

## Chapter NR 284

## PULP AND PAPER MANUFACTURING

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**Note:** Chapters NR 284 and 285 as they existed on October 31, 1986 were repealed and a new chapter NR 284 was created effective November 1, 1986.

**NR 284.01 Purpose.** The purpose of this chapter is to establish effluent limitations, standards of performance, and pretreatment standards for discharges of process wastes from the pulp and paper industry category of point sources and subcategories thereof.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.02 Applicability.** The effluent limitations, standards of performance, pretreatment standards, and other provisions in this chapter are applicable to pollutants or pollutant properties in discharges of process waste resulting from activities in any or a combination of any of the following subcategories of the pulp and paper manufacturing point source category as defined in s. NR 284.03:

- (1) Integrated production of pulp and paper or paperboard by:
  - (a) BCT bleached kraft subcategory;
  - (b) Fine bleached kraft subcategory;
  - (c) Groundwood-CMN papers subcategory;
  - (d) Groundwood-chemi-mechanical subcategory;
  - (e) Groundwood-fine papers subcategory;
  - (f) Groundwood-thermo-mechanical subcategory;
  - (g) Papergrade sulfite (blow pit wash) subcategory;
  - (h) Papergrade sulfite (drum wash) subcategory;
  - (i) Semi-chemical subcategory;
  - (j) Soda subcategory;
  - (k) Unbleached kraft subcategory;
  - (L) Unbleached kraft and semi-chemical subcategory; and
  - (m) Unbleached kraft-neutral sulfite semi-chemical (cross-recovery) subcategory.
- (2) Nonintegrated production of paper or paperboard by:
  - (a) Nonintegrated-filter and nonwoven papers subcategory;
  - (b) Nonintegrated-fine papers subcategory;
  - (c) Nonintegrated-light weight papers subcategory;
  - (d) Nonintegrated-paperboard subcategory; and
  - (e) Nonintegrated-tissue papers subcategory.
- (3) Production of paper or paperboard from wastepaper by:
  - (a) Builders' paper and roofing felt subcategory;
  - (b) Deink subcategory;
  - (c) Paperboard from wastepaper subcategory;
  - (d) Tissue from wastepaper subcategory; and
  - (e) Wastepaper-molded products subcategory.
- (4) Production of pulp by:
  - (a) Dissolving kraft subcategory;
  - (b) Dissolving sulfite pulp subcategory; and
  - (c) Market bleached kraft subcategory.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.03 Definitions.** The following definitions are applicable to terms used in this chapter. Definitions of other terms and meanings of abbreviations are set forth in chs. NR 205 and 211, and the Development Document for Effluent Limitations Guidelines and Standards for the Pulp, Paper and Paperboard and the Builders' Paper and Board Mills Point Source Categories, EPA 440/1-82/025, October, 1982.

**Note:** Copies of this document are available for inspection at the office of the department of natural resources, the secretary of state's office, and the office of the legislative reference bureau, and may be obtained for personal use from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20460.

(1) "Acid sulfite cooking liquor" means sulfite cooking liquor having a pH less than 3.0.

(2) "BCT bleached kraft subcategory" includes those mills at which bleached kraft pulp is produced in a full cook process employing a highly alkaline sodium hydroxide and sodium sulfide cooking liquor.

**Note:** Principal products include paperboard (B), coarse papers (C), tissue papers (T) and market pulp.

(3) "Bisulfite cooking liquor" means sulfite cooking liquor having a pH between 3.0 and 6.0.

(4) "Builders' paper and roofing felt subcategory" includes those mills at which heavy papers used in the construction industry are produced from wastepaper, wood flour and sawdust, wood chips, and rags. Neither bleaching nor chemical pulping processes are employed on-site.

**Note:** Principal products include saturating, deadening, and flooring papers, and roofing felt.

(5) "Corrugating medium furnish subdivision" includes those mills in the paperboard from wastepaper subcategory where only recycled corrugating medium is used in the production of paperboard.

(6) "Cotton fiber furnish subdivision" includes those mills in the nonintegrated-fine papers subcategory which produce a paper product containing equal to or greater than 4% cotton fibers.

(7) "Deink subcategory" includes those mills at which brightened or bleached deinked pulp is produced from wastepapers using an alkaline process to remove contaminants such as ink and coating pigments.

**Note:** Principal products include fine papers such as printing, writing and business papers, tissue papers, newsprint and market pulp.

(8) "Dissolving kraft subcategory" includes those mills at which a highly bleached pulp is produced by a full cook process employing a highly alkaline sodium hydroxide and sodium sulfide cooking liquor. Included in the manufacturing process is a precook operation termed prehydrolysis.

**Note:** The principal product at these mills is a highly bleached and purified dissolving pulp used principally for manufacture of rayon and other products requiring the virtual absence of lignin and a very high alpha cellulose content.

(9) "Dissolving sulfite pulp subcategory" includes those mills at which a highly bleached pulp is produced in a full cook process employing strong solutions of sulfites of calcium, magnesium, ammonia or sodium.

**Note:** Principal products include viscose, nitration, cellophane or acetate grade pulps which are used principally for the manufacture of rayon and other products that require the virtual absence of lignin.

(10) "Fine bleached kraft subcategory" includes those mills at which bleached kraft pulp is produced in a full cook process employing a highly alkaline sodium hydroxide and sodium sulfide cooking liquor.

**Note:** Principal products are fine papers, which includes business, writing and printing papers, and market pulp.

(11) "Full cook" means chemical pulping methods which employ the heating under pressure of wood, water and chemicals in a closed vessel to a temperature sufficient to separate the fibrous portion of the wood by dissolving lignin and other nonfibrous constituents.

(12) "FWP" means "from wastepaper."

(13) "Groundwood–chemi–mechanical subcategory" includes those mills at which pulp is produced, with or without brightening, utilizing a chemical cooking liquor to partially cook the wood followed by mechanical defibration by refining, resulting in yields of 90% or greater.

**Note:** Principal products include fine papers, newsprint, molded fiber products and market pulp.

(14) "Groundwood–CMN papers subcategory" includes those mills at which groundwood pulp is produced, with or without brightening, utilizing only mechanical defibration by either stone grinders or refiners.

**Note:** Principal products include coarse papers (C), molded fiber products (M), newsprint (N) and market pulp.

(15) "Groundwood–fine papers subcategory" includes those mills at which groundwood pulp is produced, with or without brightening, utilizing only mechanical defibration by either stone grinders or refiners.

**Note:** Principal products are fine papers, which includes business, writing and printing papers, and market pulp.

(16) "Groundwood–thermo–mechanical subcategory" includes those mills at which pulp is produced in a brief cook process employing steam, with or without the addition of cooking chemicals, such as sodium sulfite, followed by mechanical defibration by refiners, which are frequently under pressure, resulting in yields of approximately 95% or greater. The pulp may be brightened using hydrosulfite or peroxide bleaching chemicals. Principal products include market pulp, fine papers, newsprint and tissue papers.

(17) "Integrated" means a term used to describe a pulp and paper mill operation in which all or some of the pulp is processed into paper at the mill.

(18) "Market bleached kraft subcategory" includes those mills at which bleached pulp is produced in a full cook process employing a highly alkaline sodium hydroxide and sodium sulfide cooking liquor.

**Note:** The principal product is papergrade market pulp.

(19) "New source" for direct dischargers means any point source the construction of which commenced after January 3, 1983; and for indirect dischargers means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced after January 6, 1981.

(20) "Noncontinuous discharger" means a point source which discharges wastewaters pursuant to a WPDES permit which:

(a) Prohibits the discharge of pollutants during specified periods of time in excess of 24 hours in duration for purposes other than control of treatment plant upsets, and

(b) Specifies that annual average limitations are applicable to such a discharge.

(21) "Noncorrugating medium furnish subdivision" includes those mills in the paperboard from wastepaper subcategory where recycled corrugating medium is not used in the production of paperboard.

(22) "Nonintegrated–filter and nonwoven papers subcategory" includes those mills at which filter papers and nonwoven items are produced from wood pulp, secondary fibers and nonwood fibers which are prepared at other sites.

**Note:** Principal products include filter and blotting papers, nonwoven packaging and specialty papers, insulation, technical papers and gaskets.

(23) "Nonintegrated–fine papers subcategory" includes those mills at which fine papers are produced from wood pulp or deinked pulp prepared at other sites.

**Note:** Principal products include printing, business, writing and technical papers.

(24) "Nonintegrated–lightweight papers subcategory" includes those mills at which lightweight or thin papers are produced from wood pulp or secondary fibers prepared at other sites and from nonwood fibers and additives.

**Note:** Principal products include uncoated thin papers, such as carbonizing papers and cigarette papers, and some special grades of tissue such as capacitor, pattern, and interleaf.

(25) "Nonintegrated–paperboard subcategory" includes those mills at which paperboard is produced from wood pulp or secondary fibers prepared at other sites. Mills at which electrical grades of board or matrix board are produced are not included in this subcategory.

**Note:** Principal products include linerboard, folding boxboard, milk cartons, food board, chip board, pressboard, and other specialty boards.

(26) "Nonintegrated–tissue papers subcategory" includes those mills at which tissue papers are produced from wood pulp or deinked pulp prepared at other sites.

**Note:** Principal products include facial and toilet papers, glassine, paper diapers and paper towels.

(27) "Paperboard from wastepaper subcategory" includes those mills at which paperboard products are manufactured, without bleaching, from wastepapers including corrugated boxes, box board and newspapers. Those mills at which wastepaper comprises less than 80% of the raw material fibers are not included in this subcategory.

**Note:** Principal products include a wide variety of items used in commercial packaging, such as bottle cartons.

(28) "Papergrade sulfite (blow pit wash) subcategory" includes those mills at which sulfite pulp is produced in full cook process employing an acidic cooking liquor of sulfites of calcium, magnesium, ammonia or sodium. Following cooking operations, spent cooking liquor is washed from the pulp in blow pits.

**Note:** Principal products include tissue papers, newspapers, fine papers and market pulp.

(29) "Papergrade sulfite (drum wash) subcategory" includes those mills at which sulfite pulp is produced in a full cook process using an acidic cooking liquor of sulfites of calcium, magnesium, ammonia or sodium. Following cooking operations, spent cooking liquor is washed from the pulp on vacuum or pressure drums. Also included are mills using belt extraction systems for pulp washing.

**Note:** Principal products include tissue papers, fine papers, newsprint and market pulp.

(30) "PCP" means pentachlorophenol.

(31) "Production" means the annual off–the–machine production, including off–the–machine coating where applicable, divided by the number of operating days during that year.

(32) "Semi–chemical subcategory" includes those mills at which pulp is produced using a process that involves the cooking of wood chips under pressure with a variety of cooking liquors including neutral sulfite and combinations of soda ash and caustic soda. The cooked chips are usually refined before being converted into board or similar products. Sodium base neutral sulfite semi–chemical and ammonia base neutral sulfite semi–chemical mills are included in this subcategory for BPT and NSPS.

**Note:** Principal products include corrugating medium, insulating board, partition board, chip board, tube stock, and specialty boards.

(33) "Settleable solids" means the amount of settleable matter present in an effluent sample as determined by the test described

in "Standard Methods for the Examination of Water and Wastewater," 15th edition (1980).

**Note:** Copies are available for inspection at the office of the department of natural resources, the secretary of state's office, and the office of the legislative reference bureau, and may be obtained for personal use from the American Public Health Association, Inc., 1015 Fifteenth St., NW, Washington, D.C. 20005.

(34) "Soda subcategory" includes those mills at which bleached soda pulp is produced in full cook process employing a highly alkaline sodium hydroxide cooking liquor.

**Note:** Principal products are fine papers, which include printing, writing and business papers and market pulp.

(35) "TCP" means trichlorophenol.

(36) "Tissue from wastepaper subcategory" includes those mills at which tissue papers are produced from wastepapers without deinking.

**Note:** Principal products include facial and toilet paper, glassine, paper diapers and paper towels.

(37) "TSS" means total suspended nonfilterable solids as measured by the technique using glass fiber disks specified in "Standard Methods for the Examination of Water and Wastewater," 15th edition (1980).

**Note:** Copies are available as set forth in sub. (33) (Note).

(38) "Unbleached kraft subcategory" includes those mills at which unbleached pulp is produced in a full cook process employing a highly alkaline sodium hydroxide and sodium sulfide cooking liquor.

**Note:** Principal products include linerboard, the smooth facing of corrugated boxes; and bag papers.

(39) "Unbleached kraft and semi-chemical subcategory" includes those mills at which unbleached pulp is produced using 2 pulping processes: unbleached kraft and semi-chemical, where semi-chemical cooking liquor is burned within the kraft chemical recovery system. Unbleached kraft-neutral sulfite semi-chemical mills are included in this subcategory.

**Note:** Principal products include both linerboard and corrugating medium used in the production of corrugated boxes.

(40) "Unbleached kraft-neutral sulfite semi-chemical (cross-recovery) subcategory" includes those mills at which unbleached pulp is produced using both unbleached kraft and neutral sulfite semi-chemical, where the spent neutral sulfite semi-chemical cooking liquor is burned within the kraft chemical recovery system.

**Note:** Principal products include both linerboard and corrugating medium used in the production of corrugated boxes.

(41) "Wastepaper-molded products subcategory" includes those mills at which molded products are produced from wastepapers without deinking.

**Note:** Principal products include molded items such as fruit and vegetable packs and similar throw-away containers and display items.

(42) "Wet barking operations" include hydraulic barking operations and wet drum barking operations which are those drum barking operations that use substantial quantities of water in either water sprays in the barking drums or in a partial submersion of the drums in a tub of water.

(43) "Wood fiber furnish subdivision" includes those mills in the nonintegrated-fine papers subcategory where cotton fibers are not used in the production of fine papers.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.04 Application of effluent limitations and standards.** (1) The production basis for application of the limitations and standards set forth in this chapter shall be the annual production divided by the number of operating days in the year for each subcategory subject to the provisions of this chapter, except for those limitations set forth in Tables 1 and 3 for which only the proportion of the mill's production subject to the activities listed in Tables 1 and 3, or due to use of logs or chips subject to the activities listed in Tables 1 and 3, shall be subject to the limitations set forth in Tables 1 and 3.

(2) For facilities subject to effluent limitations in more than one subcategory, the discharge limitations shall be the aggregate of limitations applicable to the total production covered by each subcategory.

(3) Only noncontinuous dischargers shall be subject to annual average limitations. When annual average limitations are applied, the department shall establish daily maximum and monthly average concentration limitations for BOD<sub>5</sub>, TSS, and zinc reflecting wastewater treatment levels representative of best practicable control technology currently available in lieu of the monthly average and daily maximum limitations set forth in Table 1.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

## Subchapter I — Direct Discharges

**NR 284.10 Applicability.** The provisions in this subchapter are applicable to discharges of wastewater from the pulp and paper manufacturing category of point sources into waters of the state.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.11 Compliance dates.** Discharge of pollutants from facilities subject to the provisions of this subchapter may not exceed, as appropriate:

(1) By July 1, 1977 effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT);

(2) By July 1, 1984 effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT);

(3) At the commencement of discharge for new source performance standards (NSPS).

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.115 Measure of production.** Paper or paperboard production shall be measured at the paper machine takeup reel in off-the-machine moisture content, except for the semi-chemical, unbleached kraft, unbleached kraft-neutral sulfite semi-chemical (cross recovery), and paperboard from wastepaper subcategories where paper and paperboard production shall be measured in air-dry-tons (10% moisture content). Market pulp shall be measured in air-dry-tons (10% moisture). Production shall be determined based on past production practices, present trends or committed growth.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.12 Discharge standards.** (1) **BEST PRACTICABLE TECHNOLOGY.** The following effluent limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility subject to the provisions of this subchapter, after application to process wastes of the best practicable control technology currently available. These limitations for all or specific subcategories shall be applied in accordance with s. NR 284.04, except as provided in subch. IV of ch. NR 220.

(a) The daily maximum and 30-day average limitations for BOD<sub>5</sub>, TSS and zinc are set forth in Table 1 in lbs/ton of product.

(b) Noncontinuous dischargers shall not be subject to the daily maximum and 30-day average limitations for BOD<sub>5</sub>, TSS and zinc, but shall be subject to annual average effluent limitations set forth in Table 2.

(c) The annual average limitations for BOD<sub>5</sub>, TSS and zinc are set forth in Table 2 in lbs/ton of product.

(d) The limitations for wet barking operations, log washing or chip washing, and log flumes or log ponds set forth in Table 1 are in addition to the limitations for the specific base subcategory set forth in that table.

(e) Dischargers which continuously monitor pH shall be subject to the provisions set forth in s. NR 205.06

**TABLE 1**  
**BPT Effluent Limitations**

Subcategory	BOD <sub>5</sub>		TSS		Zinc <sup>1</sup>		pH <sup>2</sup> std. units
	daily max. (lbs/ton)	30-day avg. (lbs/ton)	daily max. (lbs/ton)	30-day avg. (lbs/ton)	daily max. (lbs/ton)	30-day avg. (lbs/ton)	
Integrated Facilities							
1. BCT Bleached Kraft	27.3	14.2	48.0	25.8			5-9
(a) Wet barking	4.5	2.4	11.5	6.2			5-9
(b) Log washing or chip washing	0.5	0.3	1.3	0.7			5-9
(c) Log flumes or log ponds	0.9	0.5	2.5	1.4			5-9
2. Fine Bleached Kraft	21.2	11.0	44.3	23.8			5-9
(a) Wet Barking	3.9	2.0	10.6	5.7			5-9
(b) Log washing or chip washing	0.4	0.2	1.1	0.6			5-9
(c) Log flumes or log ponds	0.7	0.4	2.3	1.2			5-9
3. Groundwood—CMN Papers	14.9	7.8	25.5	13.7	0.6	0.3	5-9
a. Wet Barking	2.3	1.1	4.0	2.2			5-9
b. Log washing or chip washing	0.3	0.1	0.4	0.3			5-9
c. Log flumes or log ponds	0.5	0.2	0.9	0.5			5-9
4. Groundwood—Chemical—Mechanical	27.0	14.1	39.5	21.3	0.68	0.34	5-9
a. Wet Barking	1.8	0.9	5.2	2.9			5-9
b. Log washing or chip washing	0.1	0.1	0.5	0.3			5-9
c. Log flumes or log ponds	0.3	0.1	1.1	0.6			5-9
5. Groundwater—Fine Papers	13.7	7.2	23.5	12.6	0.55	0.27	5-9
a. Wet Barking	2.2	1.1	3.9	2.2			5-9
b. Log washing or chip washing	0.3	0.1	0.4	0.3			5-9
c. Log flumes or log ponds	0.4	0.1	0.8	0.5			5-9
6. Groundwood—Thermo—Mechanical	21.2	11.1	31.1	16.7	0.52	0.26	5-9
a. Wet Barking	1.8	0.9	5.4	2.9			5-9
b. Log washing or chip washing	0.1	0.1	0.6	0.3			5-9
c. Log flumes or log ponds	0.3	0.2	1.0	0.7			5-9
7. Papergrade Sulfite (Blow Pit Wash)							
(a) Bisulfite liquor/surface condensers	63.6	33.1	87.9	47.3			5-9
(b) Bisulfite liquor/barometric condensers	69.4	36.1	104.4	56.2			5-9
(c) Acid sulfite liquor/surface condensers	64.6	33.6	87.9	47.3			5-9
(d) Acid sulfite liquor/barometric condensers	71.1	37.0	104.4	56.2			5-9
(e) Wet barking	5.4	2.9	15.0	7.9			5-9
(f) Log washing or chip washing	0.3	0.2	5.1	2.7			5-9
(g) Log flumes or log ponds	0.7	0.4	3.4	1.8			5-9
8. Papergrade Sulfite (Drum Wash)							
(a) Bisulfite liquor/surface condensers <sup>3</sup>	53.4	27.8	87.9	47.3			5-9
(b) Bisulfite liquor/barometric condensers <sup>3</sup>	58.8	30.6	104.4	56.2			5-9
(c) Acid sulfite liquor/surface condensers <sup>3</sup>	59.5	31.0	87.9	47.3			5-9
(d) Acid sulfite liquor/barometric condensers <sup>3</sup>	65.0	33.8	104.4	56.2			5-9
(e) Continuous digesters	76.3	39.7	107.5	57.9			5-9
(f) Wet barking	6.1	3.2	15.0	7.9			5-9
(g) Log washing or chip washing	0.7	0.4	5.1	2.7			5-9
(h) Log flumes or log ponds	1.4	0.7	3.4	1.8			5-9
9. Semi-Chemical							
(a) Ammonia Base Mills	16.0	8.0	20.0	10.0			6-9
(b) Sodium Base Mills	17.4	8.7	22.0	11.0			6-9
10. Soda	27.4	14.2	49.0	26.4			5-9
a. Wet Barking	4.1	2.2	10.5	5.6			5-9
b. Log washing or chip washing	0.3	0.2	1.0	0.5			5-9
c. Log flumes or log ponds	0.6	0.4	2.2	1.1			5-9
11. Unbleached Kraft	11.2	5.6	24.0	12.0			6-9

**TABLE 1 (Continued)**  
**BPT Effluent Limitations**

	Subcategory	BOD <sub>5</sub>		TSS		Zinc <sup>1</sup>		pH <sup>2</sup> std. units
		daily max. (lbs/ton)	30-day avg. (lbs/ton)	daily max. (lbs/ton)	30-day avg. (lbs/ton)	daily max. (lbs/ton)	30-day avg. (lbs/ton)	
12.	Unbleached Kraft and Semi-Chemical	—	—	—	—			
13.	Unbleached Kraft–Neutral Sulfite Semi–Chemical (Cross–Recovery)	16.0	8.0	25.0	12.5			6–9
Nonintegrated Facilities								
14.	Nonintegrated–Filter and Nonwoven Papers	59.2	32.6	53.2	26.0			5–9
15.	Nonintegrated–Fine Papers							
	a. Wood fiber furnish subdivision	16.4	8.5	22.0	11.8			5–9
	b. Cotton fiber furnish subdivision	34.8	18.2	48.6	26.2			
16.	Nonintegrated–Lightweight Papers	48.2	26.4	43.2	21.2			5–9
	(a) Facilities where electrical grade papers are produced	76.0	41.8	68.4	33.4			5–9
17.	Nonintegrated–Paperboard	13.0	7.2	11.6	5.6			5–9
18.	Nonintegrated–Tissue Papers	22.8	12.5	20.5	10.0			5–9
From Wastepaper Facilities								
19.	Builders' Paper and Roofing Felt <sup>4</sup>	10.0	6.0	10.0	6.0			6–9
20.	Deink	36.2	18.8	48.1	25.9			5–9
21.	Paperboard FWP							
	(a) Noncorrugating medium furnish subdivision	6.0	3.0	10.0	5.0			6–9
	(b) Corrugating medium furnish subdivision	11.4	5.6	18.4	9.2			6–9
22.	Tissue FWP	27.4	14.2	34.1	18.4			5–9
23.	Wastepaper–Molded Products	8.8	4.6	21.6	11.6			5–9
Pulp Facilities								
24.	Dissolving Kraft	47.2	24.5	74.6	40.1			5–9
	(a) Wet barking	6.4	3.4	13.8	7.5			5–9
	(b) Log washing or chip washing	0.7	0.4	1.4	0.8			5–9
	(c) Log flumes or log ponds	1.2	0.7	2.9	1.6			5–9
25.	Dissolving Sulfite Pulp							
	(a) Facilities where nitration grade pulp is produced	82.8	43.0	141.3	76.1			5–9
	(b) Facilities where viscose grade pulp is produced	88.6	46.0	141.3	76.1			5–9
	(c) Facilities where cellophane grade pulp is produced	96.1	49.9	141.3	76.1			5–9
	(d) Facilities where acetate grade pulp is produced	101.6	52.8	141.3	76.1			5–9
	(e) Wet barking	1.4	0.7	0.3	0.2			5–9
	(f) Log washing or chip washing	0.3	0.2	0.3	0.2			5–9
	(g) Log flumes or log ponds	0.3	0.2	0.3	0.2			5–9
26.	Market Bleached Kraft	30.9	16.1	60.8	32.8			5–9
	(a) Wet barking	4.6	2.4	10.6	5.7			5–9
	(b) Log washing or chip washing	0.4	0.2	1.2	0.6			5–9
	(c) Log flumes or log ponds	0.8	0.4	2.3	1.2			5–9

Mass limitations are in lbs/ton. For kg/kkg, divide by 2.

y=wastewater discharged in kgal per ton of product

x=percent sulfite pulp in final product

<sup>1</sup> These limitations apply only to groundwood facilities using zinc hydrosulfite as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

<sup>2</sup> Dischargers which continuously monitor pH shall be subject to the provisions set forth in s. NR 205.06.

<sup>3</sup> Limitations do not apply to mills using continuous digesters.

<sup>4</sup> Settleable solids shall not exceed 0.2 mg/l.



**TABLE 2<sup>1</sup>**  
**BPT: Annual Average Limitations for BOD<sub>5</sub>, TSS and Zinc<sup>2</sup>**

Subcategory	Activity/Process	BOD <sub>5</sub> annual avg. lbs/ton	TSS annual avg. lbs/ton	Zinc <sup>2</sup> annual avg. lbs/ton
<b>Integrated Facilities</b>				
1.	BCT Bleached Kraft	7.96	14.16	
	a. wet barking	1.28	3.4	
	b. log washing or chip washing	0.1	0.4	
	c. log flumes or log ponds	0.2	0.7	
2.	Fine Bleached Kraft	6.16	13.06	
	a. wet barking	1.08	3.08	
	b. log washing or chip washing	0.1	0.3	
	c. log flumes or log ponds	0.2	0.6	
3.	Groundwood—CMN Papers	4.38	7.52	
	a. wet barking	0.6	1.2	
	b. log washing or chip washing	0.1	0.2	
	c. log flumes or log ponds	0.1	0.28	
	d. zinc hydrosulfite bleaching	—	0.2	
4.	Groundwood—Chemi—Mechanical	7.92	11.7	
	a. wet barking	0.5	1.6	
	b. log washing or chip washing	0.1	0.2	
	c. log flumes or log ponds	0.1	0.3	
	d. zinc hydrosulfite bleaching	—	—	0.22
5.	Groundwood—Fine Papers	4.04	6.92	
	a. wet barking	0.7	1.2	
	b. log washing or chip washing	0.1	0.2	
	c. log flumes or log ponds	0.1	0.28	
	d. zinc hydrosulfite bleaching	—	—	0.18
6.	Groundwood—Thermo—Mechanical	6.22	9.16	
	a. wet barking	0.6	1.5	
	b. log washing or chip washing	0.1	0.1	
	c. log flumes or log ponds	0.1	0.3	
	d. zinc hydrosulfite bleaching	—	—	0.16
7.	Papergrade Sulfite (Blow Pit Wash)			
	a. Bisulfite liquor/surface condensers	18.58	25.98	
	b. Bisulfite liquor/barometric condensers	20.28	30.86	
	c. Acid sulfite liquor/surface condensers	18.86	25.98	
	d. Acid sulfite liquor/barometric condensers	20.78	30.86	
	e. wet barking	1.6	4.38	
	f. log washing or chip washing	0.1	1.5	
	g. log flumes or log ponds	0.2	1.0	
8.	Papergrade Sulfite (Drum Wash)			
	a. Bisulfite liquor/surface condensers <sup>3</sup>	15.6	25.98	
	b. Bisulfite liquor/barometric condensers <sup>3</sup>	17.18	30.86	
	c. Acid sulfite liquor/surface condensers <sup>3</sup>	17.4	25.98	
	d. Acid sulfite liquor/barometric condensers <sup>3</sup>	18.98	30.86	
	e. Continuous digesters	22.3	31.8	
	f. wet barking	1.78	4.38	
	g. log washing or chip washing	0.2	1.5	
	h. log flumes or log ponds	0.4	1.0	
9.	Soda	7.96	14.5	
	a. wet barking	1.2	3.08	
	b. log washing or chip washing	0.1	0.28	
	c. log flumes or log ponds	0.2	0.7	
<b>Nonintegrated Facilities</b>				
10.	Nonintegrated—Filter and Nonwoven Papers	18.2	14.76	
11.	Nonintegrated—Fine Papers			
	a. Wood fiber furnish subdivision	4.76	6.48	
	b. Cotton fiber furnish subdivision	10.22	14.38	
12.	Nonintegrated—Lightweight Papers	14.74	12.04	
	a. Facilities where electrical grade papers are produced	23.34	18.96	
13.	Nonintegrated—Paperboard	4.02	3.18	
14.	Nonintegrated—Tissue Papers	6.98	5.68	

**TABLE 2<sup>1</sup> (Continued)**  
**BPT: Annual Average Limitations for BOD<sub>5</sub>, TSS and Zinc**

Subcategory	Activity/Process	BOD <sub>5</sub> annual avg. lbs/ton	TSS annual avg. lbs/ton	Zinc <sup>2</sup> annual avg. lbs/ton
From Wastepaper Facilities				
15.	Deink	10.56	14.22	
16.	Tissue FWP	7.96	10.1	
17.	Wastepaper–Molded Products	2.58	6.36	
Pulp Facilities				
18.	Dissolving Kraft	13.76	22.02	
	a. wet barking	1.88	3.98	
	b. log washing or chip washing	0.2	0.4	
	c. log flumes or log ponds	0.4	0.8	
19.	Dissolving Sulfite Pulp			
	a. Facilities where nitration grade pulp is produced	24.14	41.8	
	b. Facilities where viscose grade pulp is produced	25.84	41.8	
	c. Facilities where cellophane grade pulp is produced	28.02	41.8	
	d. Facilities where acetate grade pulp is produced	29.66	41.8	
	e. wet barking	0.4	0.1	
	f. log washing or chip washing	0.1	0.1	
	g. log flumes or log ponds	0.1	0.1	
20.	Market Bleached Kraft	9.04	18.02	
	a. wet barking	1.4	3.08	
	b. log washing or chip washing	0.2	0.3	
	c. log flumes or log ponds	0.3	0.7	

Limitations are in lbs/ton. For kg/kkg, divide by 2.

<sup>1</sup> Applicable only to noncontinuous dischargers.

<sup>2</sup> For those groundwood facilities using zinc hydrosulfite as a bleaching agent in the manufacturing process the zinc effluent limitations are to be added to the base limitations. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

<sup>3</sup> Not applicable to facilities using continuous digesters.

(2) BEST AVAILABLE TECHNOLOGY. The following effluent limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility subject to the provisions of this subchapter, after application to process wastes of the best available technology economically achievable. These limitations for all or specific subcategories shall be applied in accordance with s. NR 284.04, except as provided in subch. IV of ch. NR 220.

(a) The daily maximum limitations for PCP, TCP and zinc are set forth in Table 3 in both lbs/ton and mg/l.

(b) PCP and TCP limitations are only applicable to facilities

where chlorophenolic–containing biocides are used. Permittees not using chlorophenolic–containing biocides shall certify to the department that they are not using these biocides.

(c) Zinc limitations are only applicable to groundwood facilities where zinc hydrosulfite is used as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

(d) Noncontinuous dischargers shall not be subject to daily maximum mass limitations in lbs/ton, but shall be subject to concentration limitations in mg/l.

**TABLE 3**  
**BAT Effluent Limitations**

Subcategory	PCP <sup>1</sup>		TCP <sup>1</sup>		Zinc <sup>2</sup>	
	maximum for any one day		maximum for any one day		maximum for any one day	
	lbs/ton	mg/l <sup>3</sup>	lbs/ton	mg/l <sup>3</sup>	lbs/ton	mg/l <sup>3</sup>
Integrated Facilities						
1.	BCT Bleached Kraft	0.0032	(0.011)(35.4)/y	0.02	(0.068)(35.4)/y	
2.	Fine Bleached Kraft	0.0028	(0.011)(30.9)/y	0.0176	(0.068)(30.9)/y	
3.	Groundwood–CMN Papers	0.0022	(0.011)(23.8)/y	0.00198	(0.010)(23.8)/y	0.60 (3.0)(23.8)/y
4.	Groundwood–Chemi–Mechanical	—	—	—	—	—
5.	Groundwood–Fine Papers	0.0020	(0.011)(21.9)/y	0.00184	(0.010)(21.9)/y	0.54 (3.0)(21.9)/y
6.	Groundwood–Thermo–Mechanical	0.00194	(0.011)(21.1)/y	0.00176	(0.010)(21.1)/y	0.52 (3.0)(21.1)/y
7.	Papergrade Sulfite (Blow Pit Wash)	0.00116	((0.011)(12.67) exp(0.017x))	0.0072	((0.068)(12.67) exp(0.017x))	
8.	Papergrade Sulfite (Drum Wash)	0.00116	((0.011)(12.67) exp(0.017x))	0.0072	((0.068)(12.67) exp(0.017x))	
9.	Semi–Chemical	0.0024	(0.029)(10.3)/y	0.00086	(0.010)(10.3)/y	
10.	Soda	0.0028	(0.011)(30.9)/y	0.0176	(0.068)(30.9)/y	
11.	Unbleached Kraft	0.00116	(0.011)(12.6)/y	0.00106	(0.010)(12.6)/y	

**TABLE 3 (Continued)  
BAT Effluent Limitations**

Subcategory	PCP <sup>1</sup>		TCP <sup>1</sup>		Zinc <sup>2</sup>	
	maximum for any one day		maximum for any one day		maximum for any one day	
	lbs/ton	mg/l <sup>3</sup>	lbs/ton	mg/l <sup>3</sup>	lbs/ton	mg/l <sup>3</sup>
12. Unbleached Kraft and Semi-Chemical	0.00128	(0.11)(14.0)/y	0.00118	(0.010)(14.0)/y		
13. Unbleached Kraft-Neutral Sulfite Semi-Chemical (Cross-Recovery)	0.00128	(0.011)(14.0)/y	0.00118	(0.010)(14.0)/y		
Nonintegrated Facilities.						
14. Nonintegrated-Filter and Nonwoven Papers	0.0144	(0.029)(59.9)/y	0.005	(0.010)(59.9)/y		
15. Nonintegrated-Fine Papers						
(a) Wood fiber furnish subdivision	0.0036	(0.029)(15.2)/y	0.00128	(0.010)(15.2)/y		
(b) Cotton fiber furnish subdivision	0.0102	(0.029)(42.3)/y	0.0036	(0.010)(42.3)/y		
16. Nonintegrated-Lightweight Papers						
(a) Facilities where electrical grade papers are produced	0.0186	(0.029)(76.9)/y	0.0064	(0.010)(76.9)/y		
17. Nonintegrated-Paperboard	0.0032	(0.029)(12.9)/y	0.00108	(0.010)(12.9)/y		
18. Nonintegrated-Tissue Papers	0.0056	(0.029)(22.9)/y	0.00192	(0.010)(22.9)/y		
From Wastepaper Facilities						
19. Builders' Paper and Roofing Felt	0.0034	(0.029)(14.4)/y	0.0012	(0.010)(14.4)/y		
20. Deink						
(a) Facilities where fine or tissue paper is produced	0.006	(0.029)(24.4)/y	0.0138	(0.068)(24.4)/y		
(b) Facilities where newsprint is produced	0.006	(0.029)(24.4)/y	0.002	(0.010)(24.4)/y		
21. Paperboard FWP	0.00174	(0.029)(7.2)/y	0.0006	(0.010)(7.2)/y		
22. Tissue FWP	0.006	(0.029)(25.2)/y	0.0022	(0.010)(25.2)/y		
23. Wastepaper-Molded Products	0.0052	(0.029)(21.1)/y	0.00176	(0.010)(21.1)/y		
Pulp Facilities						
24. Dissolving Kraft	0.005	(0.011)(55.1)/y	0.032	(0.068)(55.1)/y		
25. Dissolving Sulfite Pulp						
(a) Facilities where nitration, viscose, or cellophane grade pulps are produced	0.006	(0.011)(66.0)/y	0.038	(0.068)(66.0)/y		
(b) Facilities where acetate grade pulp is produced	0.0066	(0.011)(72.7)/y	0.042	(0.068)(72.7)/y		
26. Market Bleached Kraft	0.0038	(0.011)(41.6)/y	0.024	(0.068)(41.6)/y		

Mass limitations are in lbs/ton except where otherwise stated. For kg/kkg, divide by 2.

y=wastewater discharged in kgal per ton of product.

x=percent sulfite in final product.

<sup>1</sup> These limitations apply only to facilities where chlorophenolic – containing biocides are used. Permittees not using chlorophenolic – containing biocides shall certify to the department that they are not using these biocides.

<sup>2</sup> These limitations apply only to groundwood facilities using zinc hydrosulfite as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

<sup>3</sup> Applies only to noncontinuous dischargers.

**(3) NEW SOURCE PERFORMANCE STANDARDS.** The following effluent limitations establish the quantity or quality of pollutants or pollutant properties which may be discharged by a facility which is a new source subject to the provisions of this subchapter. These limitations for all or specific subcategories shall be applied in accordance with s. NR 284.04, except as provided in subch. IV of ch. NR 220.

(a) The daily maximum and 30-day average limitations for BOD<sub>5</sub> and TSS are set forth in Table 4 in lbs/ton of product.

(b) The daily maximum limitations for PCP, TCP and zinc are set forth in Table 5 in both lbs/ton and mg/l.

(c) The pH of all discharges shall be within the range of 5.0 to 9.0. Dischargers which continuously monitor pH shall be subject to the provisions set forth in s. NR 205.06.

(d) PCP and TCP limitations are only applicable to facilities where chlorophenolic-containing biocides are used. Permittees not using chlorophenolic-containing biocides shall certify to the department that they are not using these biocides.

(e) Zinc limitations are only applicable to groundwood facilities where zinc hydrosulfite is used as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent



shall certify to the department that they are not using this bleaching compound.

(f) Noncontinuous dischargers shall not be subject to the daily maximum and 30-day average limitations for BOD<sub>5</sub> and TSS, but

shall be subject to annual average effluent limitations set forth in Table 4. Noncontinuous dischargers also shall be subject to concentration limitations in mg/l where provided.

**TABLE 4**  
**NSPS Effluent Limitations**

Subcategory	BOD <sub>5</sub>			TDD		
	daily max. (lbs/ton)	30-day avg. (lbs/ton)	annual avg. <sup>1</sup> (lbs/ton)	daily max. (lbs/ton)	30-day avg. (lbs/ton)	annual avg. <sup>1</sup> (lbs/ton)
<b>Integrated Facilities</b>						
1. BCT Bleached Kraft	17.0	9.2	4.8	29.2	15.2	8.0
2. Fine Bleached Kraft	11.4	6.2	3.24	18.2	9.6	5.04
3. Groundwood—CMN Papers	9.2	5.0	2.6	14.6	7.6	4.0
4. Groundwood—Chemi—Mechanical	—	—	—	—	—	—
5. Groundwood—Fine Papers	7.0	3.8	1.98	11.6	6.0	3.14
6. Groundwood—Thermo—Mechanical	9.2	5.0	2.6	17.4	9.2	4.84
7. Papergrade Sulfite (Blow Pit Wash)*	8.76 exp (0.017x)	4.72 exp (0.017x)	*	11.62 exp (0.017x)	6.06 exp (0.017x)	*
8. Papergrade Sulfite (Drum Wash)*	8.76 exp (0.017x)	4.72 exp (0.017x)	*	11.62 exp (0.017x)	6.06 exp (0.017x)	*
9. Semi—Chemical	6.0	3.2	1.66	11.6	6.0	3.14
10. Soda	11.4	6.2	3.24	18.2	9.6	5.04
11. Unbleached Kraft						
(a) Facilities where linerboard is produced	6.8	3.6	1.88	11.6	6.0	3.14
(b) Facilities where bag paper and other mixed products are produced	10.0	5.4	2.82	18.2	9.6	5.04
12. Unbleached Kraft and Semi—Chemical	7.8	4.2	2.18	14.6	7.6	4.0
13. Unbleached Kraft—Neutral Sulfite Semi—Chemical (Cross Recovery)	7.8	4.2	2.18	14.6	7.6	4.0
<b>Nonintegrated Facilities</b>						
14. Nonintegrated—Filter and Nonwoven Papers	34.2	16.6	11.2	30.0	13.2	8.04
15. Nonintegrated—Fine Papers						
(a) Wood fiber furnish subdivision	7.0	3.8	1.98	8.8	4.6	2.42
(b) Cotton fiber furnish subdivision	15.6	8.4	4.38	19.0	9.8	5.14
16. Nonintegrated—Lightweight Papers	27.4	13.4	9.04	24.0	10.4	6.34
(a) Facilities where electrical grade papers are produced	48.2	23.4	15.8	42.2	18.4	11.2
17. Nonintegrated—Paperboard	8.0	3.8	2.56	7.0	3.0	1.82
18. Nonintegrated—Tissue Papers	14.0	6.8	4.58	12.0	5.2	3.16
<b>From Wastepaper Facilities</b>						
19. Builders' Paper and Roofing Felt	3.4	1.88	0.98	5.4	2.8	1.46
20. Deink						
(a) Facilities where fine paper is produced	11.4	6.2	3.24	17.4	9.2	4.84
(b) Facilities where tissue paper is produced	19.2	10.4	5.44	26.2	13.6	7.14
(c) Facilities where newsprint is produced	12.0	6.4	3.34	24.0	12.6	6.62
21. Paperboard FWP						
(a) Noncorrugating medium furnish subdivision	5.2	2.8	1.46	7.0	3.6	1.88
(b) Corrugating medium furnish subdivision	7.8	4.2	2.18	8.8	4.6	2.42
22. Tissue FWP	9.2	5.0	2.6	20.4	10.6	5.56
23. Wastepaper—Molded Products	4.2	2.2	1.14	8.8	4.6	2.42
<b>Pulp Facilities</b>						
24. Dissolving Kraft	31.2	16.8	8.78	54.6	28.6	15.04
25. Dissolving Sulfite Pulp						
(a) Facilities where nitration grade pulp is produced	53.8	29.0	15.18	81.6	42.6	22.42
(b) Facilities where viscose grade pulp is produced	57.4	31.0	16.22	81.6	42.6	22.42
(c) Facilities where cellophane grade pulp is produced	62.4	33.2	17.38	81.6	42.6	22.42
(d) Facilities where acetate grade pulp is produced	79.2	42.8	22.4	82.2	43.0	22.62
26. Market Bleached Kraft	20.6	11.0	5.74	36.4	19.0	10.0

Mass limitations are in lbs/ton. For kg/kkg, divide by 2.

y=wastewater discharged in kgal per ton of product.

x=percent sulfite pulp in final product.

pH=within the range of 5.0–9.0 at all times. Dischargers which continuously monitor pH shall be subject to the provisions set forth in s. NR 205.06.

\*Annual average effluent limitations for this subcategory shall be determined by dividing the 30-day average limitations for BOD<sub>5</sub> by 1.91 and TSS by 1.90.

<sup>1</sup> These limitations apply only to noncontinuous dischargers.

**TABLE 5**  
**NSPS Effluent Limitation**  
**PCP<sup>1</sup>**

Subcategory	maximum for any one day		TCP <sup>1</sup>		Zinc <sup>2</sup>	
	lbs/ton	mg/l <sup>3</sup>	lbs/ton	mg/l <sup>3</sup>	lbs/ton	mg/l <sup>3</sup>
<b>Integrated Facilities</b>						
1. BCT Bleached Kraft	0.0032	(0.012)(31.7)/y	0.02	(0.076)(31.7)/y		
2. Fine Bleached Kraft	0.0028	(0.014)(25.1)/y	0.0176	(0.084)(25.1)/y		
3. Groundwood—CMN Papers	0.0022	(0.016)(16.8)/y	0.00198	(0.014)(16.8)/y	0.42	(3.0)(16.8)/y
4. Groundwood—Chemi—Mechanical	—	—	—	—	—	—
5. Groundwood—Fine Papers	0.002	(0.016)(15.4)/y	0.00184	(0.014)(15.4)/y	0.38	(3.0)(15.4)/y
6. Groundwood—Thermo—Mechanical	0.00194	(0.017)(13.8)/y	0.00176	(0.015)(13.8)/y	0.34	(3.0)(13.8)/y
7. Papergrade Sulfite (Blow Pit Wash)	0.00116 exp(0.017x)	((0.015)(9.12) exp(0.017x))/y	0.0072 exp(0.017x)	((0.094)(9.12) exp(0.017x))/y		
8. Papergrade Sulfite (Drum Wash)	0.00116 exp(0.017x)	((0.015)(9.12) exp(0.017x))/y	0.0072 exp(0.017x)	((0.094)(9.12) exp(0.017x))/y		
9. Semi—Chemical	0.0024	(0.041)(7.3)/y	0.00086	(0.014)(7.3)/y		
10. Soda	0.0028	(0.014)(25.1)/y	0.0176	(0.084)(25.1)/y		
11. Unbleached Kraft						
(a) Facilities where linerboard is produced	0.00116	(0.015)(9.4)/y	0.00106	(0.013)(9.4)/y		
(b) Facilities where bag paper and other mixed products are produced.	0.00116	(0.012)(11.4)/y	0.00106	(0.011)(11.4)/y		
12. Unbleached Kraft and Semi—Chemical	0.00128	(0.013)(11.5)/y	0.00118	(0.012)(11.5)/y		
13. Unbleached Kraft—Neutral Sulfite Semi—Chemical (Cross Recovery)	0.00128	(0.013)(11.5)/y	0.00118	(0.012)(11.5)/y		
<b>Nonintegrated Facilities</b>						
14. Nonintegrated—Filter and Nonwoven Papers	0.0144	(0.037)(47.5)/y	0.005	(0.013)(47.5)/y		
15. Nonintegrated—Fine Papers						
(a) Wood fiber furnish subdivision	0.0036	(0.047)(9.4)/y	0.00128	(0.016)(9.4)/y		
(b) Cotton fiber furnish subdivision	0.0102	(0.039)(31.1)/y	0.0036	(0.014)(31.1)/y		
16. Nonintegrated—Lightweight Papers	0.0118	(0.037)(38.2)/y	0.004	(0.013)(38.2)/y		
(a) Facilities where electrical grade papers are produced	0.0186	(0.033)(66.8)/y	0.0064	(0.012)(66.8)/y		
17. Nonintegrated—Paperboard	0.0032	(0.033)(11.2)/y	0.00108	(0.012)(11.2)/y		
18. Nonintegrated—Tissue Papers	0.0056	(0.035)(19.1)/y	0.00192	(0.012)(19.1)/y		
<b>From Wastepaper Facilities</b>						
19. Builders' Paper and Roofing Felt	0.0034	(0.155)(2.7)/y	0.0012	(0.053)(2.7)/y		
20. Deink						
(a) Facilities where fine paper is produced	0.006	(0.045)(15.9)/y	0.0138	(0.104)(15.9)/y		
(b) Facilities where tissue paper is produced	0.006	(0.036)(19.5)/y	0.0138	(0.065)(19.5)/y		
(c) Facilities where newsprint is produced	0.006	(0.044)(16.2)/y	0.002	(0.015)(16.2)/y		
21. Paperboard FWP						
(a) Noncorrugating medium furnish subdivision	0.00174	(0.065)(3.2)/y	0.006	(0.023)(3.2)/y		
(b) Corrugating medium furnish subdivision	0.00174	(0.065)(3.2)/y	0.0006	(0.023)(3.2)/y		
22. Tissue FWP	0.006	(0.045)(16.3)/y	0.0022	(0.015)(16.3)/y		
23. Wastepaper—Molded Products	0.0052	(0.107)(5.7)/y	0.00176	(0.037)(5.7)/y		
<b>Pulp Facilities</b>						
24. Dissolving Kraft	0.005	(0.012)(50.7)/y	0.032	(0.074)(50.7)/y		
25. Dissolving Sulfite Pulp						
(a) Facilities where nitration grade pulp is produced	0.006	(0.012)(59.0)/y	0.038	(0.012)(59.0)/y		
(b) Facilities where viscose grade pulp is produced	0.006	(0.012)(59.0)/y	0.038	(0.012)(59.0)/y		
(c) Facilities where cellophane grade pulp is produced	0.006	(0.012)(59.0)/y	0.038	(0.076)(59.0)/y		
(d) Facilities where acetate grade pulp is produced	0.0066	(0.012)(65.7)/y	0.042	(0.075)(65.7)/y		
26. Market Bleached Kraft	0.0038	(0.013)(36.6)/y	0.024	(0.077)(36.6)/y		

Mass limitations are in lbs/ton except where otherwise stated. For kg/kkg, divide by 2.

y=wastewater discharged in kgal per ton of product.

x=percent sulfite in final product.

pH=within the range of 5.0 – 9.0 at all times. Dischargers which continuously monitor pH shall be subject to the provisions set forth in s. NR 205.06.

<sup>1</sup>These limitations apply only to facilities where chlorophenolic – containing biocides are used. Permittees not using chlorophenolic – containing biocides shall certify to the department that they are not using these biocides.

<sup>2</sup>These limitations apply only to groundwood facilities using zinc hydrosulfite as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

<sup>3</sup>Applicable only to noncontinuous dischargers.

**History:** Cr. Register, October, 1986, No. 370, eff. 11–1–86; correction in (1) (intro.), (2) (intro.), (3) (intro.) made under s. 13.92 (4) (b) 7, Stats., Register April 2018 No. 748.

**Subchapter II — Indirect Discharges**

**NR 284.20 Applicability.** The provisions in this subchapter are applicable to discharges of wastewater from the pulp and paper manufacturing category of point sources into publicly owned treatment works.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.21 Compliance dates.** Discharge of pollutants from facilities subject to the provisions of this subchapter may not exceed, as appropriate:

(1) By July 1, 1984 for pretreatment standards for existing sources;

(2) At the commencement of discharge for pretreatment standards for new sources.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.215 Measure of production.** Paper or paperboard production shall be measured at the paper machine takeup reel in off-the-machine moisture content, except for the semi-chemical unbleached kraft, unbleached kraft-neutral sulfite semi-chemical (cross recovery), and paperboard from wastepaper subcategories where paper and paperboard production shall be measured in air-dry-tons (10% moisture content). Market pulp

shall be measured in air-dry-tons (10% moisture). Production shall be determined based on past production practices, present trends or committed growth.

**History:** Cr. Register, October, 1986, No. 370, eff. 11-1-86.

**NR 284.22 Discharge standards. (1) PRETREATMENT STANDARDS FOR EXISTING SOURCES (PSES).** Except as provided in ss. NR 211.13 and 211.14 pertaining to removal credits and fundamentally different factors, any existing source subject to this section which introduces pollutants into a publicly owned treatment works shall comply with ch. NR 211 and achieve the following pretreatment standards for existing sources by July 1, 1984:

(a) The daily maximum limitations for PCP, TCP and zinc are set forth in Table 6 in both lbs/ton and mg/l.

(b) PCP and TCP limitations are only applicable to facilities where chlorophenolic-containing biocides are used. Permittees not using chlorophenolic-containing biocides shall certify to the control authority that they are not using these biocides.

(c) Zinc limitations are only applicable to groundwood facilities where zinc hydrosulfite is used as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the control authority that they are not using this bleaching compound.

**TABLE 6**  
**PSES Effluent Limitations**  
PCP<sup>1</sup> TCP<sup>1</sup> Zinc<sup>2</sup>

Subcategory	maximum for any one day		maximum for any one day		maximum for any one day	
	lbs/ton	mg/l	lbs/ton	mg/l	lbs/ton	mg/l
<b>Integrated Facilities</b>						
1. BCT Bleached Kraft	0.0032	(0.011)(35.4)/y	0.024	(0.082)(35.4)/y		
2. Fine Bleached Kraft	0.0028	(0.011)(30.9)/y	0.022	(0.082)(30.9)/y		
3. Groundwood—CMN Papers	0.0022	(0.011)(23.8)/y	0.00198	(0.010)(23.8)/y	0.6	(3.0)(23.8)/y
4. Groundwood—Chemi—Mechanical	—	—	—	—	—	—
5. Groundwood—Fine Papers	0.002	(0.011)(21.9)/y	0.00184	(0.010)(21.9)/y	0.54	(3.0)(21.9)/y
6. Groundwood—Thermo—Mechanical	0.00194	(0.011)(21.1)/y	0.00176	(0.010)(21.1)/y	0.52	(3.0)(21.1)/y
7. Papergrade Sulfite (Blow Pit Wash)	0.00116	((0.011)(12.67) exp(0.017x)	0.0086	((0.082)(12.67) exp(0.017x))		
8. Papergrade Sulfite (Drum Wash)	0.00116	((0.011)(12.67) exp(0.017x)	0.0086	((0.082)(12.67) exp(0.017x))		
9. Semi—Chemical	0.0028	(0.032)(10.3)/y	0.00086	(0.010)(10.3)/y		
10. Soda	0.0028	(0.011)(30.9)/y	0.022	(0.082)(30.9)/y		
11. Unbleached Kraft	0.00116	(0.011)(12.6)/y	0.00106	(0.010)(12.6)/y		
12. Unbleached Kraft and Semi—Chemical	0.00128	(0.011)(14.0)/y	0.00118	(0.010)(14.0)/y		
13. Unbleached Kraft—Neutral Sulfite Semi— Chemical (Cross Recovery)	0.00128	(0.011)(14.0)/y	0.00118	(0.010)(14.0)/y		
<b>Nonintegrated Facilities</b>						
14. Nonintegrated—Filter and Nonwoven Papers	0.016	(0.032)(59.9)/y	0.005	(0.010)(59.9)/y		
15. Nonintegrated—Fine Papers						
(a) Wood fiber furnish subdivision	0.004	(0.032)(15.2)/y	0.00128	(0.010)(15.2)/y		
(b) Cotton fiber furnish subdivision	0.0112	(0.032)(42.3)/y	0.0036	(0.010)(42.3)/y		
16. Nonintegrated—Lightweight Papers	0.013	(0.032)(48.7)/y	0.004	(0.010)(48.7)/y		
(a) Facilities where electrical grade papers are produced	0.02	(0.032)(76.9)/y	0.0064	(0.010)(76.9)/y		
17. Nonintegrated Paperboard	0.0034	(0.032)(12.9)/y	0.00108	(0.010)(12.9)/y		
18. Nonintegrated—Tissue Papers	0.0062	(0.032)(22.9)/y	0.00192	(0.010)(22.9)/y		
<b>From Wastepaper Facilities</b>						
19. Builders' Paper and Roofing Felt	0.0038	(0.032)(14.4)/y	0.0012	(0.010)(14.4)/y		
20. Deink						
(a) Facilities where fine or tissue paper is pro- duced	0.0066	(0.032)(24.4)/y	0.0168	(0.082)(24.4)/y		
(b) Facilities where newsprint is produced	0.0066	(0.032)(24.4)/y	0.002	(0.010)(24.4)/y		
21. Paperboard FWP	0.00192	(0.032)(7.2)/y	0.0006	(0.010)(7.2)/y		
22. Tissue FWP	0.0068	(0.032)(25.2)/y	0.00192	(0.010)(25.2)/y		
23. Wastepaper—Molded Products	0.0056	(0.032)(21.1)/y	0.00176	(0.010)(21.1)/y		
<b>Pulp Facilities</b>						
24. Dissolving Kraft	0.005	(0.011)(55.1)/y	0.038	(0.082)(55.1)/y		
25. Dissolving Sulfite Pulp						
(a) Facilities where nitration, viscose or cello- phane grade pulps are produced	0.006	(0.011)(66.0)/y	0.046	(0.082)(66.0)/y		
(b) Facilities where acetate grade pulp is pro- duced	0.0066	(0.011)(72.7)/y	0.05	(0.082)(72.7)/y		
26. Market Bleached Kraft	0.0038	(0.011)(41.6)/y	0.028	(0.082)(41.6)/y		

Mass limitations are in lbs/ton except where otherwise stated. For kg/kkg, divide by 2.

y=wastewater discharged in kgal per ton of product.

x=percent sulfite in final product.

<sup>1</sup>These limitations apply only to facilities where chlorophenolic – containing biocides are used. Permittees not using chlorophenolic – containing biocides shall certify to the department that they are not using these biocides.

<sup>2</sup>These limitations apply only to groundwood facilities using zinc hydrosulfite as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

<sup>1</sup>These limitations apply only when the publicly owned treatment works finds it necessary to impose mass effluent limitations.

**(2) PRETREATMENT STANDARDS FOR NEW SOURCES (PSNS).** Except as provided in s. NR 211.13 pertaining to removal credits, any new source subject to this section which introduces pollutants into a publicly owned treatment works shall comply with ch. NR 211 and achieve the following pretreatment standards for new sources:

(a) The daily maximum limitations for PCP, TCP and zinc are set forth in Table 7 in both lbs/ton and mg/l.

(b) PCP and TCP limitations are only applicable to facilities

where chlorophenolic–containing biocides are used. Permittees not using chlorophenolic–containing biocides shall certify to the control authority that they are not using these biocides.

(c) Zinc limitations are only applicable to groundwood facilities where zinc hydrosulfite is used as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the control authority that they are not using this bleaching compound.

**TABLE 7**  
**PSNS Effluent Limitations**

Subcategory	PCP <sup>1</sup>		TCP <sup>1</sup>		Zinc <sup>2</sup>	
	maximum for any one day		maximum for any one day		maximum for any one day	
	lbs/ton <sup>3</sup>	mg/l	lbs/ton <sup>3</sup>	mg/l	lbs/ton <sup>3</sup>	mg/l
<b>Integrated Facilities</b>						
1. BCT Bleached Kraft	0.0032	(0.012)(31.7)/y	0.024	(0.092)(31.7)/y		
2. Fine Bleached Kraft	0.0028	(0.014)(25.1)/y	0.022	(0.101)(25.1)/y		
3. Groundwood—CMN Papers	0.0022	(0.016)(16.8)/y	0.00198	(0.014)(16.8)/y	0.42	(3.0)(16.8)/y
4. Groundwood—Chemi—Mechanical	—	—	—	—	—	—
5. Groundwood—Fine Papers	0.002	(0.016)(15.4)/y	0.00184	(0.014)(15.4)/y	0.38	(3.0)(15.4)/y
6. Groundwood—Thermo—Mechanical	0.00194	(0.017)(13.8)/y	0.00176	(0.015)(13.8)/y	0.34	(3.0)(13.8)/y
7. Papergrade Sulfite (Blow Pit Wash)	0.00116 exp(0.017x)	((0.015)(9.12) exp(0.017x))/y	0.0086 exp(0.017x)	((0.114)(9.12) exp(0.017x))/y		
8. Papergrade Sulfite (Drum Wash)	0.00116 exp(0.017x)	((0.015)(9.12) exp(0.017x))/y	0.0086 exp(0.017x)	((0.114)(9.12) exp(0.017x))/y		
9. Semi—Chemical	0.0028	(0.045)(7.3)/y	0.00086	(0.014)(7.3)/y		
10. Soda	0.0028	(0.014)(25.1)/y	0.022	(0.101)(25.1)/y		
11. Unbleached Kraft						
(a) Facilities where linerboard is produced	0.00116	(0.015)(9.4)/y	0.00106	(0.013)(9.4)/y		
(b) Facilities where bag paper and other mixed products are produced	0.00116	(0.012)(11.4)/y	0.00106	(0.011)(11.4)/y		
12. Unbleached Kraft and Semi—Chemical	0.00128	(0.013)(11.5)/y	0.00118	(0.012)(11.5)/y		
13. Unbleached Kraft—Neutral Sulfite Semi—Chemical (Cross Recovery)	0.00128	(0.013)(11.5)/y	0.00118	(0.012)(11.5)/y		
<b>Nonintegrated Facilities</b>						
14. Nonintegrated—Filter and Nonwoven Papers	0.016	(0.040)(47.5)/y	0.005	(0.013)(47.5)/y		
15. Nonintegrated—Fine Papers						
(a) Wood fiber furnish subdivision	0.004	(0.052)(9.4)/y	0.00128	(0.016)(9.4)/y		
(b) Cotton fiber furnish subdivision	0.0112	(0.044)(31.1)/y	0.0036	(0.014)(31.1)/y		
16. Nonintegrated—Lightweight Papers	0.013	(0.041)(38.2)/y	0.004	(0.013)(38.2)/y		
(a) Facilities where electrical grade papers are produced	0.02	(0.037)(66.8)/y	0.0064	(0.012)(66.8)/y		
17. Nonintegrated—Paperboard	0.0034	(0.037)(11.2)/y	0.00108	(0.012)(11.2)/y		
18. Nonintegrated—Tissue Papers	0.0062	(0.038)(19.1)/y	0.00192	(0.012)(19.1)/y		
<b>From Wastepaper Facilities</b>						
19. Builders' Paper and Roofing Felt	0.0038	(0.171)(2.7)/y	0.0012	(0.053)(2.7)/y		
20. Deink						
(a) Facilities where fine paper is produced	0.0066	(0.049)(15.9)/y	0.0168	(0.126)(15.9)/y		
(b) Facilities where tissue paper is produced	0.0066	(0.040)(19.5)/y	0.0168	(0.103)(19.5)/y		
(c) Facilities where newsprint is produced	0.0066	(0.048)(16.2)/y	0.002	(0.015)(16.2)/y		
21. Paperboard FWP	0.00192	(0.072)(3.2)/y	0.0006	(0.023)(3.2)/y		
22. Tissue FWP	0.0068	(0.049)(16.3)/y	0.0022	(0.015)(16.3)/y		
23. Wastepaper—Molded Products	0.0056	(0.118)(5.7)/y	0.00176	(0.037)(5.7)/y		
<b>Pulp Facilities</b>						
24. Dissolving Kraft	0.005	(0.012)(50.7)/y	0.038	(0.089)(50.7)/y		
25. Dissolving Sulfite Pulp						
(a) Facilities where nitration, viscose or cellophane grade pulps are produced	0.006	(0.012)(59.0)/y	0.046	(0.092)(59.0)/y		
(b) Facilities where acetate grade pulp is produced	0.0066	(0.012)(65.7)/y	0.05	(0.091)(65.7)/y		
26. Market Bleached Kraft	0.0038	(0.013)(36.6)/y	0.028	(0.093)(36.6)/y		

Mass limitations are in lbs/ton except where otherwise stated. For kg/kg, divide by 2.

y=wastewater discharged in kgal per ton of product.

x=percent sulfite in final product.

<sup>1</sup>These limitations apply only to facilities where chlorophenolic – containing biocides are used. Permittees not using chlorophenolic – containing biocides shall certify to the department that they are not using these biocides.

<sup>2</sup>These limitations apply only to groundwood facilities using zinc hydrosulfite as a bleaching agent. Groundwood facilities not using zinc hydrosulfite as a bleaching agent shall certify to the department that they are not using this bleaching compound.

<sup>3</sup>These limitations apply only when the publicly owned treatment works find it necessary to impose mass effluent limitations.

**History:** Cr. Register, October, 1986, No. 370, eff. 11–1–86.