow rate” and not “recirculation flow rate.”
Response: The requested change has been made.		
B.4, Applicable Requirement	1. Change 40 CFR 63.864 citation. 2. Remove reference to pressure drop. 3. Add citation Order DE 05AQIS-2892 for exemption from pressure drop requirement	1. The applicable requirement citation should be 40 CFR 63.864 (e)(10) and not 40 CFR 63.864 (a)(2). 2. and 3. The PTPC scrubber is not a venturi scrubber and does not have a pressure drop (and therefore a pressure drop cannot be monitored). PTPC requests that the letter from Ecology to PTPC, stating the pressure drop requirements are inapplicable to PTPC, be incorporated into this order.
Response: The requested change has been made except the proposed modification to DE 05AQIS-2892 has not been made.		
B.4, Applicable Requirement	Delete the citation for WAC 173-400-105(h).	WAC 173-400-105(5) only applies to fossil fuel-fired steam generators, sulfuric acid plants, fluid bed catalytic cracking units catalyst regenerators at petroleum refineries, or wood residue fuel-fired steam generators.
Response: The requested change has been made.		
B.5, Monitoring	Delete the redlined text.	The redlined text is not applicable to the Smelt Dissolver Tank emission unit and should therefore be deleted.
Response: The requested change has been made.		
B.6 Limit	Change the limit to 5.	The limit is 5. (Exceedences begin at 6).
Response: The requested change has been made.		
B.6 Monitoring	Delete the words “on each unit”.	PTPC only has one Smelt Dissolver Tank.
Response: The requested change has been made.		
B.7	Delete this requirement.	The requirement citation is from Order DE 00AQIS-131 condition B.3 and it was not carried over into DE 05AQIS-2892. Therefore if DE 00AQIS-131 has been superseded and repealed by DE 05 AQIS-2892 then the citation of “Order DE 00AQIS-131” is meaningless. Also, opacity monitoring with scrubber shower flow as a compliance indicator is already addressed in Requirement B.3 (see monitoring column); re-addressing it is redundant. Corrective action is already

		addressed in Requirement B.5. The applicable requirement in the B.7 wording is WAC 173-405-040(10) which is already listed as Condition 12 in the Facility Wide Requirements (Good Air Pollution Control Practice). Therefore re-listing it in the smelt tank emission unit is redundant.
Response: The requested change has been made.		
C.1	Change “HAP (PM as surrogate)” to “Particulate and HAP (metals)”	Consistency of wording for all MACT II sources.
Response: The requested change has not been made. The abbreviation is used to condense the permit. The acronym is defined in Appendix E.		
C.1	Change wording as red-lined to match regulatory language	40 CFR 63.862 refers to scrubbing liquid flow and pressure drop. Wording has been changed to reflect this language.
Response: The requested change has not been made because the existing language clearly says the same thing.		
C.3, Monitoring	Remove reference to C.6	C.6 is redundant and is proposed to be deleted.
Response: The requested change has been made.		
C.5a Limit	Add the redline words.	40 CFR 60.283(a)(5) states ‘8ppm by volume on a dry basis’.
Response: The requested wording has been added.		
C.5b Monitoring	Add the “11” superscript at the end of the paragraph.	Footnote 11 of Appendix F should be added to incorporate CMS Data Recovery.
Response: The requested change has been made.		
C.5b Applicable Requirements	Change DE 00AQIS-131 to DE 05AQIS-2892	Order DE00AQIS-131 has been superseded by DE 05AQIS-2892.
Response: The requested change has been made.		
C.5b Applicable Requirements	Add 40 CFR 60.284(c)(2)	This is the basis for calculating and recording the oxygen concentration.
Response: The requested change has been made.		
C.6	Delete requirement.	The requirement citation is from Order DE 00AQIS-131 and it was not carried over into DE 05AQIS-2892. Therefore if DE 00AQIS-131 has been superseded and repealed by DE 05 AQIS-2892 then the citation of “Order DE 00AQIS-131” is meaningless. Also, opacity monitoring with pressure drop as a compliance indicator is already addressed in Requirement C.3 (see monitoring column) therefore re-addressing it is redundant. Corrective action is already addressed in Requirement C.11. The applicable requirement in the C.6 wording is WAC 173-405-040(10) which is already

		listed as condition 12 in the facility wide requirements (Good Air Pollution Control Practice). Therefore re-listing it in the lime kiln emission unit is redundant.
Response: C.6 has not been removed but the basis of authority has been modified to WAC 173-401-615. If PTPC wants the deletion of C.6 (a one-hour average), and replacement with C.10 and C.11 (three- hour averages), Ecology suggests submittal of monitoring results allowing a determination of comparability.		
C.10 Applicable Requirements	Delete [40 CFR 63.864(c)(ii)] for corrective action trigger.	40 CFR 63.864(c)(ii) is reserved and the Corrective Action is addressed in C.11.
Response: The requested change has been made.		
C. 11, Limit	Add reference to footnote 15 at end of limit	Footnote 15 has been added to allow for limit changes under 40 CFR 63.
Response: The requested change has been made.		
C.11 Monitoring	Delete the redlined text.	The redlined text is not applicable to the Lime Kiln emission unit and should therefore be deleted.
Response: The requested change has been made.		
C.11 Applicable Requirements	Change 40 CFR 63.864(c)(1)(ii) to 40 CFR 63.864(k)(1)(ii).	40 CFR 63.864(c)(1)(ii) is reserved. Instead 40 CFR 63.864(k)(1)(ii) is the applicable requirement.
Response: The requested change has been made.		
C.12 Monitoring	Delete the words 'on each unit'	PTPC has only one lime kiln.
Response: The requested change has been made.		
D.1 Applicable Requirements	Add 40 CFR 60.46(b)(2)	40 CFR 60.46(b)(2) is the basis for monitoring using EPA Method 5.
Response: The requested change has been made with the modification that the added reference specifies the test method to be used.		
D.1 Monitoring	Delete "See Condition D.6 for minimum O&M requirements intended to indicate compliance with the particulate limit". Add "Monitor opacity and scrubber parameters per D.2b as surrogate monitoring requirements ¹¹ ."	D.6 is redundant and is proposed to be deleted.
Response: The requested change has not been made. The wet scrubber makes opacity less useful as a PM surrogate than the proposed scrubber parameters.		
D.2b Limit	Make redline additions.	Make change for clarification.
Response: The requested wording has been added.		
D.2b Applicable Requirement	Add 40 CFR 60.45 (g)(1)	40 CFR 60.45 (g)(1) defines the threshold for excess emissions.
Response: The requested wording has been added.		
D.2c	Add the salty hog fuel requirement into Order	Order DE00AQIS-131 is cited and it will be superseded by DE 05AQIS-2892.

	DE 05AQIS-2892 and change applicable requirement to reflect this change.	
Response: The requested change has been made except the basis of authority is WAC 173-401-615.		
D.3a Applicable Requirement	Add "Table 1, D.1d".	Make change for clarification.
Response: The requested change has not been made due to the perceived negligible benefit.		
D.4 Limit	Add "periods".	40 CFR 60.45(g)(3) includes the words "three contiguous one-hour periods."
Response: The requested change has been made.		
D.6	Delete requirement.	The requirement citation is from Order DE 00AQIS-131 and it was not carried over into DE 05AQIS-2892. Therefore if 00AQIS-131 has been superseded and repealed by DE 05 AQIS-2892 then the citation of "Order DE 00AQIS-131" is meaningless. Also, opacity monitoring and scrubber parameters are addressed in Requirement D.2b therefore re-addressing them is redundant. Move the "Corrective action" sentence into the monitoring of Requirement D.2a. The applicable requirement in the D.6 wording is WAC 173-405-040(10) which is already listed as condition 12 in the facility wide requirements (Good Air Pollution Control Practice). Therefore re-listing it in this emission unit is redundant.
Response: The requested change has not been made. The basis of authority has been changed to WAC 173-401-615.		
D.7	Add "Condition 3" at the end.	Add words for clarification.
Response: The requested change has been made.		
D.8	Change reference from order 131 to order DE 05AQIS-2892, Table D.1d.	Make change for clarification.
Response: The requested change has been made except the reference has been abbreviated to cite DE 05AQIS-2892.		
D.8.a	Change the "d" to the correct citation.	40 CFR 60.45(d) is "reserved".
Response: The citation to subsection "d" has been removed and the reference is simply to 40 CFR 60.45(d). This change was made in Order DE 05AQIS-2892 also.		
E.1a, Limit E.2a, Limit E.5a, Limit	Change 4e to 2e.3	Note that Footnote 2e.c should be re-labeled to 2e.3 for clarity and consistency.

E.5b, Limit		
Response: The requested changes were made to the proposed permit citations. But not to the requested footnote labeling. The footnote citations referenced were renumbered; the original reference citations have changed. The actual footnote content has not changed.		
E.3a	Delete reference to grate cleaning. Add “or except during startup”.	The package boiler does not have grates. Footnote 5e addresses exceptions during startup. Therefore add the words “or except during startup” in the limit to clarify the limit.
Response: The requested change has been made.		
E.3b	Add “or except during startup”.	Footnote 5e addresses exceptions during startup. Therefore add the words “or except during startup” in the limit to clarify the limit.
Response: The requested change has been made.		
E.3c	Add “or except during startup, shutdown or malfunction” and delete reference to footnote 5e.	40 CFR 60.43b(g) states: “The particulate matter and opacity standards apply at all times, except during periods of startup, shutdown or malfunction.”
Response: The requested change has been made.		
E.5a, Monitoring	Add “and requirement E.11”	Requirement citation added for clarity
Response: The requested change has been made.		
E.5B, Applicable	Add “PSD 96-01A, Condition 2”	Citation added for clarity
Response: The requested change has been made and the cited limits have been adjusted to include both the 0.40 limit established by 40 CFR 60.44b(a)(2)(ii) and the 0.38 lb/mmBtu limit cited in the PSD condition.		
E.6, Limit	Change “40,683” to “40,693”	Correct typographical error
Response: The requested change has been made.		
E.7a, Applicable	Add “Conditions 1 and 12(b)(8)”	Citation expanded for clarity
Response: The requested change has been made.		
E.7b, Applicable	Add “and condition 12(e)(3)”	Citation expanded for clarity
Response: The requested change has been made.		
E.7c, Applicable	Add “and condition 12(e)(3)”	Citation expanded for clarity
Response: The requested change has been made.		
E.8, Applicable	Add “and (c)”	Citation expanded for clarity
Response: The requested change has been made.		
E.9, Applicable	Add “and (c)”	Citation expanded for clarity
Response: The requested change has been made.		
Footnote 2e	Change indented letters to appropriate numbers	Change requested for consistency and readability
Response: The requested change has not been made.		
Footnote 2eb	Add “first Revision Order 97AQ-1030, condition 4b”	Citation added for clarity

Response: The requested change has been made.		
Footnote 2ec	Add “[PSD 96-01A, condition 18] and [First Revision Order 97AQ-1030, condition 4c]”	Citation added for clarity
Response: The requested change has been made.		
F.2a, Applicable	WAC reference should be WAC 173-401-615(3)	Changed to reflect specific reporting requirement
Response: The requested change has been made.		
F.3a, Applicable	Add reference to 40 CFR 63.443(d)(4)	This regulation is also applicable to HAP management requirements.
Response: The requested change has been made.		
F.3e, Limit and Applicable	Complete reference to 40 CFR 63.10 (b)(1) and 40 CFR 63.10 (b)(2)	Changed to reflect specific recordkeeping requirements
Response: The requested change has been made.		
F.4a, Monitoring	Complete reference 40 CFR 63.962(a)(1),(2) and (b)	Changed to reflect specific requirements
Response: The requested change has been made.		
F.4a, Applicable	Correct reference to read 40 CFR 63.446 subsections (a),(b),(d)(1),(e)(2), and (e)(4)	(e)(4) is the correct treatment standard
Response: The requested change has been made.		
F.4a, Applicable	Complete monitoring reference to read 40 CFR 63.453(l)(1).	
Response: The requested change has been made.		
F.4b, Monitoring	Correct reference for excess emission reporting to read 40 CFR 63.10(e)(v)	Changed to reflect specific reporting requirements
Response: The requested change has been made.		
F.4c, Monitoring and Applicable	Complete monitoring reference to read 40 CFR 63.453(l)(1).	Incomplete reference
Response: The requested change has been made.		
F.4d, Monitoring and Applicable	Complete monitoring reference to read 40 CFR 63.453(l)(1).	Incomplete reference
Response: The requested change has been made.		
F.4f, Monitoring and Applicable	Delete reference to 40 CFR 63.453(m) and reference to surrogate parameter monitoring	This reference refers to treatment requirements, rather than collection requirements. Specifically, they are to demonstrate compliance with 40 CFR 63.446(e)(2), treatment in a biological treatment system. These requirements are already properly

		addressed in Section F.4g.
Response: The requested change has been made.		
F.4h, Applicable	Complete reference to 40 CFR 63.10 (b)(1) and 40 CFR 63.10 (b)(2)	Changed to reflect specific recordkeeping requirements
Response: The requested change has been made.		
G.2, Applicable	Add reference to 40 CFR 63.457(a)	This is the requirement for an initial compliance test under the federal CCA compliance alternative.
Response: The requested change has been made.		
G.2, Applicable	Delete "Ecology Letter Allowing Compliance Extension to 3/16/07"	This extension is not required by Port Townsend Paper, and does not need to be referenced in this document.
Response: The requested change has been made.		
G.6, Applicable	Complete reference to 40 CFR 63.10 (b)(1)	Identifies reference for record retention requirement.
Response: The requested change has been made.		
G.7, Applicable	Correct the reference description.	Clarifies wording to match regulatory wording
Response: The requested change has been made.		
H	Delete asterisked footnote	Information is redundant, as it is already specified in the heading
Response: The requested change has been made.		
I	Change heading reference from 40 CFR 63(e)(3)(e) to 40 CFR 63.6(e)(3)	Reference incorrectly identified
Response: The requested change has been made.		
I.1	Change wording in 1 st sentence from, "...maintaining the LVHC System..." to "maintaining Subpart S and MM applicable units..."	SSM plans are required for all subpart S and MM units
Response: The requested change has been made.		
I.2	Delete this paragraph	In the 4/20/06 amendments to the SSM standards, section 40 CFR 63.6(e)(3)(ii) was removed (Federal Register Vol. 71, No. 76, page 20454, 4/20/06).
Response: The requested change has been made.		
I.3	Change heading to I.2. Delete reference to 40 CFR 63.6(e)(2).	40 CFR 63.6(e)(2) has been removed.
Response: The condition numbering has not been changed; deleted condition 2 is noted as reserved.		
I.4	Change heading to I.3	
Response: The condition numbering has not been changed; deleted condition 2 is noted as reserved.		
Facility Wide Requirements		

2	Substitute word “allow” for “permit”	Clarifies wording to match regulatory wording. Use of word “permit” in this context is confusing
Response: The requested change has been made.		
13	Remove capital letters	For consistency with the rest of the permit
Response: The requested change has been made.		
14 a.	Add “of refrigerants”	To clarify what this paragraph covers
Response: The requested change has been made.		
14 a.	Change to “Air Conditioners”	Typographical error
Response: The requested change has been made.		
18	Complete reference to WAC 173-400-075(6)(a)	Identifies state adoption of asbestos NESHAP and clarifies reference.
Response: The requested change has not been made.		

Monitoring Requirements

21	Delete reference to 42 U.S.C. 7413(e)(2)	This reference is not applicable to this requirement.
Response: The requested change has not been made. This citation may be incorrect but it is the citation that is then being incorrectly applied to all kraft mill permittees. Institutional memory, vague as it is, remembers this citation coming from EPA in early negotiations on permit content.		
Reporting Requirements	Delete WAC 173-401-520 and WAC 173-401-710 in heading	Section 520 is specific to certification and is addressed in provision 33. Section 710 applies to permit renewal applications and does not apply to this section. It is addressed in provision 46 under Standard Terms and Provisions
Response: The requested change has been made.		
33	Add, “as identified by WAC 173-401-200(29)” after responsible official	Identifies regulatory reference and clarifies terminology for permit holder.
Response: The requested change has not been made.		
35 c.	Change “(condition 37c)” to “[WAC 173-401-630(5)(c)(iii)]”	Corrected regulatory reference
Response: The citation to condition 37c appears to be a legacy statement from earlier versions. It is also found in other permittee’s permits. A citation is included at all in conformance with the identification of the underlying basis of authority for permit conditions. The basis of authority for clarifying how determination of continuous or intermittent compliance is made as been adjusted to cite WAC 173-401-615 which is the generic basis of authority for monitoring and recordkeeping for Title V air operating permits.		
35 d.	Wording changed from, “The permittee is not required to certify compliance for insignificant emissions units or	This change is made to reflect a change in WAC 173-401-530(2)(d).

	activities” to, “Continuous compliance for insignificant emissions units or activities may be certified to be in continuous compliance if there were no observed, documented, or known instances of noncompliance during the reporting period.”	
Response: The change has not been made as the current wording is intended to be generic to all kraft mill permits in the state.		
49	Last paragraph, first word, change from, “Procedures” to “Proceedings”	Change is made to match wording in WAC 173-401-730
Response: The change has not been made as the current wording is intended to be generic to all kraft mill permits in the state.		
50	Change reference to 40 CFR 70.11(a)(3)(iii)	Incomplete reference
Response: The change has not been made as the current wording is intended to be generic to all kraft mill permits in the state.		
51	Change “For Ecology to evaluate a plant’s emissions or emission control program, the permittee shall furnish other data requested by Ecology” to “The permittee shall furnish upon request of Ecology such other pertinent data required to evaluate the mill’s emissions or emission control program.”	Change made to match wording in WAC 173-405-072(5).
Response: The change has not been made as the current wording is intended to be generic to all kraft mill permits in the state.		
Appendix A – 40 CFR 64 Compliance Assurance Monitoring	Under Brief Description heading, substitute “pollutant specific emission units” for “limit”	Change is suggested to match CAM wording.
Response: The requested change has not been made.		
Appendix E – Definitions of Abbreviations	Add: IPT Initial Performance Test RM Reference Method SSM Startup, Shutdown, Malfunction	
Response: The requested change has been made.		

Comments on the proposed Support Document from PTPC

Page #	Section	Comment
5	A. Recovery furnace –	First paragraph, second sentence, “...test using

	federally enforceable limits	modified method 5..." should read "...test using modified EPA Method 5..."
Response: The requested change has been made.		
5	A. Recovery furnace – federally enforceable limits	Third paragraph, fifth sentence, "Table 1 includes SO ₂ data for source tests from 10/97 through 9/98" should read "Table 1 includes SO ₂ data for source tests from 10/97 through 3/04"
Response: The requested change has been made.		
5	A. Recovery furnace – federally enforceable limits	Third paragraph, sixth sentence, "... (all test results <40% of the limit...) should read, "... (all test results average 21% of the limit and none is higher than 81% of the limit...)"
Response: The requested change has been made.		
7 and 8	B. Smelt Dissolver Tank – federally enforceable limits	See attached modifications to this section. Changes made for clarity, only.
Response: The requested change has been made.		
8	C. Lime Kiln – federally enforceable limits	First paragraph, second sentence, "...test using modified method 5..." should read "...test using modified Ecology Method 8..."
Response: The requested change has been made.		
10	D. Power Boiler #10 – federally enforceable limits	First paragraph, second sentence, "...test using modified method 5..." should read "...test using modified EPA Method 5..."
Response: The requested change has been made.		
14	Facility-Wide General Requirement Condition 10	First paragraph, third sentence, "...sources include power boilers 2 & 10, the package boiler..." should read, "...sources include power boiler 10, the package boiler..."
Response: The requested change has been made.		

Table 1: Effect of H₂S at Increasing Concentrations

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H ₂ S concentration	Reported effects
0.02 – 0.05 ppb	This is the concentration of H ₂ S measured in undeveloped areas (Chou, 2000).
0.5 ppb	The odor of 0.5 ppb H ₂ S can be detected by 2% of the population (Amoore, 1985; Collins and Lewis, 2000).

0.7 ppb	This is the Chronic Reference Concentration (RfC) for H ₂ S for the United States Environmental Protection Agency (USEPA). It is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily inhalation exposure of the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.
H ₂ S concentration	Reported effects
2 ppb	The odor of 2 ppb H ₂ S can be detected by 14% of the population, and 2% of the population is annoyed by the odor (Amoore, 1985; Collins and Lewis, 2000).
4 ppb	The odor of 4 ppb H ₂ S can be detected by 30% of the population, and 5% of the population is annoyed by the odor (Amoore, 1985; Collins and Lewis, 2000).
5 ppb	The World Health Organization (WHO) recommends that H ₂ S concentrations not exceed 5 ppb (7 µg /m ³) for ½-hour (WHO, 1987; Jaakola et al., 1990).
7 to 27 ppb annual average with peaks up to 500 ppb	Exposure to ambient air containing H ₂ S at these levels resulted in elevated self-reported health symptoms (especially those related to the central nervous system) for 9 of 12 symptom categories
8 ppb	The odor of 8 ppb H ₂ S can be detected by 50% of the population, and 11% of the population is annoyed by the odor (Amoore, 1985; Collins and Lewis, 2000).
10 ppb	The odor of 10 ppb H ₂ S can be detected by 56% of the population, and 17% of population is annoyed by the odor (Amoore, 1985; Collins and Lewis, 2000).
10 ppb average (100 ppb peak)	Exposure to air containing 10 ppb H ₂ S on average resulted in neurophysiological abnormalities in reaction time, color discrimination, and mood in humans (Kilburn & Warshaw, 1995).
10 ppb daily average	At an average daily exposure to this level of H ₂ S, there were increased reports of eye and nasal symptoms and cough for the previous year (Jaakkola et al., 1990).
30 ppb	This is the intermediate inhalation minimum risk level (MRL) for the Agency for Toxic Substances and Disease Registry (ATSDR). This MRL is an estimate of the daily exposure that is likely to be without appreciable risk of adverse noncancer health effects for intermediate (15-364 days) exposure (Chou, 2000; ATSDR)

30 ppb (CAAQS)	The odor of 30 ppb H ₂ S can be detected by 83% of the population, and 40% of the population is annoyed by the odor. In addition, 30 ppb or 42 µg /m ³ H ₂ S averaged over 1 hour and not to be equaled or exceeded is the California Ambient Air Quality Standard (CAAQS) (Collins and Lewis, 2000)
H ₂ S concentration	Reported effects
40 ppb	This concentration constitutes the mean annoyance threshold, i.e. odor annoyance for 50% of the population (annoyance occurs by 5 times the detection threshold; 5 times 8 ppb = 40 ppb) (Collins and Lewis, 2000).
70 ppb	This is the acute inhalation minimum risk level (MRL) for the Agency for Toxic Substances and Disease Registry (ATSDR). This MRL is an estimate of the daily exposure that is likely to be without appreciable risk of adverse noncancer health effects for acute (1-14 days) exposure (Chou, 2000; ATSDR)
0.32 ppm averaged over 1 hour	Nausea, diarrhea, sleep disturbance, shortness of breath, respiratory irritation and headache were linked to H ₂ S emissions in Terre Haute, Indiana,
2 ppm	Headache and increased airway resistance were found in an asthmatic subset (Jappinen et al., 1990).
2.5 to 5 ppm	Coughing and throat irritation (after 15 minutes) were found for this level of H ₂ S (Bhambhani and Singh, 1985; Collins and Lewis, 2000)

In air, 1ppm (w/v) of H₂S is equivalent to 1.4 mg/m³

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