



To: Richmond City Council
From: Councillor Linda Barnes
Chair, Community Safety Committee
Date: February 17th, 2004
File: 6175-06
Re: **Proposed Soil Treatment Demonstration Project – 13511 Vulcan Way**

The Community Safety Committee, at its meeting held on February 10th, 2004, considered the attached report, and recommends as follows:

Committee Recommendation

- (1) *That the GVRD be advised:*
 - (a) *That the City supports commencement of processing the air emissions permit for a temporary demonstration project to treat soil containing polychlorinated biphenyls at 13511 Vulcan Way by Sonic Environmental Solutions Inc., and*
 - (b) *That the City be consulted prior to the issuance of the air emissions permit.*
- (2) *That the City issue a business license to Sonic Environmental Solutions Inc. subject to the following conditions and on the understanding that if these conditions are not met, the business license will be breached and rescinded:*
 - (a) *No significant community concerns are expressed during the GVRD processing of this application, and the GVRD proceeds with issuance of the air emissions permit;*
 - (b) *There will be no discharges of any harmful substances to the air, and no discharges of any material from the site to the storm or sanitary sewers;*
 - (c) *That at the conclusion of the demonstration project, the all treated soil and any remaining contaminated soil will be removed from Richmond;*
 - (d) *That no further demonstrations other than that specifically approved by the province in their January 22, 2004 letter, will be undertaken;*
 - (e) *All information pertaining to the evaluation of the demonstration project be provided to the City; and*
 - (f) *Sonic agrees to work with the City to identify future opportunities for, and partner in the removal of, PCB contaminants located within the City of Richmond.*
 - (g) *The submission of protection indemnification satisfactory to the City Solicitor.*

Councillor Linda Barnes, Chair
Community Safety Committee

Attach.

VARIANCE

Please note that Committee added Part (2)(g).

Staff Report

Origin

Sonic Environmental Solutions Inc. is pursuing the development of a demonstration facility on leased property at 13511 Vulcan Way to treat soil containing PCBs (polychlorinated biphenyls). This is a small demonstration trial for two tonnes of soil, over a period not to exceed one year. Sonic has received conditional approval from the Ministry of Water, Land and Air Protection for the demonstration project (see Attachment 1). Additional approval is required from the GVRD for air emissions. As part of the GVRD approval process, GVRD will circulate Sonic's application to the City of Richmond for comment. This report seeks comments from Council for inclusion in the consultation process.

Analysis

Background/Proposal Summary

Sonic Environmental is a Vancouver, B.C. based company which has developed a proprietary process to remove PCBs from soils. Through their process, the PCB molecules are converted to a biphenyl by removal of the chlorine component using dispersed sodium. The sodium treatment method is already a proven process currently used by B.C. Hydro to remove PCBs from transformer oil. The unique aspect of Sonic's treatment method is that up until this time, there has been no method or technology available which is capable of effectively drawing the PCB contaminant away from the soil material in order that it may be treated.

Following treatment, levels of PCBs remaining in the soil are expected to be reduced to 0.4 parts per million. This would qualify as non-hazardous soil and would meet applicable requirements for use as structural backfill at industrial or residential construction sites (Special Waste designation is greater than or equal to 50 parts per million of PCBs). The total amount of PCBs contained in the two tonnes of soil for the demonstration trial is minimal, equal to approximately the same amount of PCBs contained in two light fixture ballasts (manufactured prior to the banning of PCBs).

The soil proposed for treatment originates from a site on Annacis Island. The soils were excavated during remediation of an electrical transformer maintenance shop. The PCB contamination resulted from spillage of transformer dielectric oil which, at the time of the plant's operation, typically contained high concentrations of PCBs. The soil is presently stored on site in a secured, permitted storage facility. The owner opted to store the material as opposed to shipping for out-of-province incineration due to cost. The Sonic proposal represents a potentially much more cost effective approach to treatment.

The Sonic demonstration facility on Vulcan Way is approximately 40' x 40' in size, and is fully enclosed in a tent-type structure. The purpose of the demonstration project is to test the process for commercial viability. If successful, Sonic's plans are to construct a portable, large scale version of the treatment process for transport to sites which contain significant quantities of soil containing PCB's. The soil would be treated on site, and in most cases, deposited back on the same site. This is a much more environmentally-friendly and cost-effective solution than transporting the soil for incineration, which is the only form of treatment available today.

Sonic's investment in the demonstration facility is approximately \$700,000. While too small to be considered for larger projects (feasibility, cost, etc.), it is possible that the proponent would want to maintain and use the demonstration facility on an on-going basis for continued demonstrations to test commercial viability.

About PCBs

PCBs are industrial chemicals which were synthesized and commercialized in North America in 1929. They were used in the manufacturing of electrical equipment, heat exchangers, hydraulic systems, and several other specialized applications up to the late 1970s. They were never manufactured in Canada but were widely used in this country (it is estimated that 22,000 – 40,000 tonnes of PCBs were imported into Canada).

When contained and secured, PCBs do not present an immediate concern. They pose a risk, however, when they enter the environment, e.g. through burning (molecules enter the air) or when spilled onto soil. PCB molecules can travel long distances by air, are poorly metabolized and are very difficult to degrade. Hence, PCBs are very persistent both in the environment and in living tissue.

PCBs have been demonstrated to cause a variety of serious health effects in animals, including cancer, and a number of serious non-cancer health effects in animals, including effects on the immune system, reproductive system, nervous system, and endocrine system. While little information is known about the human health effects of PCBs in humans, the evidence supports the potential for similar effects as to those for animals.

Because of concern for the environmental and health effects of PCBs, the Canadian government banned the import, manufacture, and sale (for re-use) of PCBs in 1977. Release to the environment of PCBs was made illegal in 1985. However, Canadian legislation has allowed owners of PCB equipment to continue using PCB equipment until the end of its service life. The storage of PCBs has been regulated since 1988. Handling, transport and destruction of PCBs are also regulated, mostly under provincial regulations.

Although the ban on PCBs resulted in large reductions in PCB inventories, there is concern that additional measures may be needed to "speed up" the pace of PCB phase-out. Additional regulations are being considered by the federal government under the Canadian Environmental Protection Act (CEPA) that would set specific dates for the complete destruction of all PCBs in service and in storage.

Project Assessment

The proposed demonstration project has been evaluated based on considerations of the project merit (i.e. necessity) and risk. A summary of the potential advantages and disadvantages of the Sonic proposed demonstration project are provided in Attachment 2.

Project Merit

There is a definite need to develop alternative treatment processes for remediating soil containing PCBs. The present option of transporting soil out-of-province for incineration

presents several challenges including restricted capacity, non-compliance with sustainability principles of treatment of waste-in-place, and greater risk of releasing harmful by-products into the air.

Risk

From a precautionary perspective, the City of Richmond does not represent the most optimal location for conducting the proposed activity. This is due to the presence of populated urban area, large areas of agricultural land, and the fact that Richmond is situated within the Fraser River estuary - in one of the most productive and sensitive ecosystems in Canada.

However, while Richmond is not optimal, it is staff's assessment that there exists a relatively low risk that Sonic's proposed demonstration project would result in any additional exposure to the local community and environment. This assessment is based on the following factors:

- the demonstration project is to operate on a temporary basis over a relatively short time period and would involve small quantities of soil,
- PCBs tend to be bound tightly to the soil and therefore, are unlikely to be inadvertently released into the environment,
- the proposed treatment involves techniques that make it very unlikely that PCBs or other hazardous-by-products will be released into the environment.

At staff's request, Sonic reviewed their proposal with the Richmond Health Department and the City's Advisory Committee on the Environment (ACE). The Richmond Health Department has indicated that it does not anticipate any significant issues from a health perspective. Volatilisation of PCBs from the soil into the air is anticipated to be below health standards and odour is not anticipated to pose a problem. The Health Department also does not anticipate noise to be a concern but have indicated that they would intend to monitor levels to ensure compliance with City standards. ACE members also did not express any concerns. One member commented on the high level of scientific expertise and credibility associated with the individuals involved.

Also at staff's request, Sonic contracted an independent consultant to assess community and environmental risks of the proposed activity. This assessment concluded that the proposed activity would pose negligible risk. The Ministry of Water, Land and Air Protection have also advised that their technical review concluded similar results.

From a longer-term perspective, supporting the development of the Sonic treatment process may actually assist to reduce overall exposures of the Richmond community to PCBs. It would be anticipated that the development of a safer and more cost-effective treatment option would result in the treatment of much greater quantities of soil over a shorter period.

Legal Authority/Options

The principal regulatory authority for approval of the demonstration project is the Ministry of Water, Land and Air Protection through the Special Waste Regulation. The property at 13511 Vulcan Way is currently licensed as a special waste facility by the province. It is owned by

Hazco Environmental Services, and is used to store special wastes. As noted previously, the Ministry has already granted approval for this demonstration project. City staff were not consulted by the Ministry prior to this approval being given. Staff will undertake to liaise with the Ministry and request that they consult with the City prior to issuing provincial approval of any future proposed demonstrations or commercial treatment of Special Waste material in Richmond.

The GVRD approves/regulates air emissions (via permit). The GVRD are awaiting comment from the City prior to processing the application from Sonic.

The City's regulatory authority is through the Zoning Bylaw and through issuance of a business license to conduct the proposed activity. While the Zoning Bylaw contains specific statements pertaining to hazardous wastes, when compared with what is practised in the City, the bylaw lacks clarity. Staff will undertake to evaluate and propose amendments to provide greater clarity and specificity with respect to the Zoning Bylaw. The City has not yet issued a business license to Sonic.

There are two principle options the City could take with respect to the Sonic proposal:

1. The City could support the project on the basis that it is a demonstration only, for a limited period of time. The City could stipulate certain limitations, as conditions of the business license approval, which would ensure that risks were strictly managed, such as:
 - a) No significant community concerns are expressed during the GVRD processing of this application, and the GVRD proceeds with issuance of the air emissions permit,
 - b) There will be no discharges of any harmful substances to the air, and no discharges of any material from the site to the storm or sanitary sewers,
 - c) That at the conclusion of the demonstration project, the treated soil will be deposited outside of Richmond,
 - d) That no further demonstrations other than that specifically approved by the province in their January 22, 2004 letter, will be undertaken,
 - e) All information pertaining to the evaluation of the demonstration project be provided to the City,
 - f) Sonic agrees to work with the City to identify future opportunities for, and partner in the removal of, PCB contaminants located within the City of Richmond.
2. The City could choose to not support the project, on the basis of the potential for community concerns. Options available to indicate this non-support are to:
 - a) Formally appeal the approval of the Ministry of Water, Land and Air Protection.

- b) Express our concerns to the GVRD via the air emissions permitting process. As part of this, the City could request that the GVRD require that public meetings be held in Richmond concerning the proposed demonstration project.

Recommended Approach

In light of the low risk presented to the community given the very limited size of the proposed demonstration project, staff recommend that the project be supported provided that the proponent agrees to the conditions outlined in Option 1, above.

The risks posed for on-going demonstration or treatment processes would be different. Staff will undertake to advise the province, the GVRD, and the proponents that City support for this particular demonstration project is not representative of support for any on-going demonstration or treatment process of Special Waste within Richmond.

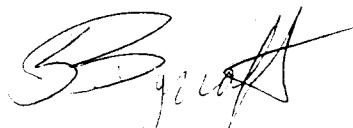
Financial Impact

Not applicable.

Conclusion

In light of pending federal regulations which are expected to require the complete destruction of all PCBs in service and in storage, the Sonic proposal represents a progressive and promising solution to help address the widespread issue of PCB contaminants in soil.

The risks to the Richmond community associated with the proposed demonstration project are minimal due to the very limited amounts of soil to be treated and the proposed technology to be used. This project represents positive potential for environmental benefits in helping to remove PCB contaminants from soil. If successful, Richmond stands to gain recognition as the community where this successful technology was originally tried and tested. If it is not successful, there is very limited risk to the City, as the contaminated soils will be returned to their point of origin (outside of Richmond).



Suzanne Bycraft
Manager, Emergency &
Environmental Programs
(4166)



Margot Daykin, M.R.M
Assistant Manager - Environmental
Programs
(4130)

SJB:

Provincial Letter of Approval



January 22, 2004

File: 66400-20/Sonic
X-Ref PS-16412

Sonic Environmental Solutions Inc.
1778 West 2nd Avenue
Vancouver, BC V6J 1H6

Attention: Mr. Adam R. Sumel
President and CEO

Dear Mr. Sumel:

Re: Your request for approval of a demonstration trial to treat PCB contaminated soil using Sonic Environmental's Technology

Thank you for your request dated November 20, 2003, for approval of a demonstration trial for a special waste treatment facility. In accordance with the provisions of Section 18(2) of the Special Waste Regulation, your request for a demonstration trial located at the Hazco special waste facility located at 13511 Vulcan Way, Richmond as described in the request and the supporting documents prepared by URS Canada Inc. dated November 18, 2003, is approved subject to the following conditions:

- This approval for a soil treatment demonstration trial is limited to the period from April 1, 2004, to April 1, 2005.
- The demonstration trial will consist of no more than four 500 kg batches of PCB contaminated soil originating from the former Wolverine Tube site, 920 Derwent Way, Delta BC.
- In accordance with Section 18(4) of the Regulation, Sonic shall submit a report after the demonstration trial is complete which shall include all the information listed in Section 18(3) of the Regulation.

Ministry of Water, Land
and Air Protection

Regional Operations
Lower Mainland Region

Mailing/Location Address:
10470 152 Street
SURREY BC V3R 0Y3

Telephone: (604) 582-5200
Facsimile: (604) 930-7119
<http://www.gov.bc.ca/>
<http://www.gov.bc.ca/wlap/>

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- No full scale treatment of special waste shall take place until the report required by Section 18(4) of the Regulation has been reviewed and accepted by the Regional Waste Manager or the Director of Waste Management.
- In accordance with Section 19(1) of the Regulation, all effluent discharges and air emissions to the environment shall be authorized by the appropriate authority.
- All solid residues from the demonstration trial shall be managed according to the Protocol for Management of PCB Contaminated Special Waste. A copy of the protocol may be viewed on the following ministry Web Page:

<http://wlapwww.gov.bc.ca/epd/epdpa/sw/pfmopcs.html>

- Demonstration trial shall be carried out according to all applicable sections of the Special Waste Regulation, including sections referred to in this approval.

The above decision may be appealed by persons who consider themselves aggrieved by this decision in accordance with Part 7 of the *Waste Management Act*. Notice of the appeal must (1) be in writing, (2) include the grounds for appeal, (3) be directed by registered mail or personally delivered to the Chair, Environmental Appeal Board, 4th Floor 836 Yates Street, Victoria, British Columbia, V8V 1X5, (4) be delivered within 30 days from the date notice of the decision is given, and (5) be accompanied by a fee of \$25.00, payable to the Minister of Finance.

Should you have any questions contact me at 604 582-5299 or David Robertson at 604 582-5287.

Sincerely,



R.H. Robb
Assistant Regional Waste Manager

cc. Rob Beleutz, Project Manager, URS Canada Inc.
Rob Dalrymple, Environmental Management, Victoria
David Robertson, Environmental Management, Surrey
Darrell Wakelin, GVRD
Margot Dayton, City of Richmond
Thomas Loo, Corp of Delta

Proposed Demonstration Project – Advantages and Disadvantages

Advantages

- supports the development of a potentially more sustainable economic business - one which strives to treat waste-in-place, is safer and more cost-effective,
- may help address current capacity limitations, help increase the rate of soil treatment and thereby reduce overall community exposure over the near-term,
- help establish a partnership with business to explore opportunities for reducing local community risks to PCBs,
- can use already existing control and management infrastructure provided at the Richmond site.

Disadvantages

- Richmond community may be concerned due to the contaminant involved,
- Richmond is not the most optimal location from a precautionary perspective,
- while predicted to be very low, there is some risk posed,
- may result in further pressure to conduct additional demonstrations which may potentially increase risks,
- very little oversight is expected to be provided by the Provincial regulatory body.