

**HUMBER TREATMENT PLANT
NEIGHBOURHOOD LIAISON COMMITTEE
(HTPNLC)**

MEETING #1/05

Humber Treatment Plant – Administrative Building
130 The Queensway
Tuesday June 21, 2005

7:00pm

SUMMARY NOTES

In Attendance

Residents/ Others

Garry Kapitan - Co-Chair

Harold Down
Sidney Down
Doreen Doan
K. Petryla
S. Maksyutynsky
Gary Hunt
J.Y Urbain
James Lampard
Don McClement
James Stott
Bob Chappel
John Lyons
V. Maksyutynsky

City of Toronto Staff

Voitek Kozakiewicz – Humber Treatment Plant
Nancy Martins – Public Consultation Unit
David Simms – Wastewater Services
George Theodorlis – Technical Services
Kathy Renouf – Councillor Milczyn's Constituency Assistant

Consultants

Moe Zolghadr – ZORIX Environmental
Michael Rix – ZORIX Environmental

Minute Taker – Michelle Kwong Hing

Agenda

1. Approval of Agenda
2. Approval of September 21, 2004 Summary Notes and Review of Action Items
3. Humber Treatment Plant Odour Study Update
4. Question & Answers on Odour Study
5. Break
6. Updates
 - Rehabilitation of Digesters
 - Return Activated Sludge/Waste Activated Sludge (RAS/WAS)
7. New Business
8. Next meeting Date/Adjournment

Documents provided at the meeting:

1. Agenda
2. Zorix Consultants presentation
3. Humber Resource Update Newsletter – Spring 2005

HTPNLC Meeting

Garry Kapitan opened the meeting at 7:00pm and welcomed participants. Introductions were made of all the attendees.

1. APPROVAL OF AGENDA

The agenda was adopted as distributed.

2. APPROVAL OF SEPTEMBER 21, 2004 SUMMARY NOTES and Review of Action Items

The summary notes from the HTPNLC meeting #2/04, September 21, 2004 were adopted as distributed.

- It was noted that there were no action items at this time.

4. HTP ODOUR STUDY UPDATE

Moe Zolghadr from ZORIX Environmental took the floor and outlined his presentation in 3 phases.

1. Recap – purpose, scope and methodology
2. Results
3. Recommendation phase – overview and progress to date

He then recapped the scope of the project asking “Where are we now?” Firstly, he stated the comprehensiveness of the study since it covers the entire plant. Secondly, it was noted that three rounds of odour sample collection and sensory evaluation had been completed. Thirdly, assessment of the odour impact through use of dispersion modeling after the 1st and 3rd rounds was completed. Finally, recommendations to minimize the impact and the conceptual design of odour abatement systems are in progress.

Sampling and Analysis took place during from May 2004 to October 2004 whereby over 40 odour sources were identified. It was stated that hydrogen sulphide was also measured at each source. Dispersion Modelling and impact assessment were completed using combined results from all three rounds.

Moe Zolghadr continued the presentation and reviewed the concept of **one odour unit** being the level of odour in air which can be detected by 50% of the population. He also reviewed the **odour emission rate** which is the “quantity” of odour released per second whereby the rate of

release is time based and the measuring units are “odour units per second.” Moe Zolghadr overviewed the odour sampling and evaluation process. He explained that an odour sample is taken from a source, transferred to the laboratory for analysis and presented to odour panelists. The 8 panelists evaluate the sample whereupon responses are recorded and the threshold is determined. It was stated the significance of the analysis is that it is completed by actual human beings. Moe Zolghadr continued to outline the major components/ clusters within the HTP and where odours have been sampled from:

Source Groups at Humber HTP:

- 1. Grit and Screening - Headworks**
- 2. Open Primary Tanks**
- 3. Aeration Tanks and Main Odour Scrubbers**
- 4. Sludge Thickening Building**
- 5. Digesters**
- 6. Final Clarifier Tanks**

Photographs were shown of sample collection throughout the plant. He stated that hard measurements had been taken of representative samples to predict the impact and recommendations to reduce such impacts.

Furthermore, Moe Zolghadr summarized the format of results. The results were presented in several ways including:

- Odour from each source group as a percent of the total of the odour
- Worst- case impact by major sources
- Worst- case impact of the total plant and each source group to help prioritize action
- Frequency of exceedance at the receptors i.e. How many hours in a year exceed certain odour levels

A Summary of Consolidated Results form Rounds 1 to 3 were highlighted:

- There is potential for significant odour impact in the neighbouring community
- The bulk of the odour impact is due to 3 source groups:
 - ❖ Headworks Building
 - ❖ Primary tanks – the North/South Cluster
 - ❖ The old scrubber

A graph of the Comparison of Results from Each Round was shown to break down the impact from each of the 3 source groups.

Moe Zolghadr continued on with the presentation by explaining the Modelling & Impact Assessment through the use of

- Computer modeling
- US EPA Dispersion model (CALPUFF)
- 5 years of local meteorological data to assess the impact
- worst-case predictions
- impact at elevated receptors i.e. From apartment levels

A predicted worst-case contour map was displayed to explain the unit threshold from all odours of the plant at ground level and from each source group in order to view adverse impacts for the neighbouring community.

Moe Zolghadr clarified that they are currently in the midst of the **Recommendation Phase** and progress has been slower than expected because of the impacts of other projects. He stated ways to reduce odour impacts include:

- Prevent/minimize odour formation through efficient process and operation
- Prevent/minimize odour release through capture and containment
- Odour removal through application of odour controls

These steps are all interlinked.

There are **Critical Links in the Odour Control Chain** including:

- Commitment of management and plant operators to odour impact reduction objectives
- Containment of foul odours at each source
- Capture of odours from each source
- Transport of odours to the odour control device(s)
- Treatment of odours by control device(s) through the use of technology
- Proper operation and maintenance of installed odour abatement systems at all times in order to perform at peak levels

Moe Zolghadr defined **5 approaches to the recommendation phase**:

1. Divide foul air (odour) streams into two categories for capture, conveyance and treatment for engineering purposes to distinguish between low and high intensity odour sources
2. Contain high intensity odour sources, collect and treat
3. Contain low intensity odour sources, such as building interiors, collect and treat
4. Employ odour treatment technologies that are both effective and environmental friendly
5. Design all new odour treatment systems to be “operator friendly” in order to maximize effectiveness on a routine basis

The next phase of the presentation shifted to **4 Odour Control Options**:

1. Chemical – scrubbing the odours off the air to remove compounds through chemistry

Example of technology: **Chemical Scrubbing**

- small space requirement relative to others
- expensive to operate
- high maintenance to maintain efficiency

2. Physical – dispersion and absorption of the odour compounds

Example of technology: **Activated Carbon**

- high efficiency
- needs to be replaced frequently
- only suitable for small volumes of air
-

3. Thermal – use of heat (catalysis) to destroy the compounds

Example of technology: **Thermal Oxidation**

- very high clean-up efficiency, 99% odour removal
- expensive to operate

4. Biological – use of a bioscrubber or biofilter where, instead of chemicals being used, a natural process is employed where bacteria (“bugs”) eat the odour compounds.

Example of technology: **Biofiltration**

- Natural process, environmentally friendly
- High clean up
- Needs large space

Moe Zolghadr explained that the appropriate use for each of these technologies for each source group has yet to be worked out.

Some of the Control Options that are being considered for the HTP source groups were also defined:

Group 1 – Headhouse and North Grit Buildings

- Existing containment and enclosure of operational processes using a high rate of ventilation
- Improved containment and enclosure of operational processes using a low rate of ventilation
- Status quo or close-off and capture of the incoming sewer air

Group 2, 3 – Primary Tanks

- Cover the tanks with high/medium/low profile building covers
- Cover influent channels and effluent troughs
- High rate vs. low rate ventilation

Group 4 – Aeration Tanks and Existing Odour Scrubber

- Replace existing chemical scrubber with same technology
- Replace with new biological system

Finally, Moe Zolghadr closed his presentation and stated that ongoing consultation is in progress to identify an optimum option to implement promptly in order to start remedial action as soon as possible.

Questions during/after the ZORIX Environmental presentation:

Q: Does the prediction of the worst-case scenarios take into account wind direction, weather conditions?

A: Michael Rix responded that 5 years of meteorological data was used to predict the very worst-case. He continued to explain that low wind conditions would actually cause the worst-case scenario. A grid of receptors is evaluated whereby the overall worst-case from 5 years of data is discovered. George Theodorlis stated that it is a very conservative predication of the worst 10 minutes in a period of five years. Therefore, Moe Zolghadr stated that if you are analyzing the worst-case, that in reality the impact should be less.

Q: How do you decide which Control Option is best?

A: Moe Zolghadr stated that all are interlinked and being cost effective is significant. He explained that it is not a 'sledge hammer' approach and that there are other issues such as ventilation and safety that must be considered. Furthering the response, Michael Rix stated the complexities of other City projects interplays with this odour study and it is important to review all issues in order to find the optimum solution.

Q: How does the study prioritize the tradeoffs?

A: Moe Zolghadr replied saying that first and foremost the safety and well being of the staff and operation is a main priority. The second priority would be impact mitigation and finally, the technicality of the system whereby each treatment plant system is complex and unique. It is not only a question of enclosing the odour which could create a larger problem; the assessment must look at all scenarios and the complex issues that surround it.

Q: What are the financial assumptions/capital costs over this study period?

A: Moe Zolghadr responded saying the lifecycle cost of odour control and treatment must be taken into account. It is important to assess how effective the system will be maintained over a period of time and when analyzing the financial aspects, one can not lose sight of maintaining the efficiency of controlling the odour at all times.

Q: Is the solution for this problem (odour) on target?

A: Yes, still on target.

Q: Is it possible to discuss the biological treatment, since there are different ways to treat?

A: Moe Zolghadr replied by stating the assessments' main focus is the treatment of air however the wastewater is the reason why there are odours. When discussing biological treatment, it is the foul air that is emitted from wastewater. The waste water treatment process is the way the plant looks after treatment from the sewers. We (ZORIX) deal with the smelly air that comes off of the wastewater. There is foul air that is emitted and we collect it, blow it into a biological treatment system and then the system is such that biology is used to consume the odour compounds in the air that becomes food for bugs and then is filtered and a water vapour is released. Moe Zolghadr significantly stated that the number one treatment process is prevention.

Q: What is the amount of H₂S sources emitted and is it treated?

A: 10ppm which is fairly low of the headspace from the sewage and it is treated by the chemical scrubbers.

Q: What extent are you limited by the actual Humber treatment plant itself?

A: Viotek Kozakiewicz responded, stating that expanding on existing technology has its limits. Technologies are updated and improvements are being implemented when found necessary. The overall assessment of the Humber facility is important to define process areas needing the upgrade or reconfiguration. Presently there is no shortage of the process capacity at the plant.

Q: When will implementation occur?

A: Moe Zolghadr replied that they hoped to be wrapped up by Christmas 2005 with the merging requirements of other projects.

Q: How is the timeline of this project for the City of Toronto?

A: George Theodorlis answered by saying that there is no specific timeline but budgeting and other projects will be revisited in order to harmonize with the timeline. He stated that the design aspect should start in 2006.

Q: How long will the design process take?

A: George Theodorlis stated that these projects, specifically covering the tanks, are multi-million dollar, large complex projects and timing is difficult to pinpoint right now. Each project has a design, implementation and construction phase and there are 6-12 concurrent projects ongoing at any given time. The scheduling is very tricky. Viotek Kozakiewicz added that a few other plant projects are on hold because their design elements may be impacted by the Odour Study recommendations. The timeline is very difficult to define and there are other projects on hold in order to focus on this project. Moe Zolghadr proceeded to answer and compared the assessment from Ashbridges Bay whereby the study was finished in 2002 and the implementation phase began in 2004. The study itself was a 10 year process and you can not compare the two projects since they are very different and complex. Moe Zolghadr continued and said that it is reasonable to say that real implementation could start by 2010.

Q: Through the study, was there any shocking discovery? Was anything found that you didn't already know?

A: Michael Rix stated that the headhouse impacts were far greater than expected as well as the incoming sewer was greater than expected. The old scrubber was in worse shape than we thought but nothing shocking, rather the findings are qualitative and document real data required to support future decisions.

Q: Will this study help with getting the budget from the City?

A: Viotek Kozakiewicz stated that the budget has been presented. Moe Zolghadr stated that obviously, yes it helps. George Theodorlis replied that the political will is there and money has been set aside.

It was stated from a resident that this had been one of the best presentations that had been shown regarding this topic.

5. UPDATES

Voitek Kozakiewicz reported on the following capital projects within the Humber Treatment Plant:

- **RAS/WAS – Return Activated Sludge/Waste Activated Sludge**

Scope

- change of the philosophy of wasting and system upgrade

Status

- completed
- Operational today

- **Plant Water Treatment Project**

Scope

- Plant water utilization
- Plant water distribution system upgrades
- Water filter facility

Status

- Construction and commissioning completed
- Plant Water Facility in service
- PCS (process control system) integration in progress

- **Rehabilitation of Digesters**

Scope

- Digesters 1-6 structural rehabilitation
- Digester gallery structural rehabilitation
- Mechanical equipment and electrical upgrade
- Control systems upgrade

Status

- Design completed
- Construction divided into 3 phases:
 - Digesters 1-2 upgraded within 18 months
 - Digesters 3-4 upgrade within 12 months
 - Digesters 5-6 upgrade within 12 months
- Electrical substation construction and demolition of Digester Tanks Nos. 1 & 2 in progress

Furthermore, the sampling stations within the Digestion facility would also be upgraded as well as the remote control capabilities in order to improve the working conditions for the staff. It was mentioned that the upgrade constructions are quite large and safety training for the crew was provided

Voitek Kozakiewicz also stated that the Plant is preparing to test-run cogeneration equipment which would produce electricity for the plant.

Questions during Voitek Kozakiewicz presentation on capital projects:

Q: How much money is the plant spending on this project?

A: Voitek Kozakiewicz stated 40 Million dollars.

Q: How many employees does the plant have?

A: Voitek Kozakiewicz answered there are 80 plus employees ranging from maintenance, operational and administrative.

Q: How many employees are needed for the second shift?

A: Voitek stated 3 operators are needed whereas before 5 were needed. Some employees were relocated within The City and some employees retired.

6. NEW BUSINESS

No new business was related however it was mentioned that Councillor Milczyn's Constituency Assistant Kathy Renouf was in attendance.

7. NEXT MEETING

No meeting date was set.

8. ADJOURNMENT

The meeting adjourned at 9:30pm