

REPORTS
Regular Council Meeting
1987 September 21

THE CORPORATION OF THE DISTRICT OF BURNABY

TO: MEMBERS OF COUNCIL
RE: FOUR-LITRE MILK JUGS

Madam and Gentlemen:

The Council agenda for 1987 September 08 contained an item of correspondence dealing with the issue of four-litre plastic milk jugs. Council at that time passed the following motions:

"THAT this item of correspondence be now REFERRED to the Greater Vancouver Regional District's Solid Waste Management Committee for evaluation in order to determine the environmental effects of large plastic milk containers in connection with landfill and incinerator operations"; and further,

"THAT The Honourable Bruce Strachan, Minister of Environment, be requested to examine the environmental hazards posed by the use of all large plastic containers and to consider the feasibility of imposing a requirement for deposits as a control mechanism on the usage of such containers."

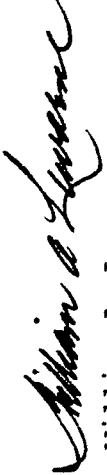
For the information of Council, I attach agenda Item 3(f) (iii) of the 1987 September 10 meeting of the Water & Waste Management Committee of the Greater Vancouver Sewerage and Drainage District regarding this matter. Also attached are Items 3(f) (i), regarding proposed glass depot pilot projects and 3(f) (ii) regarding updating of the regional collection of old newspapers.

It must be understood that these items have to go before the G.V.R.D. Board of Directors for final adoption on 1987 September 30.

Also arising out of this decision by the Water & Waste Management Committee, the following motion was put:

"Given the problems associated with garbage disposal and the significant efforts of local governments to handle garbage disposal in an effective, economical and environmentally acceptable manner, it was moved and seconded that the Committee recommend that the Greater Vancouver Sewerage & Drainage District Board:

- (a) express its strong concern to the Minister of the Environment regarding the decision to allow the use of four-litre plastic milk jugs without a full evaluation of the impact on waste disposal,
- (b) request the establishment of a system whereby any further such decisions be fully discussed and evaluated with those concerned before being implemented;
- (c) indicate its support for the request of Environmentally Sound Packaging for the establishment of a task force, with representatives of concerned community groups and all levels of government, to look into the problems associated with packaging and its regulation."



William A. Lewarne
M A Y O R

INTERNAL DISTRIBUTION:
: - AGENDA - 1987 SEPTEMBER 21
: - COPY - MUNICIPAL MANAGER
- DIR. ADMIN. & COMM. SERV.
- CHIEF PUBLIC HEALTH INSP.

**GREATER VANCOUVER SEWERAGE
AND DRAINAGE DISTRICT**

36

ESTABLISHED 1914

ITEM 3(f)

TO: Water and Waste Management Committee

FROM: Manager of Operations

RE: Recycling Program

DATE: September 10, 1987

4330 KINGSWAY
BURNABY, B.C.
CANADA V5H 4G8
PHONE (604) 432-6200

REPORT:

(i) Proposed Glass Depot Pilot Project

At the May 8, 1987 Water & Waste Management Committee meeting, staff reported on the feasibility study prepared by Daymax Management Ltd. which recommended the setting up of a pilot glass depot system in the Region for the recovery of container glass from the municipal waste stream. Daymax has followed this up with an implementation report in July 1987 for such a pilot glass depot program utilizing the "igloo" type glass recycling container. This container, with a capacity of one tonne, has been used with great success in Europe and more recently in the U.S.; several large California communities such as Sacramento and San Jose have started glass depot systems using this container. The implementation report projects that 50 percent of the waste glass in the municipal waste stream can be recovered by this system. Since colour separation of recycled glass is critical, each depot would consist of two containers; one for clear glass (or flint) and the other for coloured glass (green and amber).

There is an estimated 40,000 tonnes per annum of container glass in the municipal waste stream in the Region. Currently, this quantity is being disposed of at the landfills in the Region. The objective of the pilot program is to establish a successful glass depot program in several selected communities in the Region with the goal of diverting a minimum 50 percent of glass containers from the municipal waste stream. If the pilot program is successful the intent is to expand it to the rest of the Region. The communities tentatively chosen for the pilot program are Burnaby, Port Moody and the District and City of North Vancouver. As recommended by the consultant, the pilot program should run for a minimum of 3 years to allow proper assessment of its chance for success. The quantities of container glass estimated in each municipality and number of depots is set out below:

Municipality	Population	Projected Recovery @50% (tonnes)	Number of Depots
Burnaby	142,000	2,300	40
Port Moody	17,000	230	5
D. of N.V.	66,000	950	20
C. of N.V.	35,000	750	10
Total	260,000	4,230	75

The estimated capital cost of the "igloo" type container is \$750 each for the 150 containers necessary for the pilot program. Their estimated useful life is 8-years. The implementation report estimated the annual cost for operating this system and also emphasized that for this pilot project to be a success it must be heavily promoted and advertised to the community. On this basis, the annual cost of the pilot glass depot program is estimated at:

Capital cost of containers: $150 \times \$750 = \$112,500$.

Annual cost of amortizing this capital expenditure over the 8-year life of the containers at 10% interest is: $\$112,500 \times 0.187$ \$ 21,000
 Annual operating and maintenance cost 78,000
 Annual cost for management and advertising and promotion 50,000

Total Annual Cost / say \$ 150,000

Based on the assumption that after initial start-up the anticipated recovery rate of 50% is achieved and that the potential revenue from sale of recovered glass is realized, the anticipated revenue for the pilot glass depot program is:

Savings based on present regional disposal rate $4,200 \times \$29.10$ \$ 122,000
 Expected revenue from sale of glass 67,000
 $4,200 \times \$16/\text{tonne}$ \$ 189,000

On the assumption that a glass recovery rate of 25 percent is achieved in the first year of operation, 40 percent in the second year and 50 percent in the third year, the program will have a shortfall of revenue over operating costs of \$55,000 in the first year, breakeven in the second and have a surplus of about \$40,000 in the third year. Overall it is anticipated that the program will come close to breaking even over the three year period.

If this were the case then the municipal costs would be reduced accordingly.

The pilot glass depot program has been discussed in general terms with each of the municipal engineers of the four communities and they are interested in participating pursuant to details of the plan being accepted by their respective municipal councils. In principle, the municipalities would cover the costs for the program through the savings in tipping fees at the Regional disposal sites and the revenue from the sale of glass. The supply of the containers and the operation of the system would be provided by public tenders. Once the tenders have been received the District will finalize the project implementation with the municipalities.

It is worth noting that the quantity of glass being recycled from the commercial sector, and thus not being landfilled, has risen dramatically in the last year in the Region. For instance, the glass beneficiation plant in New Westminster has seen its quantity of commercial waste glass intake increase from about 1,500 tonnes in all of 1986 to a rate of 10,000 to 12,000 tonnes per annum in 1987. (This plant has a full time staff of 12 people). Much of the impetus for this increase has come from the realization in the glass industry that the District is serious about glass recycling in the Region and that measures would otherwise be taken to prevent commercial waste glass from being landfilled. The District's pilot glass depot project is to similarly increase the quantity of waste glass being recycled from the municipal waste stream.

RECOMMENDATION:

That it be recommended to the Greater Vancouver Sewerage and Drainage District Administration Board that a glass depot pilot project be authorized for implementation with the costs being recovered from the participating municipalities subject to the approval of the municipal councils.

(ii) Update on Regional Collection of Old Newspapers

At present all municipalities in the GVRD have programs for the recycling of old newspapers, either pick-up at curbside or at drop-off containers. Approximately 27,000 tonnes of old newspaper is being recycled in the Region and removed from the waste stream each year. This old newspaper is used for manufacture of new newspaper, cardboard packaging, building felt and the like; some old newspaper is being shipped to the Far East. The following is a brief description of the types of programs in each municipality:

Burnaby - The collection of newspapers from the 35,500 households is a bi-weekly "blue bag" service by International Paper Industries Ltd. and about 1,560 tonnes of ONP is collected annually.

Coquitlam - There is no curbside collection of recyclables. The SANE Society provide some 70 containers throughout the city. This service collects some 105 tonnes annually.

Delta - Delta Recycling Society currently picks up 1,320 tonnes of newspaper annually on a bi-weekly schedule, from some 23,500 households. The society also operates four multi-material depots which collect an additional 320 tonnes of recyclables each month (mostly metals).

Maple Ridge/Pitt Meadows - Ridge Meadows Recycling Society have provided a curbside collection of multi-materials in the urban areas of Pitt Meadows and Maple Ridge since 1981. They service some 10,000 homes on a weekly basis and with their depot at the Cottonwood Drive Landfill and a sub-depot in Pitt Meadows collect some 1,100 tonnes of recyclables annually. These totals include 480 tonnes of paper; 71 tonnes of glass; 340 tonnes of metals and 200 tonnes of scrap (white goods, etc.).

New Westminster - Mayam Enterprises recently commenced a "yellow bag" curbside collection of newspaper. They service some 7,500 homes with a bi-weekly collection and collect about 10 tonnes per month. Before the school summer break the tonnage collected was almost twice as high and they anticipate the volume will return after school re-starts. The SANE Society provide some 70 containers throughout the city. This service collects some 75 tonnes annually.

North Vancouver City - International Paper Industries Ltd. provides a "blue bag" curbside pick-up program for newspapers and collects some 510 tonnes annually.

North Vancouver District - International Paper Industries Ltd. provides a "blue bag" curbside pick-up service for newspaper from 19,700 households and with their various bins located throughout the District collect some 2,340 tonnes annually.

Port Coquitlam - The SHARE Society provides a "blue bag" curbside collection for newspaper to the 8,600 households and with an additional 25 bins throughout the city they collect some 500 tonnes of newspapers annually.

Port Moody - The SHARE Society provides a "blue bag" curbside collection for newspapers to the 4,900 households and with an

additional 25 bins throughout the city they collect some 240 tonnes of newspapers annually.

Richmond - Belkin Paper Stock provides a "yellow bag" curbside collection of newspaper for the 31,300 households in the municipality and collects some 1,200 tonnes annually.

Surrey - The Surrey Food Bank commenced a curbside collection for newspaper this past June. They service some 10,250 homes on a bi-weekly basis and collect some 12 tonnes of newspaper each month. They are currently introducing a "blue bag" into this service and anticipate increased collection tonnage. During September they propose to expand the "blue bag" service to an additional 10,000 homes. An additional 20 tonnes per month is collected through their apartment bins and donations.

Vancouver - There are many small entrepreneurs that provide neighbourhood bins, etc. One of these, John Gilbert, provides a curbside collection for some 45,000 households for newspapers, in the south portion of the city. An estimate of the newspapers recovered annually through his various programs is some 3,000 tonnes.

West Vancouver - International Paper Industries Ltd. provides a "blue bag" curbside collection service for newspaper for the 10,415 households. This along with the volume collected from three depots in the municipality diverts some 1,350 tonnes annually from the waste stream.

White Rock - The Semiahmoo House Society provides a weekly "blue bag" service for the collection of newspaper to 3,900 households, and with the volume collected from apartments, neighbourhood bins and paper drives they collect some 600 tonnes annually.

The total estimated quantity of recycled newspaper collected via these programs is 13,500 tonnes per annum. Additional quantities are collected through paper drives, neighbourhood bins, local recycling efforts and the like which is estimated to collect another 14,000 t/a for a total quantity of old newspapers recovered of 27,500 t/a in the Region.

RECOMMENDATION:

That it be recommended to the Greater Vancouver Sewerage and Drainage District Administration Board that the Update on Regional Collection of Old Newspapers as included in the Recycling Program Report be received for information.

(iii) Milk Packaging in New 4 Litre Plastic Jugs

Recently, the B.C. Ministry of Agriculture amended its regulations on milk packaging which has allowed the marketing of the 4 litre plastic milk jug container. The introduction of this new packaging container has not been welcomed by some environmental and recycling groups.

Several member municipalities have approached the District for its position on this matter. The attached memorandum dated

August 10, 1987 outlines the District's investigation.

The milk packaging market in B.C. is divided between the waxed paper carton, with approximately 75 percent of market share, and plastic containers with the remaining 25 percent. Prior to introduction of the 4 litre jug, the plastic pouch was the only plastic milk container. Since the introduction of the 4 litre jug it has captured approximately 25 percent of the plastic container market.

The 4 litre jug is bulkier than the pouch and the District's investigation shows that for the whole province the additional quantity of plastic to be disposed of amounts to 143 tonnes per year. This is not a large quantity of additional material. At the GVRD Regional disposal rate of \$30/tonne this would amount to an additional disposal charge of \$4,300 per annum for the whole province. However, if the 4 litre jug begins also to replace the waxed paper carton the additional quantity to be disposed of will be minimal since the waxed carton is itself quite bulky.

The 4 litre jug is made of high density polyethylene which burns cleanly and will not create difficulties at the Burnaby incinerator. The 4 litre plastic jug has a strong potential to be recycled and can be reused for various purposes. Certainly there is a recycling potential with higher quantities. In the U.S. high density polyethylene milk jugs are being recycled and the material used to manufacture a variety of items such as storage containers, drainage gutters, composting boxes, planters and the like.

It is not clear that these 4 litre milk jugs are an environmental problem at this time. However, it does raise the question of packaging and the reuse of packaging materials which is beyond the powers of the District. The Solid Waste Management Plan states that "Legislation regarding packaging and reuse of material are beyond the effective powers of local government. Senior governments should be urged to evaluate such legislation, taking into account all social and other costs." The Committee could pass a resolution asking the Senior Governments to do something about packaging and the reuse of materials but it probably would be more effective to first have the GVRD Recycling Committee investigate what is happening in other areas of North America and prepare specific recommendations that would provide some direction to Senior Governments.

RECOMMENDATION:

That it be recommended to the Greater Vancouver Sewerage and Drainage District Administration Board that the GVRD Recycling Committee be asked to investigate packaging and reuse of materials in other jurisdictions and to report back to the Committee with recommendations for forwarding to the Senior Governments.

WM/4
enclosure

MEMORANDUM

Greater Vancouver Regional District

TO: Toivo Allas

DATE: August 10, 1987

RE: Evaluation of the 4L Plastic Milk
Jug with Respect to its Impact on
Disposal Alternatives in the
Regional District

FILE: SD 95.02

INTRODUCTION

The British Columbia Ministry of Agriculture has recently amended its regulations on milk packaging. The amendment has deleted the reference to a specific 4L milk container, such as the milk pouch, and allowed other types of 4L containers, such as the plastic jug, on the British Columbian market.

The introduction of the 4L plastic jugs has not been welcomed by a number of B.C. environmental and recycling groups, who considered this a regressive step in their efforts to recycle and reduce the volume of waste generated.

An active role in the campaign against the 4L plastic jugs as a milk packaging is played by Du Pont of Canada Inc. They have contacted a series of interested organizations and many government offices. Du Pont strongly opposes the new packaging. Their attitude is based on both commercial interest and environmental concern.

Several municipalities have asked the GVRD to evaluate the new milk package with respect to its impact on disposal alternatives in the Region.

This report will assess the new 4L plastic jugs from the point of view of their suitability for incineration and landfilling and their disposal costs.

BACKGROUND INFORMATION

Milk is currently marketed in British Columbia in three types of packaging:

- waxed paper cartons of various sizes, up to 2 L
- 4L plastic pouches
- 4L plastic jugs.

The 4L plastic jug was introduced on the market several months ago when an amendment to the Milk Act regulations allowed for other types of containers to be used in milk packaging in addition to the two traditional ones, the cartons and the plastic pouches. The change in packing regulations was initiated by two local dairies, Belden Farms from Langley and Alamar from Delta. All the major dairies have since installed packing lines for the new type of containers.

The B.C. milk market is divided between the three types of packaging with 70 to 80% going to the waxed paper cartons and 30 to 20% going to the 4L containers, the plastic pouch and the newly introduced plastic jug. A supermarket survey indicated that the consumers' preference at this point in time is divided 3-to-1 in the favour of the pouch over the plastic jug. A vigorous marketing strategy might change the existent ratio more in the favour of the jug.

Du Pont Canada Inc., which is the sole distributor of the pouch packing system in B.C., has taken a leading role in the campaign against the plastic jug. They recognize that their concerns are partially of a commercial nature as the jug is competing with the plastic pouch for the same market share. In the brochure about the plastic milk jug that they distributed to various citizen groups and government offices, they expressed concern about the environmental and energy impacts of the milk jug. They claim that more than twice as much energy is used in the production of the jug than the pouch and that three times as much industrial solid waste and more than twice the waterborne waste is generated during the production phase of the container. Referring to the post-consumer waste streams Du Pont cites data from a Mid-West Research Project for US EPA, which were not confirmed by the direct testing done by the undersigned (weight discrepancies). As direct extrapolation of the US findings to the B.C. market may be the cause for it, their data were not used in this report.

Several citizen groups have also expressed concern about the new milk packaging. A newly formed coalition of concerned groups is seeking a meeting with the provincial Minister of Environment, Bruce Strachan, to discuss the new containers.

The plastic jug issue was discussed at a recent West Vancouver Council meeting which recommended the appointment of a task force to review milk packaging in the province. They also called for either an interim ban or a deposit system on the plastic jug until the task force study is completed. The two recommendations coincide with Du Pont's position on the plastic jug issue.

1. DISPOSAL COSTS

There is no doubt that the newly introduced 4L plastic jug is both heavier and bulkier than the 4L plastic pouch. The average weight of the plastic jug is 84 g which is 68% more than the 50 g average weight of the plastic pouch. The pouch compacts more easily than the jug under landfill conditions and it is expected to take less space at the disposal site.

There is a difference in the retail price between the plastic pouch and jug, the pouch being about 8 ¢ cheaper. There is also the cost of disposal of the extra weight of garbage generated by this new type of packaging.

Our calculations showed that at the current milk consumption rate, market share of the plastic jug and regional cost for disposal in the GVRD, B.C. communities are already paying about \$4,300/year for the disposal of the extra waste generated by the new 4L jug. In the event of total replacement of the pouch with the plastic jug, the estimated disposal cost of the extra waste will be about \$17,000/year for the province.

Detailed Calculation:

B.C. milk sales (1985 level): 270,000,000 litres/year

4L containers market share: 25% of B.C. milk sales = 67,500,000 litres/year

4L plastic jugs market share: 25% of all 4L containers =
16,875,000 litres/year

Number of 4L plastic jugs: 4,218,750/year

Extra waste generated: $34g \times 4,218,750/year \times 1kg/1000g \times 1tonne/1000kg =$
143 tonnes/year

Unit disposal costs: assume the GVRD Regional Disposal Rate of \$30/ tonne

Disposal costs: 143 tonnes/year \times \$30/tonne = \$4,290/year

Note: Regional disposal cost is averaged for the next 6 years and does not differentiate between the types of waste disposal (incineration, landfilling, resource recovery).

Landfill costs are built into the regional disposal rate. However, as previously mentioned, the plastic jugs take more room at the disposal site and this is an important factor to consider in this province where siting a landfill is a critical issue and the available landfill space is restricted.

The plastic materials the two 4L milk packagings are made of, low density polyethylene film for the pouch and high density polyethylene for the jug, are both long-term biodegradable materials.

2. INCINERATION SUITABILITY

Plastic materials, which represent about 5% of the total Canadian municipal refuse, have the highest range of calorific value (up to 11,600 kcal/kg) of all the municipal refuse constituents.

The 4L milk jug is made of high density polyethylene polymer which is blow molded by a local company in Richmond.

Polyethylene yields the least hazards or potential hazards during incineration of all the various plastic materials. Good combustion conditions, such as high turbulence, sufficient residency time and sufficient temperatures will result in a toxicological clean effluent.

Polyethylene burns with the least difficulty of the entire range of plastics and does not emit any harmful substances. The amount of ash residue is also very small compared to other waste plastics. Consequently, polyethylene represents a good fuel for the Burnaby incinerator considering its trouble free burning characteristics and high calorific value.

The 143 tonnes/year extra waste generated in B.C. by the 4L plastic jugs represents about 0.07% of the Burnaby incinerator capacity. As the incinerator is capable of burning only about 20% of the refuse generated in the Region, the added tonnage of plastic jugs is of no benefit to the operation of the energy-from-waste plant.

3. CONCLUSIONS AND RECOMMENDATIONS

The 143 tonnes for all of B.C. does not seem much when compared to the more than 1,000,000 tonnes of refuse generated in the Region. However, when it is compounded with hundreds of other small quantities generated by the communities, it makes good sense to try to avoid adding any extra quantity to the refuse that society already has to dispose of.

At the current market share of the plastic milk jug, the added cost for disposal of this extra material is \$4,300 per year for the Province. At an increased market share of the plastic jugs this cost will proportionally increase.

If the 4L plastic jug becomes a fixture in the milk packaging industry and if its market share increases in B.C. then certainly it should be recycled rather than disposed of at landfill.

There is existent technology to recycle high density polyethylene. In recent years, a number of entrepreneurs have found that used high density milk bottles can be processed for secondary uses. Depending on the purity of the processed product, applications range from containers to fiberfill. Recycled plastics can also be used in structural applications where dampness or water would make other materials unsuitable.

The current distribution of the 4L plastic jugs to the consumers does not include a deposit system. That means that there is no mechanism for diverting the cost of disposal of the containers to the dairies, and there is no incentive for the consumers to recycle the product.

Polyethylene represents a good fuel for the Burnaby incinerator based on its trouble free burning characteristics and high calorific value. Since the incinerator is capable of burning only about 20% of the refuse generated in the Region, it does not need any extra garbage to run at full design capacity. Its main role is to diminish the quantity of waste reaching the local landfills in an effort to prolong their active life.

To conclude, the 4L plastic milk jug creates more after-use waste than the 4L plastic pouch and the cost of disposal of the extra waste is borne by the communities. An evaluation of the current options for milk packaging should be made, with emphasis put on the recycling potential of the materials used and on reducing the amount of waste generated.

Cristina Jacob

CJ:cg
U4/136

cc: L. H. Hayton
G. W. Smith
D. Terrill

