

Operation of Food Waste Disposal Units Installed by the City of Jasper, Indiana

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This paper covers the installation period from April 1, 1950, to March 1, 1951, in which time approximately 750 food waste disposal units were installed for the city of Jasper under an installation contract awarded by the city early in 1950.

DESCRIPTION OF UNITS INSTALLED

The city contracted for a short bodied type of unit manufactured by the General Electric Company. This unit consists of an electric motor operated machine which shreds or pulverizes all types of food wastes and flushes them into the sewer. The motor drives a rotating plate, or table, in the bottom of the waste container of the unit which is attached to the kitchen sink. The rotating plate is equipped with impellers which force the wastes in the container toward the outer edge of the plate and against the stationary housing by centrifugal force. The inside of the housing is equipped with rough projections which tend to shred the wastes as they are rotated against them. As the waste particles are reduced to the proper size they flow through the small openings in the rotating plate and on into the waste pipe from the sink under which the unit is installed.

The type of unit specified by the city of Jasper is equipped with two controls. One control, an on-off switch, operates in conjunction with the removable top of the unit in such a manner so as to prevent the operation of the unit and turning it to the on position. This prevents objects from falling into the unit when it is in operation and keeps the food wastes from splashing out of the unit. The other control is an adjustable water interlock switch which prevents the unit from operating unless there is a predetermined flow of cold water into the sink. This flushes the shredded wastes into the waste

pipe and also keeps the grease solidified and in a finely divided state so that it will not adhere to the waste pipe.

OPERATION OF THE DISPOSAL UNITS

The operation of the disposal units presents several problems including the servicing of the unit; the effect of the food wastes on the residential plumbing; the effect of the food wastes on the sanitary sewer system of the city; and the effect of the food wastes on the sewage treatment plant of the city.

The mechanical operation of the unit is very simple since there are very few moving parts. The electrical circuit and motor can be serviced by any electrician and the wear on the shredding mechanism is very slight because the food wastes are relatively soft in comparison to the hard metal alloy used for the shredder. The installation contract provided for one year of maintenance by the contractor and practically all of the service calls to date due to stoppages of the mechanism were caused by a small splinter of a relatively hard substance, such as a splinter of bone, becoming wedged between the rotating plate and the housing of the unit before the plate began rotating. It was found that this could be taken care of by the housewife herself by inserting a stick or broom handle in the unit and pushing against the plates so as to rotate it to the left about a quarter turn. Some service calls were made to correct the adjustment of the flow interlock switches which is a simple adjustment made with a screwdriver. The interlock switch is set so as to allow the unit to operate when the flow of cold water reaches approximately two gallons a minute.

The cost of operating the units is very low and in a typical installation the unit operates approximately three minutes a day. This operation requires approximately 180 gallons of water and less than 1 kilowatt of electricity a month. At 4c per 100 gallon for water and 4c per kilowatt for electrical energy, the operating cost is approximately 11c per month for the unit.

The residential plumbing has not been affected by the discharge of the food wastes into the drain lines and in no instance has the sink drain line become clogged from the operation of the disposal unit when it was installed according to the specifications. The city specified that all of the small waste lines connecting the kitchen sink in which the disposal was to be installed to the 4-inch or larger waste lines should be rodded and cleaned out before the disposal unit was installed. Wherever this cleaning of the small waste line was done properly, no stoppages have been experienced to date at Jasper. In

several instances where the units were installed on drain lines which tended to become sluggish and stopped up periodically before the units were installed, we have not experienced any further sluggishness or stoppages since installation. In several experimental installations of the units, without first cleaning out the waste lines, stoppages resulted and it was decided that no installations could be made without the waste pipe cleanout specified by the city. A number of the disposal units had been installed in the city before the city wide contract was awarded and no clogging of the waste line have occurred on units that have been in use for two years or more that could be traced to the operation of the units. All clogging of 4-inch or larger waste lines reported was traced to roots and other objects which had become lodged in the waste lines and obstructed the flow and was not caused by the operation of the disposal units.

The sanitary sewers of the city have some sewers laid on a flatter grade than that which should be used but none of these have been clogged or filled with deposits as a result of the operation of the disposal units. Records were made of the condition of several junction manholes on the sanitary sewers before the installation of the disposal units. Visual inspections of the same manholes since the units were installed seem to indicate that the sewers are cleaner than they were before the installation of the units. In testing the operation of various units on which bids were submitted, a uniform charge was placed in each unit and the discharge examined. It was found that the discharged wastes from the unit could not be readily separated from the water content unless it was allowed to stand for some time. The food wastes which pass through the disposal units are discharged in a finely shredded mass of pulpy material which flows readily through the waste lines and sanitary sewers.

The sewage treatment plant of the city is a new plant of the activated sludge type which was scheduled to be in operation before the disposal unit installation was commenced, but due to adverse weather conditions the concentration was delayed to such an extent that the disposal units were being installed before the plant was in operation. For this reason no comparison can be made of the plant operation before and after the installation of the units. The biochemical oxygen demand (B.O.D.) of the raw sewage in dry weather varied from 400 to 500 parts per million at the plant.

The operation of the waste food disposal units at Jasper through the initial installation period over the past year has been satisfactory, both from the standpoint of the city, which no longer has a garbage collection problem, and from the standpoint of the citizens who are enjoying the benefits of this sanitary disposal of food wastes.