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The East Side Incinerator - A Source of Air Pollution*

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by
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Summary:

Because of inadequate design, poor maintenance and improper operation, Rochester's East Side Incinerator is a source of air pollution (particulate matter).

Introduction:

Last fall it was revealed (Democrat and Chronicle, November 11, 1969) that the level of particulate matter in Rochester air exceeded safety standards set by the U. S. Government. It was stated that these particulates originated, in large part, from combustion. This report concerns one of a number of sources of particulate matter in our air: the City of Rochester's East Side Incinerator.

Sources of Information:

The data for this report was principally derived from four sources: interviews with R. Bouley of the County Health Department, discussions with Mr. Heineman of the City Sanitation Department, a city-sponsored report on the condition of the incinerator done by two engineers, Greeley and Hansen, in July 1967, and a September 1956 article in The American City: "Two New Incinerators".

Findings:

Although designed with at least some attention to air pollution control (1), the incinerator is not adequate by today's standards. A fan-induced draft is a necessity if effective pollution control devices are to be installed. But none was installed because the incinerator could pass the pollution control ordinance at that time (1). Apparently the possibility of future, stricter ordinances was not considered in the design.

The storage bins (where the garbage is stored until it can be burned) are only adequate for one to one and one half days worth of collection. In the event of a breakdown, nuisance and possible health hazards could result since there will be no place to store the garbage until the crisis passes.

The incinerator was originally designed to handle 600 tons per day (2). Since 1960, the incinerator has been operating with broken cone drive mechanisms (an automated stoking device) (3). As a result, less efficient and less effective hand

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stoking must be done in order to obtain proper burning. However, there is some question as to whether or not this stoking is being done at all (2). The necessary replacement of the cone drive mechanism with a chain drive mechanism would cost an estimated \$25,000. Money for this was allocated at least once (1967-68) since the drive broke in 1960, yet replacement was not done. The total repair cost was estimated at \$85,000 (2). The sum is less than one-half that presently allocated in the city budget to pay for hand stokers. The cones may have been originally broken by overloading (4).

Temperature in the furnace must be maintained at 1600-1800°F for proper burning. The instruments for monitoring temperature have not been functioning since at least 1967. The temperature is suspected to be well below this minimal level for proper incineration (2).

Present operational procedures (see appendix) result in financial waste as well as poor quality burning. Damage to the refractory due to large heat fluctuation could cost \$25,000 to repair. Continuous burning (as opposed to the current practice of batch burning) would also be more efficient. Greeley and Hansen recommend that, after repairs are completed, the plant should be operated at only 400 tons per day. It is presently being operated at closer to 600 tons per day.

As for anti-pollution devices, a wet wall scrubbing device was installed in one of the furnaces at the East Side Incinerator at the cost of about \$10,000. It was removed less than a year after it was installed. This was because it was not properly cooled and therefore it warped (4).

Discussion:

The taxpayers have just recently finished paying for the East Side Incinerator, yet the city already has plans to abandon it in the near future (4). In the meantime, (and it is uncertain for how long this will be, since there has been a change in the City administration), the incinerator is being operated in an inefficient (and expensive) manner and in violation of the state air pollution code (Times Union, January 9, 1970). Because it burns refuse incompletely, the incinerator is a source of unnecessarily large amounts of particulate matter. These contribute to the high concentrations of particulate matter found in the air we breathe in Rochester.

References:

- (1) "Two New Incinerators", The American City, September 1956.
- (2) Report on Refuse Incineration Plants, Greeley and Hansen, July 1967.
- (3) Interview with Mr. R. Bouley
- (4) Interview with Mr. Heineman

General Background References:

Air Pollution Control, W. L. Faith, John Wiley and Sons, Inc., New York, 1959.

Air Pollution, second edition, Volume III, Arthur C. Stern editor, Academic Press, New York, 1968

Pollution Control 1965, Dr. Robert Rickles, Noyes Development Corporation, Pearl River, New York, 1965.

Appendix

The following is an excerpt from the report by Greeley and Hansen (1967).

VI. Plant Operation

During our inspection of the refuse incinerating plants, we also spent some time observing the methods of operation now in use.

At the present time, the East and West Side Plants are operated in a similar manner. The furnaces are charged with from 15 to 18 crane bucket loads of refuse each. The refuse is then burned for one hour after which time all material is dumped right down to the bare grates.

We did not observe any hand stoking at any of the plants..... The furnaces are merely filled to the level of the charging gates and allowed to burn down for a fixed period of time regardless of the kind of refuse charged to them.

Operating in this manner results in a poor quality and excessive quantity of residue as the refuse is not burned long enough or at high enough temperatures. In addition, there are wide variations in temperature which are harmful to the refractories.

We believe that an attempt should be made in all three plants to burn as continuously as possible and to maintain temperatures in the furnaces of from 1600 degrees to 1800 degrees F. The furnaces should not receive such large charges, but should be charged more frequently. The burned material should be pulled or moved by the rocking grates or rabble arms to the dumping grates and the frequency of dumping should depend on the type of materials being burned. Frequent observations of the burning refuse and occasional hand stoking are essential in order to burn the material as completely as possible.

More complete burning in the furnaces should eliminate the burning which now occurs in the ash hoppers and reduce the amount of quenching required. Such burning now results in excessive damage to the hoppers and cone mechanisms at the East and West Side Plants.