



## STAFF REPORT ACTION REQUIRED

### Supply Shortage of Iron Salts for Wastewater Treatment

<b>Date:</b>	April 21, 2009
<b>To:</b>	Public Works and Infrastructure Committee
<b>From:</b>	General Manager, Toronto Water Acting Director, Purchasing and Materials Management
<b>Wards:</b>	All
<b>Reference Number:</b>	P:\2009\Cluster B\TW\pw09013

#### SUMMARY

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The purpose of this report is to seek delegated authority for the General Manager, Toronto Water to procure on a sole source basis the supply of alternate chemicals, services and specialized equipment, if necessary, used to remove phosphorus at the City's four wastewater treatment plants. The City has been using iron salts for many years as a method to treat sewage received at the plants in accordance with the Certificates of Approval as issued by the Ministry of the Environment.

Iron salts are a by-product of the steel manufacturing process and are used by municipal wastewater treatment plants across North America to remove phosphorus. Phosphorus is a nutrient that if not controlled, can lead to a significant increase in algae growth within water bodies. With a significant slowdown in the North American steel industry, there has been a sudden shortage of iron salts in the market. This chemical is expected to remain in short supply until a number of North American steel mills resume production. Alternate chemicals are more costly but are required as part of the wastewater treatment process to maintain regulatory compliance.

#### RECOMMENDATIONS

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**The General Manager of Toronto Water and the Acting Director of Purchasing and Materials Management recommend that:**

1. Council authorize the General Manager, Toronto Water to procure the supply of alternate chemicals, services and related equipment required for the removal of phosphorus from sewage at all four wastewater treatment plants, either on a sole

source basis or by such other means of procurement, in consultation with the Director of Purchasing and Materials Management, in such a manner and on such terms and conditions as he considers appropriate; until such time as either the industry supply of iron salts has returned to sustainable levels, or the expiration of the existing iron salts supply contract (December 31, 2010).

2. Should the existing contract for supply of iron salts expire or should the supplier no longer be able to provide the contracted chemicals, then any unspent funds may be utilized to fund sole source purchases as per Recommendation 1.
3. Subject to the adoption of Recommendation 1, the General Manager, Toronto Water be authorized to execute one or more contracts and/or agreements on terms and conditions satisfactory to him and in a form satisfactory to the City Solicitor, including any such contracts and/or agreements whose value may exceed \$500,000.
4. Staff report to Public Works and Infrastructure Committee in the Fall of 2009 regarding the number and value of contracts entered into for alternative chemicals, services and related equipment.

## **Financial Impact**

The financial implications of this report will depend on the terms of new contract(s) for the supply of alternate manufactured chemicals and any other services or equipment necessary in order to control phosphorous levels discharged from Toronto's wastewater plants. Furthermore, financial implications will depend on the time required for the steel industry to recover from the current economic slowdown and commence generating the quantities of iron salts by-product necessary to supply the wastewater treatment industry. It is expected that some of the alternate manufactured products may cost more than twice the unit rate of the iron salts currently purchased by Toronto Water. As a result, the extra cost could amount to between \$1.5 million to \$2.5 million per year on Toronto Water's existing budget for iron salts.

If additional funds over and above the approved amounts for iron salts are required to procure alternate chemicals, this can be accommodated from the 2009 Toronto Water operating budget in Cost Centre WW100 (Wastewater Treatment) and will be made available in the 2010 Toronto Water Operating Budget under the same account.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

## **DECISION HISTORY**

At its April 25, 26 and 27, 2006 meeting, Council adopted the Works Committee recommendation to award a prorated one year contract for the supply of iron salts to Eaglebrook Inc. of Canada, now known as Kemira Water Canada. The decision document can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/council/cc060425/cofa.pdf>

At its July 25, 26 and 27, 2006 meeting, Council approved a recommendation from the Policy and Finance Committee to adopt the recommendation from the Works Committee to extend the contract for iron salts from one year to five years, based upon the completion of a review that included the iron salt market place, alternatives to iron salts as well as the results of a Request for Quotation. The decision document can be found at:

<http://www.toronto.ca/legdocs/2006/agendas/council/cc060725/cofa.pdf>

## **ISSUE BACKGROUND**

Phosphorus is a major contributor to the growth of algae in Lake Ontario. The Ministry of Environment Certificate of Approval for each of the City's wastewater treatment plants requires that the monthly average concentration of phosphorus in the final effluent remain below 1.0 mg/l. Iron salt in the form of ferrous chloride has traditionally been used by the City of Toronto largely due to its reliability, relatively low cost and abundant supply. Iron salts are received at the plants in a liquid form and are also known as "waste pickle liquor" and are recycled from the steel industry. Due to the economic slowdown in steel production across North America, a market wide reduction in the availability of this steel manufacturing by-product exists.

Kemira Water Canada is the current supplier of iron salts to the City's wastewater treatment plants. Their five year contract with the City expires on December 31, 2010. Kemira advised its customers in late 2008 and early 2009 that market conditions were tightening and as such some municipalities commenced the process of sourcing alternate chemicals. Toronto was advised that its supply at the time was considered relatively safe provided the situation did not worsen. Recent correspondence received from Kemira states that the supply of iron salts has been further reduced and recommends that Toronto initiate plans to convert its facilities to alternate products.

## **COMMENTS**

The current iron salts contract with Kemira Water Canada was tendered in December 2005 and has a term of five years. At the time, Kemira was the only bidder as

Toronto's needs for this product could not be met by any other supplier. The contract has a total value of \$11,857,300 excluding GST, over the five year term.

The impact of the current economic downturn on the steel industry has been that all North American steelmakers have significantly curtailed production resulting in the shut down of numerous mills both in the U.S. and Canada. According to the American Iron and Steel Institute, the adjusted year-to-date U.S. domestic steel production through April 11, 2009 has decreased by 52.9%. The market shortage of iron salts is a direct result of this decline and it remains unclear how long this shortage will persist. In a recent study published by the Water Environment Research Foundation, the expected prospects for the short term supply of iron salts is described as limited until more manufacturing capacity using scrap steel is installed, or steel production increases in the United States.

Given the widespread use of iron salts for phosphorus control in the wastewater treatment industry, other municipalities are facing the same pressures to convert to alternate chemicals. To date, Peel Region, Niagara Region and Durham Region have either converted their wastewater facilities to an alternate product or are in the process of doing so. As this trend continues, it will impact the availability and price of alternate products.

It is expected that the outlook on the long term supply market for ferrous chloride will become more evident in the upcoming months. In the meantime, Toronto Water staff will work closely with Purchasing and Materials Management staff to develop the appropriate call documents to establish long term agreements for alternative manufactured products prior to December 31, 2010.

The 2010 Operating Budget Submission for Toronto Water will identify the long term plan for managing the supply shortage of iron salts for Wastewater Treatment.

## **CONTACT**

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## **SIGNATURE**

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