

# M E M O

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Project #: 75360

To: Glenn Prosko

cc:

From: Rick Bitcon

**Subject: Iqaluit – Sludge Stabilization**

The sludge that will be produced by the Iqaluit Wastewater Treatment Plant (WWTP) will not be ‘acutely toxic’, however the sludge will contain pathogens. Pathogens are organisms (parasites and viruses) from warm blooded animals, such as humans, that if ingested by humans in sufficient doses could cause disease, resulting in diarrhea, vomiting, and in extreme and rare cases death.

In the past, it was quite common for municipalities to landfill raw sludge (liquid or dewatered cake) from WWTPs. Generally, the sludge was placed in a separate part of the landfill and covered immediately upon being discharged on the tipping face. In recent years and with the promulgation of Environmental Protection Agency (EPA) Regulation 503 (covers sludge disposal in the US) in the US, land application and disposal of raw sludge has been discouraged. A similar trend has occurred in Canada.

Today, most municipalities are required to treat sludge prior to land application or landfilling. The process of ‘treating’ is referred to as stabilization, and most regulations governing sludge stabilization recognize two categories of treatment:

1. Class A – high level of treatment and suitable for unrestricted use (ie. distribution to public, golf courses, landscapers, etc).
2. Class B – lower level than Class A, but suitable for land application with restricted access (farms, landfills, forests, etc).

The terms Class A and Class B are categories from EPA Regulation 503, and the nomenclature has gained acceptance around the world.

For small communities, generally the most common form of sludge stabilization is aerobic digestion, which involves aerating the sludge for an extended period of time (approximately 40 days). Other sludge stabilization technologies include composting, alkaline stabilization (lime addition) and anaerobic digestion.

In the case of Iqaluit, ‘freezing’ may also be an option, however studies have found that while freezing and/or freeze/thaw does achieve substantial pathogen destruction, the approach does not achieve the same level of treatment as the alternative technologies of aerobic digestion, composting, alkaline stabilization and anaerobic digestion.

In the event that sludge stabilization is required for Iqaluit, and long-term ‘freezing’ is not acceptable to the regulators, then aerobic stabilization appears to be the most appropriate

technology. The technology is cost-effective, simple to operate, and can be incorporated into the WWTP after the Dissolved Air Flotation (DAF) process. After aerobic digestion, sludge would be fed to the Belt Filter Press.

An aerobic stabilization process could be constructed at the Iqaluit WWTP any time after the WWTP is constructed and put into service.