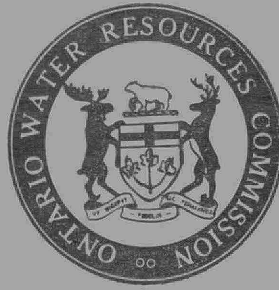


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*Survey*



THE  
ONTARIO WATER RESOURCES  
COMMISSION



INDUSTRIAL WASTES SURVEY

of the

MALDEN ROAD LANDFILL

WINDSOR, ONTARIO

*Dec* 1968

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A  
Report On  
An Industrial Wastes Survey  
of  
MALDEN ROAD LANDFILL  
Windsor, Ontario

December 10, 11, 12, 1968

Division of Industrial Wastes  
ONTARIO WATER RESOURCES COMMISSION

REPORT

Ontario Water Resources Commission

Municipality Windsor, Ontario Date of Inspection December 10, 11, 12, 1968.

Re: MALDEN ROAD LANDFILL

Field Inspection by N. Borodczak Report by N. Borodczak

There are a number of sources, both domestic and industrial, in the City of Windsor that generate liquid wastes which cannot be dealt with in a conventional manner and therefore are currently being disposed on land. Wastes of this type, produced within the city boundaries are trucked for disposal at the Malden Road Landfill operated by the municipality.

Since the start-up of this site, the volume of liquid wastes received, has increased considerably. As no specific facilities were provided to handle this particular type of waste, a high percentage of this material drains into the local ditches which eventually flow into the Detroit River. The water pollution that results was brought to the attention of the OWRC and therefore a survey of this landfill site was carried out during the week of December 9, 1968, to define the nature and extent of the water pollution problem and to obtain an inventory of all liquid wastes hauled to the site. This report, then, summarized the findings of this survey.

SUMMARY

Based on the data collected, it was estimated that on an average a total of 365,000 gallons per month of liquid wastes are

hauled to the Malden Road Landfill in Windsor. An approximate breakdown was found to be as follows:

- 110,000 gallons per month septic tank wastes
- 95,000 gallons per month spent oils and water
- 100,000 gallons per month paint wastes
- 60,000 gallons per month detergents and alkali cleaners

As there are no facilities at the site to handle these particular types of waste, the operations of the Malden Road Landfill constitute a major source of water pollution, and because of the flammable nature of some of the pollutants, (oil, paint, cleaners, etc.) a potential fire hazard. It is expected that this situation will be further aggravated when the municipal sewer-use by-law is enforced prohibiting the discharge of certain wastes to the sanitary sewer. A number of establishments will have to treat the wastes prior to discharge and haul the resulting sludges, etc., away for land disposal.

Rectification of this condition will require the cooperative efforts of the municipality, the commercial haulage firms, and finally the industries which generate a major portion of the liquid wastes. This report, therefore, recommends that all parties concerned respond in a positive manner and as quickly as possible, to eliminate this serious source of pollution.

#### DETAILS OF SURVEY

During the week of December 9, 1968, one of the field staff from the Division of Industrial Wastes, accompanied by representatives from the Waste Management Section, Ontario Department of Health, visited Windsor to inspect the Malden Road Landfill operated by the municipality. The

purpose of this visit was to identify and define the problems associated with the disposal of liquid wastes at the dump and to estimate the volume and nature of the wastes hauled to the site.

Since April of this year, the municipality has maintained a log of all liquid wastes received at the dump noting the nature, volume, and source of the material. Based on this data, a number of industries were visited to learn whether changes in operations were contemplated that would tend to alter the volume of liquid wastes hauled to the site.

Personnel Participating

Mr. J. Fetchison, P.Eng.	- Waste Management Engineer Department of Health
Mr. H. A. Campbell	- Environmental Health Branch Department of Health
Mr. N. Borodczak	- Industrial Wastes Division Ontario Water Resources Commission

Personnel Interviewed

Dr. D. R. MacDonald	- Director Environmental Health Division Metro Windsor, Essex County Health Unit
Mr. W. E. Dunford	- Director of Operations Department of Public Works City of Windsor
Mr. C. Lawrence	- Superintendent Malden Road Landfill
Mr. M. Ritchie	- Manager Transmission and Chassis Plant, Ford Motor Co. of Canada Ltd.
Mr. S. Cowin	- Manager, Engine Plant Ford Motor Co. of Canada Ltd.

- Mr. D. Osmun - Project Engineer, Car plant,  
Chrysler Canada Ltd.
- Mr. J. Bellanger - Manager, Plasticast Limited

Description of Landfill Site and Operations

The Windsor municipal landfill site is located in the western outskirts of the city and consists of approximately 180 acres of land. The site, operated 6 days per week, accepts all solid and liquid wastes generated within the municipality. The solid wastes are compacted and covered over with earth while the liquid wastes are simply dumped into open pits dug in the soil. During dry spells the oil-water emulsions are spread on roads for dust control.

The Malden Road Landfill site was converted from a marsh with the intention of ultimately creating a recreation park consisting of a golf course and a ski-hill. The site has been in operation for some time and has an expected life from 5 to 7 years.

Liquid wastes, both domestic and industrial, are taken to the dump by local haulage contractors. The tank trucks are backed up near the open pit, the valve is opened, and the wastes are simply allowed to flow in. When a pit becomes full it is filled in with earth and rubble and a new hole is dug. Aside from these make-shift arrangements, no other facilities are available to handle liquid wastes.

There are a number of periphery ditches constructed on the site to collect the run-off and direct it to McKee Drain. This drain flows more or less in a northerly direction and eventually empties into the Detroit River. A high percentage of the wastes hauled to the dump is eventually

discharged to the Detroit River through the aforesaid ditches.

Sources of Liquid Wastes and Method of Disposal

Liquid wastes that cannot be discharged to the sanitary or storm sewer or that cannot be dealt with readily at the source are hauled away by local trucking contractors for disposal at the municipal landfill site. These wastes consist essentially of septic tank sludge wastes from areas that are not serviced by sanitary sewers (i.e., Sandwich West), waste oils from local garages and service stations, and other liquid wastes and sludges generated by the local industries.

There are a number of industries that contribute a major share of the total liquid waste volume hauled to the local site. Because each of these industries generates a different type of waste, they are discussed under separate headings.

Plasticast Limited

This Company is engaged in the manufacturing and finishing of metal hardware for the automotive industry. Essential operations consist of casting and plating. The rinses from the plating operations are treated in conventional treatment units while the spent alkali and detergent cleaners, and still rinses, are hauled away for land disposal.

Aside from minor quantities of oil and sludges the major percentage of the liquid wastes hauled away consists of spent alkali and detergent cleaning solutions, and still rinses, because they cannot be treated by the existing filter. The Company is considering installing an equalization tank



to retain these wastes and pass them through the filter at a controlled rate. It is therefore expected that the volume of wastes hauled away from the plant will be reduced considerably in the future.

Chrysler Canada Limited

The entire Chrysler of Canada Limited complex in Windsor manufactures the complete line of Dodge and Plymouth cars. This industry has constructed a complex waste treatment system that is capable of treating a majority of the liquid wastes produced. Once these facilities are put on stream most of the oils and other flammable liquids will be incinerated at the plant and will not be hauled away to the landfill site.

The new facilities, however, will not be capable of treating the paint emulsions and hence these will still have to be hauled away for land disposal. The Company will still exert a heavy hydraulic load on the local landfill site.

Ford Motor Company of Canada Limited

The manufacturing operations for the Ford complex in Windsor are housed in five main plants. The entire complex is engaged in the production of engine, transmission, and chassis parts for the Ford line of cars.

From short discussions held with plant personnel, it was learned that a majority of the waste oils hauled to the landfill originate from the transmission and chassis plant. These operations are to be discontinued in the near future and hence this will eliminate one of the major sources of wastes. If the new operations do not generate any liquid effluents, only the wastes from the engine manufacturing operations will be hauled to

the dump and will consist of caustic cleaners, paint wastes, and sand sludges from the casting operations.

McKinnon Industries Limited

This Company is engaged in the manufacture of automotive transmissions. In September of 1968, new treatment works were put on stream and this reduced considerably the volume of wastes hauled to the local landfill site. It was reported to OWRC field staff that only concentrated oil wastes from the treatment unit are to be hauled to the dump, and will amount to approximately 7,000 gallons per month.

SUMMARY OF LIQUID WASTES HAULED TO THE LANDFILL SITE

Since April of this year a log was kept at the gatehouse at the landfill site to record all liquid wastes received. Based on the data collected, a summary is presented on page 8. A summary of the major industrial contributors is also presented on page 9.

DISCUSSION OF FINDINGS

The Division of Industrial Wastes has been aware for some time that liquid industrial wastes can be generated in municipalities that are difficult to handle and that cannot be discharged to the sanitary sewer or treated at the source by conventional means. These wastes are normally collected and hauled away by contractors for disposal by incineration, specialized treatment, or land disposal.

Recently, land disposal of liquid wastes has become of prime concern because it has been demonstrated that indiscriminate dumping of these wastes

SUMMARY OF LIQUID WASTES RECEIVED AT MALDEN ROAD LANDFILL

1968

Month	Septic Tank Sludges	Oil and Animal Greases	Paint Wastes	Alkali and Detergent Cleaners
April	112,750 gal.	60,650 gal.	100,650 gal.	133,600 gal.
May	117,100 "	58,450 "	122,450 "	103,900 "
June	111,350 "	89,250 "	93,800 "	34,350 "
July	112,570 "	66,400 "	91,250 "	68,050 "
August	105,700 "	83,700 "	94,950 "	28,300 "
September	145,450 "	170,400 "	90,200 "	27,900 "
Average per week	27,500 "	20,300 "	22,400 "	15,200 "

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MAJOR INDUSTRIAL CONTRIBUTORS OF LIQUID WASTES TO MALDEN ROAD LANDFILL

Industry	Oil and Water Emulsions (gal/month)	Paint Wastes (gal/month)	Detergent and Alkali Cleaners (gal/month)	Remarks
Plasticast Limited	5,000	2,000	65,000	Alkali cleaners are to be treated at plant and will not be hauled away.
Chrysler Canada Limited	3,000	90,000	-	Oil wastes are to be burned at Industry. Only paint wastes to be hauled away.
Ford Motor Co. of Canada Limited	8,000	2,000	18,000	Shut down of chassis and transmission plant will eliminate haulage of oil wastes.
McKinnon Industries	38,000	-	-	Installation of new treatment works will reduce oil wastes to 7,000 gal/month of 92% oil.
C.P.R.	7,000	-	-	No change expected.

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on land may produce some serious problems. The disposal of strong alkali or acid solutions on land would render the soil corrosive requiring extensive excavation prior to construction. The discharge of toxic wastes to a well drained area may result in the material entering a natural watercourse resulting in serious pollution. If the wastes are flammable a potential fire hazard may also be created. It is evident that the land disposal of liquid wastes must be carefully controlled and regulated, and proper sites provided to prevent any of the above mentioned problems.

High volumes of liquid wastes are generated in Windsor that are difficult to handle and must be hauled by local contractors to the Malden Road Landfill for land disposal. Since April of this year (1968), the municipality has maintained a log of all the liquid wastes hauled to this landfill noting the nature and volume as well as the source of the wastes. From these records, it was estimated that approximately 365,000 gallons per month were received at the site. Of this total approximately 32% constituted septic tank sludge, while the remainder originated, essentially from the various industries located in Windsor.

In the summer of 1968, a number of complaints were received by the OWRC reporting the presence of oil on the Detroit River in the Canada Steamship Lines slip at the mouth of McKee Drain. The source of this oil was traced to the Malden Road Landfill. At the time it was thought that a heavy rainfall washed some of this material into the drainage ditch. From subsequent investigations it was learned that there was a steady discharge of liquid wastes from the site.

During the week of December 9, 1968, a more comprehensive survey was carried out of the Malden Road Landfill by personnel from the Department of Health and the OWRC. At the time it was noted that there were no adequate facilities provided to handle liquid wastes. The simple pit dug to store the fluids was full and there was a considerable overflow to a flat area of land that was already saturated with oil and other liquids. There was a steady flow in the main drainage ditch which tended to surge whenever a fresh load arrived at the site and was dumped into the pit. It was suspected that this flow would increase considerably following a heavy rainfall carrying high volumes of this material to the Detroit River. The contents of the ditch flowing out of the site were black containing paints, oils, and other floating viscous scums.

During this visit it was also noted that there was a considerable amount of lateral percolation of wastes, as some of the slopes and hills were stained with oil. Because the area used for the landfill was previously a marsh, the water table in the vicinity is high. The operation of this dump could, therefore, constitute a source of ground water pollution as well.

During the course of the survey a number of photographs were taken to provide a visual presentation of some of the points discussed. The photographs, along with brief comments are appended to this report. It is interesting to note that when the pictures were being taken a resident in the area approached the author and spoke about the shameful condition of the ditch carrying the run-off from the Malden Road Landfill. He mentioned

an occasion when children accidentally set fire to the ditch and the local fire department was required to extinguish the flame. Even on the day of inspection the ditch was filled with oils, paints, cleaners, and other flammable liquids.

Following inspection of the site, the problem of land disposal was discussed with representatives of industries that produced a major portion of the industrial liquid wastes hauled to the dump. It was learned that most of the companies were attempting to reduce this waste volume either through treatment or through in-plant control. Although the expected volume of liquid wastes generated would be reduced considerably, the residual effluents would still pose a disposal problem. It should also be noted that as soon as the municipal sewer-use by-law becomes enforced, it will tend to increase the volume of wastes hauled to the dump. The industries presently discharging untreated wastes to the sanitary sewer will likely have to haul these wastes to the site, or treat the wastes and haul away the resultant sludges. It is more than likely that this increase will offset any reductions effected by the major industries.

If the municipality continues to accept liquid wastes at the Malden Road Landfill adequate facilities should be provided to handle them. Certainly the simple digging of holes or pits in the ground, and then filling these in with dirt and rubble when they start to overflow does not constitute a satisfactory method of handling this type of waste.

This practice should not have been allowed to continue to a point where watercourses and health are threatened.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this survey it was estimated that approximately 365,000 gallons per month of liquid wastes were hauled to the Malden Road Landfill for land disposal. As no facilities were provided to handle this type of waste there was a considerable overflow to the local drainage ditches which empty to the Detroit River. It was therefore, concluded that the operation of the Malden Road Landfill constituted a serious source of water pollution and, because of the flammable nature of the materials, a potential fire hazard.

The municipality should first attempt to eliminate the haulage of septic tank sludges to the landfill by accepting these wastes in the sanitary sewerage system for eventual treatment at the Little River sewage treatment plant. This waste could be discharged at appropriate locations to obtain maximum dilution in the sanitary sewers, and at controlled rates to prevent the overloading of the sewage treatment plant. This practice should only be considered as a temporary measure until construction of the new sewage treatment works planned for the City of Windsor, has been completed.

It should then be decided whether the remaining liquid wastes are to be accepted at the Malden Road Landfill. If this is to be the case, then the necessary facilities in the form of incinerators, storage tanks, specialized treatment units, etc., should be provided to render the wastes non



deleterious. To recover capital and operating costs, a charge may be levied based on the nature and volume of wastes received.

If on the other hand the liquid wastes are no longer to be accepted at the municipal landfill, the municipality along with the industries should encourage a private individual to set up an alternate land disposal and liquid waste handling site. Some of the local haulage contractors may be interested in such an operation as a full-time enterprise.

Since the provincial agencies have the necessary legislative powers to request the necessary corrective measures, they should play an active role in organizing meetings and providing the necessary assistance to find a satisfactory solution to the problem. Under a recent amendment to the Public Health Act, the Department of Health will soon become responsible for regulating and approving landfill sites and therefore, it is recommended that this agency play the primary role. The OWRC should be kept informed of any new developments to insure that the terms of the OWRC Act will not be violated, and should provide any advice or assistance it can in the development of a suitable program.

Prepared by:

Approved by:



N. Borodczak, P.Eng.,  
Division of Industrial Wastes.



R. M. Gotts, P.Eng.,  
District Engineer,  
Division of Industrial Wastes.

NB/maf

The haulage trucks carrying the liquid wastes back up to the open pit and simply allowing the wastes to flow in by gravity. The drums on the banks represent the wastes hauled by private individuals from garages and other smaller waste producing establishments.

A breach in the dyke is noted in the pit used to contain the liquid wastes. On this particular day there was a considerable portion of land saturated and covered with oil, paint, and other waste fluids. Run-off from this area eventually enters the drainage ditches.

This is one of the typical ditches collecting the run-off from the Malden Road Landfill. There was a steady flow in this particular ditch which contained oil, paints, grease, and cleaners.

This photograph shows the flow in the main drainage ditch leaving the Malden Road Landfill. The flow in this ditch was continuous and tended to surge whenever a fresh load of liquid wastes arrived and was dumped into the storage pit.

This ditch carries the run-off and general drainage away from the Malden Road Landfill. This ditch flows in a more or less northerly direction and joins the McKee Drain which in turn empties to the Detroit River. The black and singed banks appear to indicate an earlier fire.



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