

ONTARIO WATER RESOURCES COMMISSION

Industrial waste survey Whyte Packing
Company, Limited Stratford - Ontario.

March 1958.

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REPORT

INDUSTRIAL WASTE SURVEY

WHITE PACKING COMPANY, LIMITED

STRATFORD - ONTARIO

MARCH 13TH, 1958

Report by: R.H. Millest, P.Eng.

INDUSTRY

Whyte Packing Company, Limited.

MANAGEMENT

x J.J. Asselin, Plant Engineer.
x N. Heitbokmer, Assistant Superintendent.

PERSONS INTERVIEWED

x - as above.

TYPE OF INDUSTRY

Slaughterhouse - Packinghouse
- beef, pork, lamb, veal.

OPERATING SCHEDULE

5 - day week
- 1 slaughtering & packing shift.
- 1 shipping shift.

NO. OF EMPLOYEES

175 to 200.

WATER SUPPLY

Municipal: 160,000 g.p.d. total, of which
90,000 g.p.d. is in process.
(to convert to private wells)

RAW MATERIALS

300 Beef per week.
1,700 Hogs per week.
Calves & sheep only 25 to 30 per week combined.

PRODUCTS

Dressed beef, veal, pork, lamb.
Pickled pork products.

WASTE DISPOSAL

Process wastes to sanitary sewer: 90,000 g.p.d. -
all paunch manure, refuse, etc. collected - blood
collected and dried for fertiliser manuf. - cooling
water to storm sewer.

All process wastes pass through two catch basins before being discharged to the sanitary sewer. The first of these is cleaned out three times per week, and the second about once every three months.

Pickling brines are dumped daily (one of four or five tanks daily) each tank about 6' x 8' x 5' (1,500 gallons) and go directly to the sanitary sewer.

REPORT

Ontario Water Resources Commission

Municipality Stratford, Ontario. Date of Inspection Feb. 26, & Mar. 15,
1958.
Re: Whyte Packing Co. Limited - Industrial Wastes.
Field Inspection by R.H. Millest. Report by R.H. Millest.

An industrial waste survey was begun on February 26 and continued on March 13, 1958, at the Whyte Packing Co. Limited, at Stratford, to determine the volume and strength of wastes being discharged to the sanitary sewer, so that the effects on the operation of the municipal sewage treatment plant (under construction) might be evaluated and preliminary treatment recommended if necessary.

SURVEY METHODS

Initial contact was made with the company on February 26 when the operating schedules and methods were discussed at the plant with the Superintendent and Plant Engineer. All operating data shown in the foregoing sheet were obtained at that time.

Sampling was carried out at the final outfall from the plant on March 13, when a composite of the waste was collected between 9 A.M. and 3 P.M. by adding approx. 150 ml. of waste to the sample bottle every hour to provide a total sample of approx. 1 litre. Grab samples were taken in mid-morning (10 A.M.) during beef slaughtering, and in mid-afternoon (2 P.M.) during hog slaughtering so that peak operations could be evaluated.

SURVEY METHODS (Cont'd)

All samples were returned to the Experimental Station for analysis.

PACKINGHOUSE OPERATION

Beef, hogs, and some lambs and calves are slaughtered and prepared for sale in a combined slaughterhouse - packinghouse from which fresh, as well as cured meats are marketed. Operations begin at 8 A.M. with beef-slaughtering, which continues until noon when hog slaughtering begins. This latter lasts until about 3 P.M., after which beef that is left over from morning, or lambs or calves, are slaughtered. Killing seldom extends beyond 5 P.M.. Late afternoon beef killing is usually restricted to Wednesdays and Thursdays.

Beef killing is followed by dressing, cleaning and trimming for sale, while hog killing is followed by dressing, scalding, trimming and cutting for direct sale or for pickling, smoking, canning, etc.. In all slaughtering, blood, paunch manure, entrails and trimmings are collected for by-product use. Collected blood is dried and sold for fertilizer manufacture. Paunch manure and some trimmings are collected and placed on a manure pile in the Yard for use as fertilizer. Entrails, bones, etc., are sold for production of glue, animal feeds, etc.. The need for cleanliness in most of the plant dictates the need for large quantities of wash water which is all sewered through two solids recovery chambers to the sanitary sewer.

QUANTITIES & TREATMENT OF WASTE WATERS

Of the total water-use of approx. 160,000 gallons per day, approx. 90,000 gallons is used in process and is discharged through two catch basins (approx. 12' x 4' x 4' each) to the sanitary sewer. Solids retained in the catch basins are removed manually three times per week from the first basin, and once every two months from the second. Each basin is baffled at the surface near the outlet to retain floating solids, and discharges through an inverted elbow behind the baffle.

Waste waters from the packinghouse section, in which pork products are processed (pickling, smoking, curing, etc.) are discharged directly to the sanitary sewer. Although the brine tanks were not in use on March 13, when hams were being dry-salted for canning, one tank is usually discharged each day when pork products are being pickled. This amounts to some 1,000 to 1,500 gallons of 10% (approx.) brine, and, since it is in contact with meat for 5 days, probably has a fairly high BOD.

All cooling water is discharged directly to the storm sewer.

Hog scalding is carried out in a long, steam heated tank that is discharged to the slaughterhouse sewer at the end of the hog-killing period each day.

DISCUSSION OF RESULTS

Analysis of the composite sample taken between 9 A.M. and 3 P.M. indicates that suspended solids and BOD are high, and, when expressed in terms of population equivalent, will produce sewage treatment plant loadings equal to sanitary wastes from populations of 10,000 for primary treatment, and 24,000 for secondary treatment.

The grab samples that were taken in mid-morning and mid-afternoon were thought, at the time of sampling, to represent peak waste discharges, but the analyses showed their strengths to be much lower than that of the composite.

CONCLUSIONS AND RECOMMENDATIONS

Analyses of samples taken at the Whyte Packing Co., Limited, at Stratford, indicate that the strength of the wastes is excessive in relation to the volume, and that additional pretreatment should be given before the wastes are discharged to the sanitary sewer. Removal of waste solids and blood at the sources is reasonably efficient, as housekeeping has been stressed by management in controlling waste.

Although the Stratford sewage treatment plant has more than adequate capacity to handle the total sanitary and industrial waste flow, the strength of the packinghouse wastes

CONCLUSION AND RECOMMENDATIONS (Cont'd)

is such that the treatment required for this later is excessive in relation to the flow. For example, the packinghouse waste flow of 90,000 gallons per day is approximately equivalent to the sanitary waste flow from a population of 1,000, while on a suspended solids basis the population equivalent is approximately 10,000, and on a BOD basis is 24,000. In other words, the primary treatment plant capacity required for the packinghouse wastes alone is equivalent to that required for a population of 10,000. Removal of suspended solids would lower the BOD somewhat, although the reduction would not be more than perhaps 35 to 45%, since much of the BOD is contributed by bleed and other soluble compounds.

It is recommended, therefore, that the discharge of suspended solids from the Whyte Packing Co. be limited, so that the loading at the municipal sewage plant be in keeping with the normal sanitary waste load. Replacement of the existing second stage settling tank at the packinghouse with a larger unit of suitable design would serve this purpose. In any case, suspended solids in the effluent to the sanitary sewer might well be limited to no more than 500 ppm, a reduction of approx. 60% in the present effluent.

Removal of BOD at the source might be appreciable with the removal of suspended solids, as above, although it

CONCLUSION & RECOMMENDATIONS (Cont'd)

is felt that blood and other soluble wastes, that would not be removed by primary treatment, are of major importance. Further study within the plant will be necessary to determine ways of minimizing such wastes at their sources, and since this depends largely on housekeeping and slaughterhouse techniques, more time will be required than for the more straightforward problem of solids removal.

All of which is respectfully submitted...

RHM:ns

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