# LETTERS

### Infiltration

Dear Sir: The subject of excessive infiltration and inflow (*ES&T*, July 1973, p 586) involves many factors which need to be considered, and my comments relate to some of them. It is noted that the law requires that after July 1, the EPA Administrator cannot award grants for construction of waste treatment facilities until he is assured there is no excessive infiltration. If this were carried out literally, there would be no construction of such facilities for a year or two. The prevalence and magnitude of the infiltration problem were not recognized. It is good to know that EPA may fund some work on rehabilitation of sewer lines.

The above is an example of the tendency of legislators to assume that some of these problems can be solved by passing laws demanding perfect results immediately. Many problems, such as this and others related to ecology, cannot be solved by edict. What is needed is a better understanding of the problems so that laws can promote and support logical and effective solutions to produce best long-term results and avoid waste in money and effort.

It has been assumed that excessive flow in sewers is largely due to faulty joints in the street sewer. While it is true that, particularly in old lines, much infiltration has resulted from leaks in joints, that is not the only source of excessive flow. It appears that in many cases much infiltration comes from house connections. This does not seem to be unreasonable when it is recognized that the total length of house connections may be a little more or less than the length of the street sewer, and the construction of house connections has had a minimum of attention and control. Also there may be structural weakness in the connection of the house line to the street sewer. Other sources of excessive flow include connections from foundation drains, other improper drain connections, cooling water from commercial establishments and industry, and the like. Factual information on these sources is difficult to obtain.

Another factor which might be considered is how far to go in eliminating infiltration. Is there an advantage in attaining zero infiltration? Some manufacturers of pipe using new materials stress the point that a sewer built with their pipe will have infiltration of 100 gal/in. of diameter per mile per day, or less, while their competition using pipe material common in the past, can get only as low as 250 gal/in. per mile. It can be demonstrated that for the average collection system an infiltration of 250 gal/in. per mile would amount approximately to an increase in the per capita flow for treatment from 100 to 104 gal per day. Treatment plants are not designed to that degree of precision, and any increase in treatment cost would be negligible. Furthermore, it can be argued that some additional flow in the upper reaches of the collection system helps to prevent stranding of solids. Thus, the value of restricting infiltration to 100 gal/in. per mile is questionable.

Another important factor in any project of rehabilitation to limit infiltration is the cost of that rehabilitation. Much more information is needed on cost and on how the unit cost increases with the higher degree of limitation of infiltration. These comments relate only briefly to some of the factors involved in infiltration and its control.

**Charles R. Velzy**
Charles R. Velzy Associates Inc.
Elmsford, N.Y. 10523

### $NO_x$ aircraft emissions

Dear Sir: Your short note in "Currents" (*ES&T*, June 1973, p 487) stating that "$NO_x$ emissions from aircraft can be cut 30% by fuel modification, according to ESSO Research and Engineering Co." is out of context. The uninformed reader should also have been told, as the Esso investigators did in their report ("Fuel Modification for Abatement of Aircraft Turbine Engine Oxides of Nitrogen Emissions," by Henry Shaw, AFAPL-TR-72-80, Oct. 1972) to the Air Force Aero Propulsion Laboratory, that "None of the investigated additives was fully acceptable because of the relatively low $NO_x$ reduction that was obtained even with high additive treat rates." Sensationalism and 8-month-old news is hardly what the scientific community involved with air pollution research should expect to be offered by your magazine.

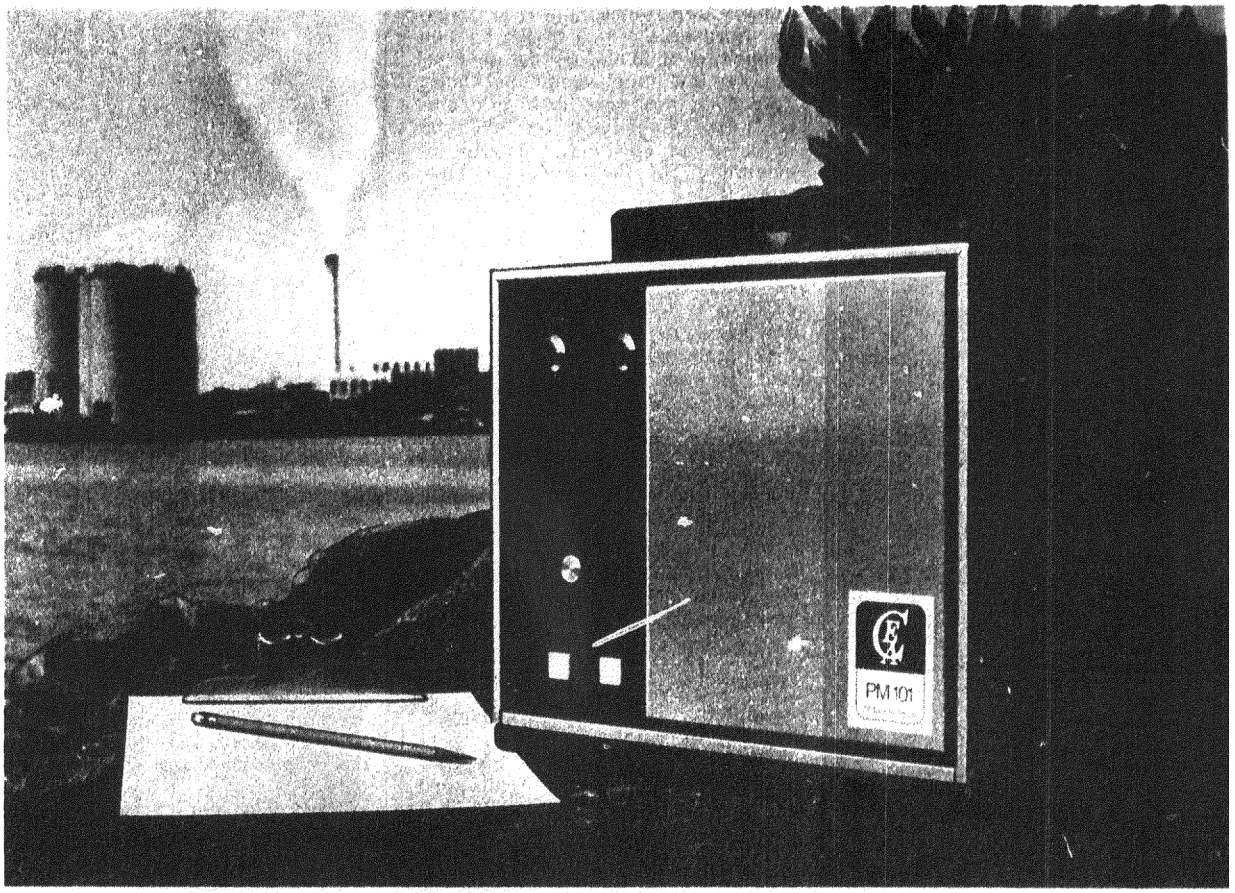
**Stanley A. Mosier**
North Palm Beach, Fla. 33408

### Solid waste incinerators

Dear Sir: It is apparent from your April issue of *Environmental Science & Technology* that you are not aware of the power-generating incinerators we have built in the City of Chicago and at Harrisburg, Pa. The feature article (*ES&T*, April 1973, p 308) contains a tabulation in which we note that you have given great emphasis to a number of manufacturers who have not accomplished anything in this field of refuse incineration, and we note with great regret that our own name is not mentioned.

For your information, the largest power-generating incinerator plant in

*(Continued on page 880)*

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CIRCLE 28 ON READER SERVICE CARD

the Western Hemisphere is at Chicago, Northwest with a refuse burning capacity of 1600 tons per day generating 440,000 lb of steam per hour. This plant has now been in operation since September of 1970 and is doing an outstanding job of incineration. The stack emissions have been tested by EPA as well as by Wisconsin Chemical & Testing Co. and the particulate stack emissions did not exceed 0.04 grain per standard dry cubic foot corrected to 12% $CO_2$, compared to the permissible stack emissions by the Federal EPA of 0.08 grain per standard dry cubic foot. Similarly, the new plant in Harrisburg, Pa., with a total refuse burning capacity of 800 tons per day and generating over 200,000 lb/hr, is now in full operation and has been tested by Battelle Memorial Institute with similar outstanding performance results.


**Georg Stabenow, President**
Ovitron Corp.
East Stroudsburg, Pa. 18301


### Odors

Dear Sir: The feature article entitled "Odor controls for rendering plants" (*ES&T*, June 1973, pp 504–10) clearly outlined a strong case against the incineration of odors as a means of odor control, but the authors failed to include one major defect of the process. No mention was made of the fact that a large portion of malodors contain nitrogen and/or sulfur, and so the combustion of these compounds in air would yield the oxides of those elements along with the combustion products of carbon and hydrogen—i.e., carbon dioxide and water.

At the temperatures used for proper incineration, atmospheric nitrogen is also oxidized. Thus, the output of nitrogen oxides from an incinerator would tend to be greater than the expectation based upon the content of nitrogenous compounds in the malodors.

Since the oxides of nitrogen and sulfur are more toxic than the original malodors, it seems to me that we are trading a nuisance for a danger if we follow the thermal oxidation route. Fortunately, it is no longer necessary to consider that possibility since there is now a new product on the market for use in wet scrubbers which eliminates the need for incineration by removing all malodors from the air being scrubbed.


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### Reverse osmosis omission

Dear Sir: I read your April issue with considerable interest. This issue featured an article by Mr. Fred Wit-

*(Continued on page 882)*