2013 WASTEWATER TREATMENT REVIEW REPORT

Environment Management Permit 1149

HOWE SOUND PULP & PAPER CORPORATION
Port Mellon, B. C.

By:

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January 2014

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SUMMARY

The performance of Howe Sound Pulp and Paper's (HSPP's) effluent treatment system was good throughout 2013 with issues of carbon dioxide toxicity during daphnia magna testing. Overall, discharges of TSS, BOD_5 and AOX remain below permitted levels.

DISCUSSION

The mill's annual average discharges and production rates are compared to previous years in Table 1 and Figures 1 - 5.

HSPP continued to improve production rates on both the kraft and paper mills in 2013. The effluent treatment system continues to operate effectively and maintained good treated effluent quality throughout the year. Discharges of all parameters remained within their permit levels with the exception of two days in June where daily TSS concentration was over limit. During this time the mill was in start up and effluent flows low so the overall TSS loading did not exceed permitted levels.

All but two 96hr LC50 trout toxicity tests conducted during the year passed. In both instances the cause of toxicity was identified as excess ammonia in the discharge effluent. Ammonia is added to the effluent treatment process as nutrients essential to the bacteria for biodegradation to occur. From each event, process control modifications were made and fine-tuned to prevent further reoccurrence.

HSPP experienced a series of daphnia magna failures throughout 2013. The mill embarked on an extensive study into the causal factors of this toxicity. After thorough examination of the process, treatment and testing of the effluent it was concluded that the main contributor to daphnia toxicity is high concentrations of carbon dioxide. Carbon dioxide is generated in effluent treatment during the respiration of bacteria. As the UNOX effluent treatment system is maintained under pressure, the carbon dioxide remains in solution and overcomes daphnia during toxicity testing. In the receiving environment this is not an issue as any carbon dioxide present in solution dissipates. With water conservation efforts the concentration of carbon dioxide increases in the effluent. The mill continues to explore ways to reduce carbon dioxide in the effluent.

TABLE 1: TREATED EFFLUENT DISCHARGE COMPARISON

		2011	2012	2013	PERMIT
Total Production (adt)		576,905	575,115	596,410	--
Kraft Pulp Production (adt)		390,990	390,309	384,732	--
Paper Production (adt)		185,915	184,806	211,679	--
Flow (ML/d)		72.5	71.6	68.8	< 106.5
Temperature (^{0}C)		32.2	32.8	33.5	< 38.5
pH		6.4	6.4	6.2	5.5 - 8.0
TSS	(kg/day)	2,920	3,496	3,920	< 11,809
	(kg/adt)	1.5	1.8	1.9	< 7.0
BOD_5	(kg/day)	548	780	1,515	< 7,592
	(kg/adt)	0.3	0.4	0.7	< 4.5
AOX	(kg/day)	286	308	311	< 595
	(kg/adt)	0.2	0.2	0.2	< 0.50
96hrLC_{50} Trout	number of tests	16	19	28	monthly
	number of passes	15	17	26	100%
48hrLC_{50} Daphnia	number of tests	52	56	56	weekly
	number of passes	49	51	35	100%

Notes: Discharges in kg/adt are based on 90th percentile production rates. TSS and BOD are based on total production, AOX on Kraft production only.

CONCLUSION

HSPP's effluent treatment system continues to operate very well, producing effluent that meets both Provincial and Federal requirements.

Figure 1. TSS Discharges

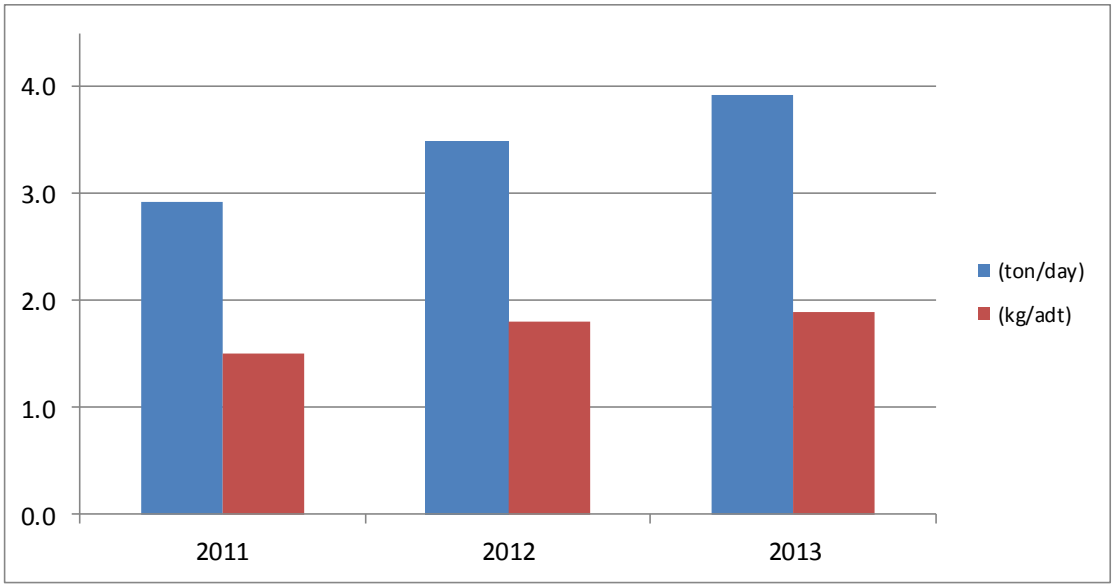

Figure 2. BOD_5 Discharges

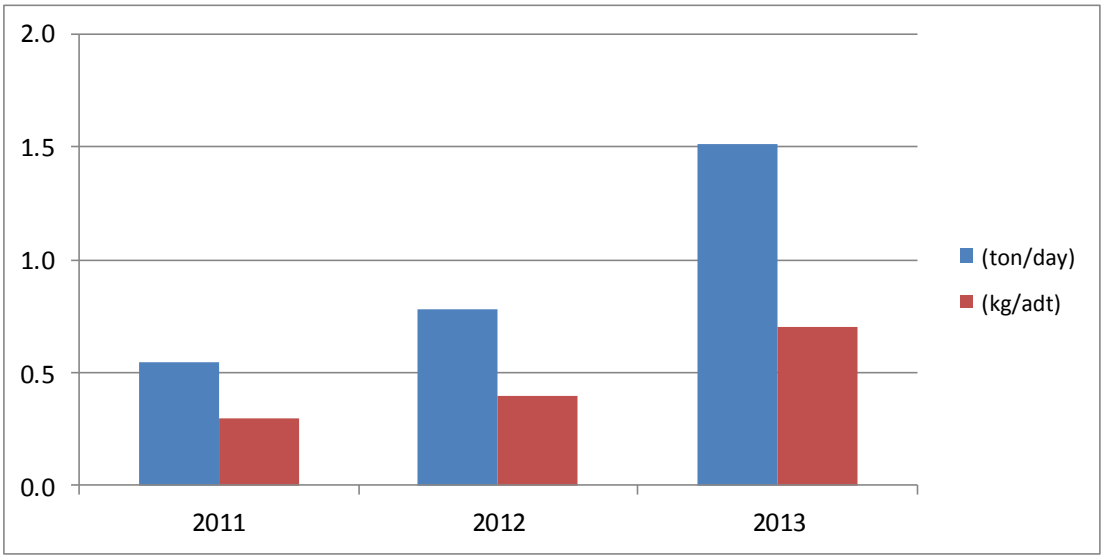

Figure 3. AOX Discharges

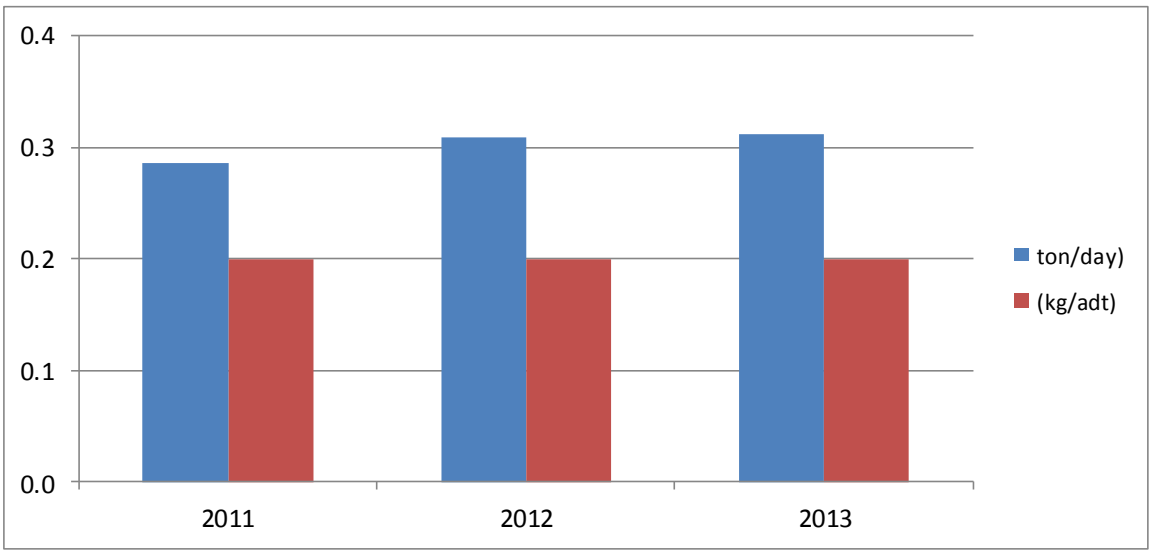

Figure 4. Other Parameters

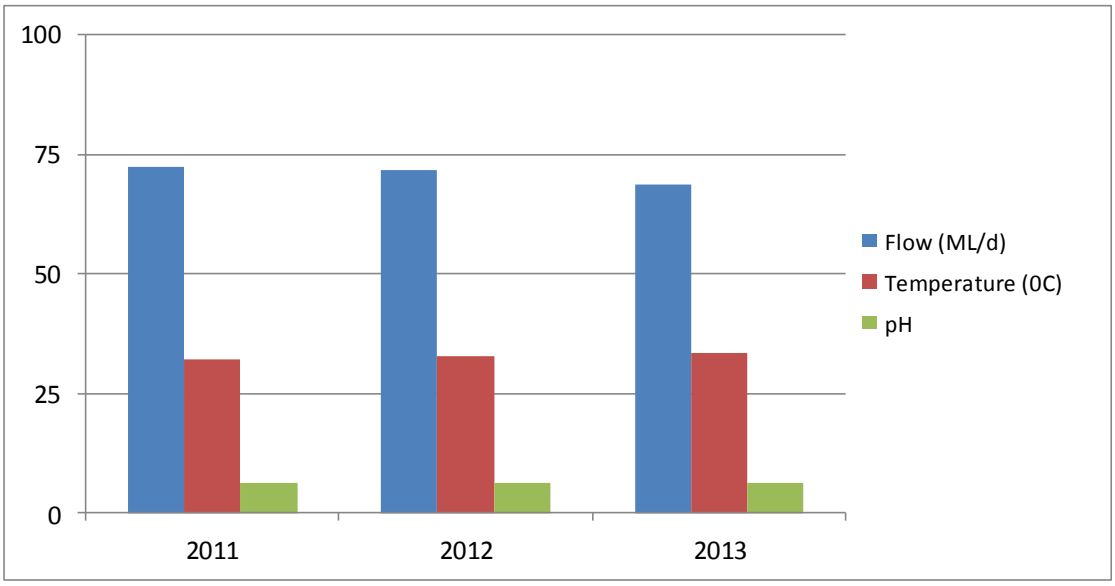

Figure 5. Production Rates