

contaminants than are presently being removed in conventional secondary processes at something about 10 percent less cost than the present processes, even if one does not recover the thermal energy still retained by the coal. Even on that basis.

If one has a large enough plant or some place to recover that thermal energy, then the cost should go down quite substantially over that 10 percent reduction.

Mr. VIVIAN. Can you tell me whether or not you have reached the point where any large-scale installation is being contemplated? I recognize that your reply might get into difficulty with corporate information.

Mr. RAYNES. Our pilot plant will be a quarter of a million gallons a day, and that's the biggest operation we have got going now. Many people are talking to us about what is going to happen with the process assuming that it is successful. We would like to see the coal-based process, and any new process that looks like it is going to help the pollution problem, get going as soon as possible.

Mr. VIVIAN. I understand it is a proprietary process covered by patents, is that correct?

Mr. RAYNES. No; the process belongs to the people.

Mr. VIVIAN. Therefore, whether the process is applied or not is principally a question of whether some firm will begin to make quotations and bids on specific plants and back them up with some form of guarantee?

Mr. RAYNES. Yes, sir.

Mr. VIVIAN. Can you compare the powdered-coal process to the carbon-absorption process which I presume is the principal established process today?

Mr. RAYNES. The carbon process is also in a pilot plant as I understand it, except perhaps in one installation at Lake Tahoe. The powdered-coal process that we are developing is a process intended to provide sewage treatment superior to present secondary treatment processes, whereas the carbon-absorption process is a tertiary treatment following conventional secondary treatment.

When we get a chance we will look at tertiary treatment using coal. We may be able to cut costs in tertiary treatment too, but right now there is no real competition between the processes. One is tertiary, the other, secondary treatment.

Mr. VIVIAN. I understand the carbon-absorption process uses finely pulverized pure carbon, is that right?

Mr. RAYNES. Not too fine. The last technical paper I heard on this subject specified granules.

Mr. VIVIAN. And, the coal process uses different material?

Mr. RAYNES. Yes. Like table salt in size.

Mr. VIVIAN. What difference is there between these materials?

Mr. RAYNES. Activated carbon is frequently produced by charring coal, and in the process takes away from the coal some of its volatile ingredients. The coal is as mined except for sizing.

Mr. VIVIAN. The binder type of ingredients.

In other words, the two processes are very similar except the extra stage of charring is used to get increased activity.

Mr. RAYNES. There are similarities in the two processes. However, the activated carbon is regenerated by thermal-heating of a portion