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NWB Files: 1BR-JEN0712
1BR-MAC
1BR-BYR

Our Files: 4517 000 010
4517 000 014
4517 000 037

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RE: NWB Defence Construction Canada (DCC) Position Paper on the Regulation of Phenols in the DEW Line Cleanup Project Sites (CAM-1, CAM-5 and PIN-4) Licences

The information submitted with the above-mentioned application has been reviewed on behalf of Environment Canada (EC) by Yvon Theriault and myself. The following specialist advice has been provided pursuant to Environment Canada's mandated responsibilities under the *Canadian Environmental Protection Act*, Section 36(3) of the *Fisheries Act*.

The Nunavut Water Board (Board) is requesting interested parties to comment on a position paper prepared by the Environmental Sciences Group and submitted by Defence Construction Canada (DCC), entitled *DEW Line Cleanup Project – Phenols in Wastewater*, June 2007. This paper discusses the inclusion of the phenol parameter in the waste disposal and monitoring requirements for licences where this parameter may be a concern.

Wastewater generated during cleanup work at Distant Early Warning (DEW) Line Cleanup Sites is periodically discharged in small volumes for a finite period of time. Specifications for the cleanup work state that wastewater must be discharged onto land at least 30 m from natural drainage courses and at least 100 m from fish-bearing waters, with a maximum allowable concentrations (MAC) specification for phenols of 20 ug/L based on the Canadian Council of Ministers of the Environment (CCME) Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments.

ESG is recommending that "phenols be removed from the list of parameters for which wastewater generated by DEW Line Cleanup Sites remediation work be analyzed, provided that the MAC for oil and grease continues to be implemented," (p 15) based primarily on the following arguments:

- That existing guidelines for the discharge of wastewater to land, which is typically vegetated, are not directly applicable or appropriate for wastewater discharged to land during the cleanup work at DEW Line Cleanup Sites (p 11&13);
- The potential impact of phenols entering the environment through wastewater during cleanup work at DEW Line Cleanup Sites is limited (p 14); and,
- Treating wastewater for oil and grease above the 5 mg/L MAC prior to discharge would also concurrently decrease phenol concentrations to below the MAC value of 20 ug/L; and therefore, would also meet the site-specific phenol guidelines (p 14).

EC is of the opinion that the discharge of wastewater containing phenols to land where there is no direct or indirect flow to water may be outside of what is normally regulated through effluent criteria in a water license. EC's concerns are with deleterious substances entering waters frequented by fish, so we would hesitate to comment on what limits should be applied to a terrestrial receiving environment.

However, one phenol compound, alkylphenol ethoxylate, is a Canadian Environmental Protection Act, 1999 (CEPA) listed toxic substance, which is found in products such as degreasers and paints; and therefore, potentially present at DEW Line Cleanup Sites. Under CEPA, it is EC's responsibility to ensure that "the most harmful substances are phased out, or are not released into the environment in any measurable quantity." Consequently, EC is requesting that, if the Board allows the discharge of wastewater containing this type of phenol to the land, then monitoring be required to ensure levels do not build up in the environment, and a risk assessment be done if necessary.

Additionally, EC would also like to note the following observations:

- There is no evidence that a determination of phenols in wastewater was carried out to identify phenol compounds present in the wastewater. As noted, one phenol compound, alkylphenol ethoxylate, is a CEPA toxic substance and could possibly be present in the DEW Line Cleanup Sites wastewater;
- Even though the "likelihood of the discharge wastewater impacting aquatic life is minimal" (p 13), there is still a chance that, in the long term, wastewater could potentially be discharged into water;
- Phenol degradation in northern regions is slower than in warmer regions;
- Only eight samples were measured for both oil and grease, and phenols to study the correlation. Two out of these eight samples were found to exceed the phenol criteria of 20 ug/L (p 7) while showing no visible sheen (i.e., oil and grease concentration lower than 5 mg/L). Therefore, it would seem that relying on the oil and grease MAC value above the 5 mg/L to treat wastewater prior to discharge would not necessarily guarantee a concurrent decrease in phenol concentration below its MAC value of 20 ug/L. In this case, wastewater will not meet the site-specific phenol guidelines before discharging to land.

Therefore, in view of the above observations, EC recommends that the contract specifications for phenols (i.e., that the phenols should be analyzed in wastewater generated by cleanup work at DEW Line Cleanup Sites) should continue to be regulated at DEW Line Cleanup Sites where phenols may be of concern.

Should you have any comments or questions with regards to the foregoing, please feel free to contact me at (867) 975-4631 or by email at carrie.spavor@ec.gc.ca

Yours truly,

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