

it will be virtually innocuous so that the Federal role is not necessarily any stronger than the local role, depending upon the motivation of the voters in the area concerned. You have to motivate the voters to want results rather than simply rely upon the Federal legislators to tell the voter.

To go beyond that, I would like to ask about the effective operating life of typical secondary treatment plants.

Can you tell me what the wear-out time is for typical secondary treatment plants?

Mr. CONABLE. Is there such a thing as a typical secondary treatment plant?

Mr. RAYNES. There are conventional ones. I think they are generally amortized between 20 and 40 years, depending upon what the general municipality action is. I think 40 tends to be the average. There is a survey on that, on sewage treatment plant costs that I don't have with me. It was put out by the Public Health Service last year, about 9 months ago. The title of this publication is "Modern Sewage Treatment Plants; How Much Do They Cost?" Public Health Service publication No. 1229 (1964).

Mr. VIVIAN. I'm interested in any information which is available on this subject for insertion in the record, Mr. Chairman, because I think it is going to show that research which might be started now or be partly along now which will lead to pilot plant work in the next few years and eventually to installation of plants in various cities, will come along at a time when it can replace a very large fraction of all operating treatment plants today.

In other words, we shouldn't assume that just because a city has a treatment plant now that that plant will not be replaced within the generation or perhaps even a decade.

There are often times when it is cheaper to replace large portions of a plant than to continue utilizing an out-of-date plant, and this trade-off curve can be very shallow at times.

Over a period of years it may be very difficult to see what the right year to drop an old plant may be, but usually there is merit to it, and of course, plants are also technologically displaced.

If you come up with a cheaper plant, many cities say find a cheaper way and keep it because it will be in the long run cheaper. I would like to see more information on that subject if it is available. It can pace the R. & D. system to some extent.

The next item is the subject of the powder coal treatment process in which your firm is involved. I understand that to date you have run tests on fairly large samples of a variety of effluents and are fairly convinced that the process works. I would like to know what you now know about the cost of this process as you project its application versus the cost of other treatment processes.

Are you in a position to make any statement on that subject?

Mr. RAYNES. I can say that we are convinced the process works. The applicability of coal in treating liquid wastes is established. It is a question of economics that remains, the economics and how good the effluent is. We are building a pilot plant in which the economic estimates we have made will either be proved or disapproved. Our present prediction is that coal can treat sewage and remove more