

50 Years of Pulp Effluent

“I’ve been smoking for 20 years and I don’t have cancer.”

“Well then, I guess there’s no harm if you keep on smoking.”

Just change the words, and it could be Northern Pulp and Nova Scotia’s Minister of the Environment talking about pumping pulp effluent into the Northumberland Strait.

“Treated effluent has been discharged into the Northumberland Strait for 50 years,” both Northern Pulp and the Minister reply when people raise concerns about the proposal to pump 70 + million litres of pulp effluent daily into Northumberland Strait fishing grounds.

Northern Pulp and the Minister of Environment seem to imply that because pulp effluent has entered the Strait for 50 years no harm has been done and there is no reason to worry if it continues. They also seem to imply that the proposed new system will have no more impact on the fisheries than what has been happening all along.

True or not true?

1. Is harm being done? Most people recognize the environmental devastation of Boat Harbour as a clear illustration of the harm that has been done by pulp effluent. Not everyone realizes that although effluent quality has improved over the past 50 years, present regulations are still not sufficient to prevent harm. According to a recent analysis by the federal government, existing regulations are not enough to protect marine life. The study shows that while almost all Canadian pulp mills now meet federal PPER regulations, 70% are having harmful effects on aquatic life and habitat and 55% are having harmful effects on the larger environment.¹

In terms of toxicity, only one test is required to meet federal regulations. This test measures acute toxicity -- whether 50% of rainbow trout die when exposed to effluent for 96 hours. It does not measure

impacts on fish growth or reproduction or on fish habitat. No toxicity test on salt water fish is required to meet federal regulations. There are no federal regulations for a number of known harmful substances in pulp effluent, including AOX and phenols.

2. Northern Pulp’s proposed new effluent treatment facility differs from the present facility in a number of ways.

In the present system, untreated effluent is piped from the mill to the north settling ponds at Boat Harbour, where it remains for 12 hours for primary treatment. It then moves to an aerated stabilization basin where effluent is placed in contact with micro-organisms. The effluent remains there for 8 days for secondary treatment.² After 8 days, the effluent is discharged from the aeration basin at what is known as Point C, and treatment is considered finished. At point C, samples are taken for testing to determine whether the treated effluent meets regulations.

After point C, the effluent enters the 300-acre Boat Harbour lagoon, also known as Boat Harbour Basin. Boat Harbour Basin was initially used as a stand-alone effluent treatment facility. In 1972, settling ponds and an aerated stabilization basin were constructed to meet stricter regulations for pulp effluent treatment. Additional aeration and other upgrades were added from 1992-1996, as the federal government again adopted stricter regulations.³

The lagoon at Boat Harbour has not been officially part of the effluent treatment system since 1972. Official or not, treated effluent remains in the lagoon for an additional 20-30 days.⁴ Further aeration, settling, cooling, volatilization and breakdown of materials takes place during that time. This is referred to as “polishing” or tertiary treatment. Natural springs and surface run off further dilute the effluent. According to Northern Pulp’s figures, during the time in Boat Harbour Basin, total suspended solids (TSS) and biochemical oxygen

¹ See also https://docs.wixstatic.com/ugd/b61814_dd299f5bb0914f959eaaaf94ca66db20.pdf

² Stantec. (2004). *Cycle 3 environmental effects monitoring interpretive report for the Kimberly-Clark NS Mill at New Glasgow, NS* Report to Kimberley Clark, New Glasgow.

³ *Replacement of Effluent Treatment Facility*, Northern Pulp Nova Scotia, Environmental Assessment, December 2017, Panel

⁴ Stantec 2004

demand (BOD) decrease up to 30%, before the effluent flows out at the shore edge of the Strait at Point D.⁵

In the proposed new Activated Sludge Treatment (AST) system on the mill site, effluent will move through a primary clarifier to an aeration basin using micro-organisms to break down pollutants, and then to a secondary clarifier. The process will take less than 24 hours.

Northern Pulp states that effluent from the new system, including an added oxygen delignification system, will be similar to treated effluent leaving the present system at point C, with some (unspecified) reduction in biochemical oxygen demand (BOD.)

However, the effluent being released from the proposed new system directly into the deep waters of the Strait will not benefit from the considerable reduction in BOD, Total Suspended Solids (TSS) and other contaminants including heavy metals which takes place during the 20-30 days that effluent presently remains in the Boat Harbour Basin stabilization lagoon. Northern Pulp has not provided a detailed comparison between the effluent which presently reaches the edge of the Strait (Point D) and the effluent they propose to release into the fishing grounds with the new system.

3. Where the effluent is discharged matters. The present effluent outfall location at the shore edge does not disperse effluent in the Strait in the same way that the proposed new outfall site would. With the proposed new system, 70+million litres of treated effluent would be pumped directly and continuously into the prime fishing areas of the Strait every day.

Presently, effluent flows from Boat Harbour Basin lagoon, through an estuary, to an outfall point at the shore edge of the Strait (known as Point D.) From the present outfall point, tides and currents keep much of the effluent re-circulating along the near shorelines and into Pictou Harbour.

A 1969 Fisheries Research Board report, *Tidal Flushing of Pictou Harbour* makes clear that effluent released from Boat Harbour at the shore edge of the Strait is not widely dispersed. "It is found that the flushing capacity of the area is inadequate to dilute the effluent

below the proposed water quality standard of 1%." ⁶ *The Stantec Preliminary Receiving Waters Study*, August 2017, illustrates the same lack of dispersion. Treated effluent has never flowed directly into the deeper waters of the Strait. From its discharge at the shoreline, after 20-30 days in Boat Harbour Basin, tides and currents further break down, dilute and settle contaminants before they reach the deeper waters of the Strait.

It is misleading to imply that effluent from the proposed new system pumped directly into the fishing grounds of the Strait will have the same impact as the effluent which presently enters the Strait at the shore edge, hugs the shore and recirculates in and out of Pictou Harbour. Northern Pulp and their consultants are well aware that all discharge points do not have the same impact.

4. Ocean environments are increasingly stressed.

The Northumberland Strait Ecosystem Overview Report, prepared for DFO in 2007, documents increasing stresses on the Strait. "Increased nutrient loading from land-based activities was identified as the most important MEQ [Marine Environment Quality] issue in the near shore areas such as the estuaries, harbours, and bays. The principal sources of nutrients to the coastal areas of the Northumberland Strait are sewage, agricultural runoff, fish plant effluents, and pulp mill effluent." ⁷

The Ecosystem Overview Report also states, "In addition to individual impacts of the various elements identified as having an impact on the environment in the Northumberland Strait, there can be cumulative impacts that exceed the individual effects."⁸

Ocean stresses are increasing generally. Anoxic areas, where there is insufficient oxygen for marine life, are growing, and are expected to continue to do so due to global warming and other factors. The discharge of pulp effluent, with significant amounts of total suspended solids, biochemical oxygen demand, chemical oxygen demand and contaminants including heavy metals and AOX, has to be evaluated in the context of cumulative impacts on an increasingly stressed ecosystem. The consequences will be greater now and in coming decades than they would have been 50 or 25 years ago in healthier oceans.

⁵ Replacement of Effluent Treatment Facility, Northern Pulp Nova Scotia, Environmental Assessment, December 2017, Panels 15, 1

⁶ Technical report No. 146, *Tidal Flushing of Pictou Harbour*, the Fisheries Research Board of Canada, 1969

⁷ *Northumberland Strait Ecosystem Overview Report*, AMEC Earth and Environmental, 2007, Executive Summary p 14

⁸ *Northumberland Strait Ecosystem Overview Report*, AMEC Earth and Environmental, 2007, Executive Summary p 15

