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STATUS REPORT ON SPECIAL WASTE MANAGEMENT IN BRITISH COLUMBIA

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This paper reviews the status of the special waste management program of the Province of British Columbia. Special wastes are wastes potentially hazardous to human health and/or the environment which require special management techniques. Approximately 74,000 tonnes are thought to be generated annually in the province, mostly in the Vancouver area. The program's waste management technologies, waste management legislation, criteria for siting disposal facilities, and public information plan are among the major topics discussed.

Introduction

During the past three years the proper management of special wastes in British Columbia has become one of the highest priorities of the Ministry of Environment. This concern has arisen from growing public pressure to provide proper management of special wastes, and from observation of the serious consequences where special wastes have been poorly managed.

Today I am speaking on behalf of British Columbia's Environmental Safety Program, which is part of the Waste Management Program of the Ministry of Environment. This paper reviews the status of the Province's special waste management program.

Some of you may have noticed the use of the term "special wastes" rather than "hazardous wastes," so I will begin by explaining what we mean by this term. Second, I would like to consider the definition of special wastes, and in particular, our special waste list. After a brief review of the special waste inventory for B.C., it will be interesting to consider some of the major components of the Province's special waste management program. These include special waste laws and regulations, disposal facilities and their siting, and importantly, our public information programs.

Special Waste Definition

Recently an ad hoc Canadian task force resolved that special wastes are "those wastes which due to their nature and quantity are potentially hazardous to human health and/or the environment and which require special disposal techniques to eliminate or reduce the hazard." They may be classified as ignitable, corrosive, reactive, toxic, infectious, bioaccumulative, and mutagenic, carcinogenic, or teratogenic.

You may be curious to know why the British Columbia government uses the label "special wastes" rather than "hazardous wastes." The term "special" signifies the need for special disposal technologies and techniques, rather than the traditional disposal processes of sanitary landfilling and primary sewage treatment. It is not intended to downplay the hazardous properties of these substances, but rather, it places emphasis on the need for special management procedures. Simply, we wish to emphasize solutions to our waste problems, not the problems themselves.

Special Waste Inventory

Several years ago, the consulting company Reid, Crowther and Partners Ltd., was commissioned to prepare a comprehensive report on special waste management for the five western Provinces, the Yukon and Northwest Territories, and the Federal government of Canada. In this study an approximate inventory was developed for special wastes, and it was estimated that 74,000 metric tonnes (wet weight) of these materials are generated per year in British Columbia. The dry weight annual generation rate is believed to be about half that amount. About 26,000

tonnes or 36% of the total are oils. Acids constitute nearly 20%, while miscellaneous materials such as tank bottoms, paint, plastics, tannery wastes, and PCBs include approximately 18% of the total.

As one might expect, a large proportion of our special wastes arise in Greater Vancouver area. Reid, Crowther and Partners calculate that about 78% of the total originates around the Lower Mainland, while the remaining major regions in B.C. are thought to produce each less than 5% of the Provincial total, except for the Kamloops area, which is thought to produce 7% annually. Now since these statistics clearly indicate a special waste problem does exist in B.C., the next questions concerns what steps are being taken to regulate their management.

Waste Management Legislation

The Province's Waste Management Act has been in place almost two years. TF combines the former Pollution Control Act and Litter Acts, and additionally provides a powerful legislative means of managing special wastes. Here, the major impact is to establish a comprehensive special waste transportation manifest system, plus a mechanism for the issuing of permits for special waste storage, treatment, and disposal facilities. While the Waste Management Act describes a broad outline for the special waste management system, special waste regulations provide greater detail for implementation of the plan.

Special Waste List

B.C.'s special waste list, which is part of the Waste Management Act's regulations, defines special wastes as those wastes containing substances or compounds described in the list. A waste generator will simply need to refer to a special waste exemption code, reading from a graph derived by consideration of wastes' quantity, concentration, and hazard, to determine whether his wastes are exempt.

A short example will illustrate the use of this system. Assume for a moment that I am a pesticide manufacturer who wishes to dispose of 500 kg of a contaminated mixture containing 5%, or 50 g/kg of 2,4-D. To find whether this qualifies as a special waste, first I consult the list of special waste exemptions, which precedes the special waste list. Materials such as foundry moulding sand, polymerized plastic and rubber, building and demolition scraps, etc., are not considered special wastes, but pesticides are not exempt, according to this list. Second, I consult Schedule I of the Regulations, "Specific Special Wastes" to determine whether 2,4-D appears. Since it does not, I next examine Schedule 2, "Generic Special Wastes" under Pesticides — halogentated organic pesticides, and find that exemption code C applies. Upon inspection of Schedule 3, which is the graph "Special Waste Exemption Codes," I find that the quantity of this mixture and the concentration of 2,4-D falls far above curve C. Thus, the waste is not exempt, and it qualifies as a special waste. To be exempt, its quantity and concentration would have to fall below or to the left of the curve.

Special Waste Transportation Manifest System

British Columbia's Waste Mangement Act, in part, deals with the proper transportation of special wastes by implementing a compulsory special waste transfer manifest system, it involves a systematic method of tracking the movement of special wastes from their point of generation, to their ultimate disposal, destruction, or long-term storage sites.

The Ministry of Environment has developed a three-part, six-copy form which requires specific information from the shipper and carrier, before special waste transportation occurs, and from the receiver, before receipt of the ship is acknowledged. The identity of the shipper, carrier, and receiver, and waste's nature, quantity, destination, and handling and emergency procedures are several major elements.

Special Waste Facility Proposals

In late January 1982, the Ministry of

Environment invited competitive proposals for the handling and management of special wastes in the province. It was decided to give the private sector an opportunity to indicate what it is willing and able to do in the special waste field. By July 1982, the Ministry received detailed submissions from nine companies. These were reviewed for environmental impact, technical feasibility, and project scheduling by an inter-Ministry assessment committee and a sub-committee reporting on financial capabilities, socio-economic impact, and corporate responsibility.

The assessment committee produced a short list of four proponents: Browning-Ferris Industries Ltd., Chem-Security Ltd., Genstar Conservation Systems/IT Corporation, and Stablex (Canada) Ltd. These firms were interviewed in late November, and in September 1983, Environment Minister Tony Brummet endorsed the joint proposal by Genstar and IT Corporations. This firm demonstrated that it could properly handle the full range of special wastes generated in British Columbia, at no net cost to the Province, based on fair and equitable user fees.

Special Waste Management Technologies

Genstar and IT Corporations have proposed a series of special waste management technologies which are outlined in a "Letter of Understanding" with the Province. Included are:

- regional collection stations
- receiving and storage facilities
- physical-chemical treatment processes, using technologies such as concentra tion, separation, and neutralization
- biological treatment, using the perched bed system: a type of landfarming on an artificial soil medium. It eliminates groundwater pollution through a sub surface liquid collection system.
- high temperature destruction: organic liquids will be blended with fuel and incinerated in Genstar's cemet kiln in Delta.
- secure landfill: located on Crown land in the south central interior of B.C., this facility will receive solids and solidified residues from the treatment facilities.

Siting Special Waste Management Facilities

Considerable thought has been given to the siting of special waste facilities in B.C. Physical, chemical, and biological treatment plants, special waste incinerators, and collection and storage depots can be accommodated in many industrially zoned areas, since these facilities are not so dependent on geographical and climatic factors for their security. However, siting of a secure landfill is more involved because it requires long term security from resource conflicts and unsuitable natural surroundings.

Our mountainous and wet zones are generally considered to be unsuitable, mainly because of the threat of ground or surface water contamination, due to excessive precipitation. Since most of the special wastes now produced in British Columbia come from the Lower Mainland, selection of the northern part of the Province seems unlikely because of limited accessibility, and higher transportation costs and risks. By eliminating these areas, the dry southern central interior of B.C. emerges as the most suitable area for a secure landfill.

The most preferred general areas in B.C. were identified in the Reid, Crowther and Partners report, and this constitute Phase I of the secure landfill siting process. Next, the Surveys and Resource Mapping Branch of the Ministry undertook a more detailed, comprehensive investigation of high potential special waste secure landfill areas. During this Phase II siting process, a base map and 14 sets of overlays were used to describe a variety of siting constraints such as heritage resources, surface and underground water features, surface geology, precipitation, wildlife capability, and agricultural land use. When these data were combined and evaluated, 1 I potentially suitable areas emerged. Generally, these are located on Crown land between areas of higher elevation and higher precipitation, and valley bottoms which are often privately owned, in the

Agriculture Land Reserve, within critical habitat areas and/or important for their groundwater resources.

Two of the 11 general areas were viewed as most suitable when the additional requirement of maximizing transportation safety and minimizing road construction costs by locating the site reasonably close to major transportation routes was included.

Phase 111 of the secure landfill siting process involves onsite investigations by Genstar and IT Corporations. Such studies have begun with an examination of surface materials and seismic work. When the most promising sites within each area are identified, drilling programs to determine the depth and quality of soil, bedrock, and groundwater are to be performed.

Once the results of on-site studies and the public participation plan are evaluated, the company will file applications with the provincial government. Final approval will be made through the processes in which waste management permits are granted.

Finally, the development of the special waste management system in the Lower Mainland should gather speed this Spring. After a period of planning and assessing generation rates of B.C.'s special wastes, Genstar and IT are now prepared to implement their facility siting and public participation programs.

Public Information Programs

The last of the special waste management program components I will discuss is the need to inform and involve the public. Both the province and Genstar/IT Corporations are committed to public participation throughout the development of the special waste program. For example, during the siting process, local residents who have first-hand knowledge of the potential sites in question, are a valuable resource. In fact, Genstar and IT, by agreement with the Province, are implementing a public participation plan which will provide for ongoing public review and input into site selection, environmental and socio-economic Impact assessment, and project monitoring.

Conclusion

To conclude, in comparison with many of the more heavily industrialized areas of the world, it is apparent that British Columbia is in a fortunate situation concerning special wastes.

While a special waste problem does exist in the Province, our special waste inventory is relatively small, and implementation of a comprehensive special waste program is well underway. Appropriate legislation is in place, a special waste transfer manifest system has been developed, and special waste management facilities are being developed. We are confident that British Columbia will be able to avoid the deleterious human and environmental impact seen in scores of poorly-managed programs elsewhere.