Department of Environment and Planning

Industrial Waste Survey Tasmania

December 1991

Consulting Environmental Engineers

in association with

Environmental and Technical Services Pty Ltd

1. INTRODUCTION

The Department of Environment and Planning (DEP) is developing policies and strategies for the management of industrial and hazardous wastes in Tasmania. However, this work has been constrained by a lack of detailed information on the quantities and types of wastes produced by industry in various parts of the State. DEP commissioned Consulting Environmental Engineers to undertake a comprehensive survey of the existing pattern of industrial and hazardous waste generation in Tasmania and to predict likely future trends in waste generation.

In the context of the DEP's waste management programme and the survey, the term "industrial and hazardous wastes" applies to any waste which presents a potential risk to public health or the environment if disposed of in an inappropriate way. Therefore, the range of wastes to be included in the survey range from relatively large volumes of organic (natural) wastes produced by the vegetable and fish processing industries to the small quantities of potentially toxic chemicals requiring disposal in Tasmania.

As discussed below, the survey focussed on wastes for which the preferred means of disposal is transporting to special industrial waste facilities. Wastes which may continue to be safely discharged to municipal sewerage systems or discharged to land or water under specific DEP Licences were excluded from the survey, although the production of sludge and screenings as by-products of treating such wastes before discharge has been considered.

Three other waste categories which were not included in the survey following discussions with DEP are: (1) bio-medical wastes, as the generation and disposal of these is currently being reviewed by the Tasmanian Department of Health; (2) mine tailings, which will continue to be controlled by the Department of Resources and Energy (with advice from DEP where appropriate); and (3) laboratory-scale quantities of chemicals, for which specific guidelines are followed in each laboratory, depending on the volume and nature of the chemicals used.

1.1 Objective of Study

The objective of the study is to provide the basic data on industrial and hazardous waste generation required for developing a statewide strategy to manage these wastes, and to provide the basis for design of one or more dedicated industrial waste disposal facilities in Tasmania.

As shown in the Table, moderate problems are experienced with the disposal to sewer of fish wastes (orange roughy), and with the disposal to landfill of fish, offal, onions, animal wastes including skins, bark, coal washings, pesticides, farmer chemical containers, and asbestos.

Disposal of dairy wastes to land also was identified as a major problem, where it results in contaminated runoff entering waterways.

With respect to disposal of industrial wastes to sewer, it is understood that only one Municipality has a gazetted By-Law for trade waste acceptance. However, a few municipalities have agreements with major industries for acceptance of trade waste into their sewerage systems.

Trade waste By-Laws and/or signed agreements with industry are considered a cornerstone in the management of industrial wastes. Trade waste By-Laws and agreements should include wastewater quality acceptance limits applicable to industry in general and to specific premises. The limits should relate also to the sewage treatment system available and the nature of the receiving environment. Further, the By-Laws and agreement should require comprehensive and regular monitoring of industrial wastes to ensure compliance and to enable charging on a user pays basis.

With respect to disposal of industrial wastes at municipal landfills, it is understood that there are few if any procedures in place to monitor and record the volume and nature of specific wastes entering tips.

Implementation of a system to record the volume and nature of industrial wastes disposed in landfills is considered an essential component of industrial waste management. This could be part of an overall industrial waste manifest for production, transportation, treatment, recycling and disposal.

6. SURVEY OF WASTE CARTAGE CONTRACTORS

As described in Section 2, all major waste cartage contractors were interviewed by members of the study team. The main purpose of the interviews was to obtain an additional insight into the nature and sources of industrial/hazardous wastes, and to confirm data on existing methods of disposal for the major waste categories.

Waste Nature and Sources

The types of wastes transported offsite consist mostly of: (1) inorganic wastes; (2) putrescible animal and vegetable wastes; (3) other organic wastes; and (4) dust collector residues.The major waste cartage contractors transport less than 10 per cent of the total annual volume of industrial wastes carted offsite for disposal or recycling. Most of the cartage is by company-run vehicles, or by farmers collecting vegetable wastes.

The waste cartage contractors transport most of the inorganic wastes, acids, alkalis, dyes, solvents, oils, persistent organics and waste containers which are disposed of offsite.

Existing Waste Storage and Treatment

The waste contractors undertake little waste storage and treatment. Notable exceptions include: (1) waste oil storage, blending and testing in the south, and (2) onsite treatment of some wastes with a mobile stabilization and fixing unit prior to offsite disposal at municipal landfill sites.

Existing Waste Disposal and Recycling

Most of the wastes transported by the waste contractors, with the exception of waste oil, are disposed of at municipal landfill sites. Waste oil that is suitable for burning (ie "low lead" and reasonably free of water and solids) is generally recycled as fuel. Waste oil that contains high lead can be treated at an industry owned facility.

A small quantity of wastes are transported to the mainland for treatment, recycling and for high temperature incineration overseas. These wastes include solvent and medical wastes from hospitals and universities.

Table 7.1 Estimated Statewide Annual Volume of Industrial Wastes for which Existing Disposal Arrangements are Inadequate.

No.	Waste Category	Annual Volume, m^3/year	
		Inadequate Existing Disposal	Acceptable Existing Disposal
1	Inorganic wastes	202715	242153
2	Acids not neutralized	9324	1302
3	Alkalis - not neutralized	7305	233305
4	Reactive chemicals	0	0
5	Water paint,resin,dyes	749	81681
6	Non chlorinated solvents	11	0
7	Chlorinated solvents	36	0
8	Putrescible animal wastes	21279	1544398
9	Putrescible veg. waste	88426	0
10	Other organic wastes	129072	907140
11	Oily water, mixes, sludge	356	4651
12	Waste oil	4198	0
13	Animal/veg fat & oil	563	4410
14	Persistent organic wastes	6073	0
15	Non-persistent organics	0	0
16	Asbestos/fibres	33	0
17	Containers, drums, bags	6395	0
18	Dust collector residue	249599	16500
	Other		37206
	Grand Total (rounded)	730000 m^3/yr	3070000 m^3/yr

0.73 Million 3.07 Million

Accuracy of Survey Results

The predicted accuracy of the survey results for each waste category is ±25 per cent, and for the regional and statewide totals is ±20 per cent.

Problem Areas

The following problem areas have been identified in existing waste management:

Monitoring and Data Acquisition

1. Waste generation of the following is not known: septage; grease trap wastes; dairy, piggery and feedlot wastes; farm wastes; and forestry wastes.
2. Estimated volume of waste oil may be low and requires confirmation.
3. Limited data available on composition of industrial wastes generated and disposed to sewer and landfills.

Regulatory Requirements

1. Insufficient trade waste acceptance By-Laws and agreements for discharge to municipal sewers and landfills.
2. No industrial waste transport permit system to monitor industrial waste movement and disposal.

Treatment and Disposal

1. Treatment and disposal of septage
2. Disposal of grease trap wastes and possible future recycling
3. Storage, treatment and disposal of medical and solvent wastes
4. Storage and disposal of chemical containers
5. Treatment and disposal of abattoir and high strength organic wastes
6. Disposal of some odourous vegetable wastes.

There is a need for at least two putresible waste treatment facilities (one in southern Tasmania and one in northern Tasmania) to handle: septage, grease trap wastes, vegetable sludges, animal wastes and other high strength organic wastes.

Future Aqueous Waste Treatment Facilities

There is a need for at least one aqueous waste treatment and disposal facility in Tasmania. Several of the major contractors have expressed interest in participating in the ownership and/or the operation and management of any facility. It is envisaged that the facility could include treatment and disposal of: inorganic wastes; acids and alkalis; paints; resins; solvents; oily water and sludges; and other wastes that can be treated to produce a material that can be disposed of in an environmentally acceptable way.

Up to 25 000 m^3 of inorganic wastes (excluding wastes discharged to the ocean under Commonwealth licence) could be treated at an aqueous treatment plant. Most of this waste is generated in the north of the state.

Up to 9 000 m^3 of acid wastes and 6 000 m^3/year of alkali wastes could be treated at an aqueous treatment plant. Most of these wastes are generated in the northwest of the state. Hence an aqueous treatment plant could be located in the northwest to neutralize these wastes.

Secure Landfill

There is a need for at least one and preferably three secure landfills in Tasmania. As for possible aqueous waste facilities, several major waste cartage contractors have expressed interest in participating in any future facilities.

Chemical Containers

The volume of chemical containers, contaminated drums and bags is underestimated in this survey as farmers, foresters and crop dusters were not surveyed. However they are known to use significant quantities of potentially toxic chemicals and to have problems in disposal of the containers. It is recommended that a survey of these wastes be conducted, and that it includes discussions with major chemical suppliers, industry and councils, in order to obtain an accurate estimate of the annual generation rate and the present volume stored. A facility is needed to receive, store, handle, and safely dispose of chemical containers.

Waste Oil

More information is needed on waste oil. The survey did not include service stations, garages, and shipping and road transport companies which are major generators of waste oil. An estimate has been made of the total quantity of waste oil generated based on interviews with the waste cartage contractors (approximately 4,000 m^3/year), but it is considered desirable to confirm this estimate. A permanent waste oil storage, treatment and recycling facility is required in a central location in the state.

A number of concerns exist relating to the use of waste oil as a dust suppressant on roads. These include: the difficulty in controlling the application; the variable concentration of contaminating constituents in waste oil; and the need to investigate the effect on the environment. It is probable that there may eventually be a ban on this use of waste oil.

Toxic and Hazardous Wastes

There are only small quantities of toxic and hazardous wastes generated and stored in Tasmania. Some are now exported to the mainland for treatment and disposal and this would appear to be the best course of action for the small quantity of liquid toxic wastes likely to be generated in the future. Ideally, there should be a single collection and storage depot for hazardous wastes, including chlorinated solvents, to which all waste cartage contractors have access.

8. RECOMMENDATIONS

Major recommendations arising from this study are presented below.

1. Prioritize the list of waste categories for collection, treatment, and disposal for each region.

2. Establish volume, concentration and characteristics of waste streams for each priority waste category.

3. Require Municipalities to introduce a model By-Law and/or appropriate agreements for trade waste acceptance into sewers.

4. Evaluate suitability of existing major trade waste discharges to sewer and ocean waters with routine monitoring.

5. Require Municipalities to monitor and record the volume and nature of specific wastes entering tips, and method of treatment and location of disposal.

6. Introduce an industrial waste transport permit system, similar to that used in Victoria.

7. Determine the feasibility of up to two putresible waste treatment facilities (one in southern Tasmania and one in northern Tasmania) to handle: septage, grease trap wastes, vegetable sludges, animal wastes and other high strength organic wastes, with possible future recycling.

8. Determine the feasibility of at least one aqueous waste treatment and disposal facility in the north or northwest of the State. The study should include a facility to store, handle, and treat up to 40 000 m^3/year of: inorganic wastes; acids and alkalis; paints; resins; solvents; oily water and sludges; and other wastes. The possibility of State, private or joint operation of the facility should be addressed.

9. Determine the feasibility of at least one and preferably three secure landfills (one in each area of the State) for safe disposal of selected industrial wastes. The capacity of the sites should be sized to handle predicted present and future demand for normal industrial waste generation and also provide capacity for emergency storage. (eg marine spills, industrial spills, etc.)