

## On Professor Okun's Paper

In the paper by Daniel A. Okun entitled "Drinking Water for the Future",<sup>1</sup> he states "in 1963 there were some 20,000 public water supply systems, half of them serving fewer than 1,000 persons. By 1975, the number of such systems had grown to 40,000 with half of these still serving fewer than 1,000 persons. Hence the number of systems serving fewer than 1,000 persons had more than doubled." This statement is clearly not correct as it implies 20,000 new public water supply systems of more than 1,000 persons which if we accept an average of say 1,500 persons per supply gives us new public water supply systems for 30 million persons, equivalent to the population increase over that time. This implies that all of the (net) population increase took place where there was no previous drinking water supply.

These numbers are unreferenced and so I conjecture that Professor Okun is using the 1963 Inventory of Municipal Water Facilities of the Public Health Service (Publication No. 775, 1964) which is well known to have undercounted public water supply systems in the United States especially smaller systems. Thus, the number of systems has not doubled but rather the number of such systems which now appear on our listings has doubled. One suspects the same problem may be involved in his comments that "more than half the communities (in New Jersey) and about 14 per cent of the population did not have a public water supply available in 1963."

Somewhat later the author states "of 120 compounds (out of 496 organic chemicals) found in fresh water and examined for carcinogenicity in animals 22.5 per cent were positive; of 32 compounds examined for teratogenicity in animals, 62.5 per cent were positive; of 29 examined for mutagenicity all were found to be positive . . ." While the numbers are technically correct the proportions are obviously biased by selection of those compounds known by chemical structure to be the most likely candidates for carcinogenicity, teratogenicity, and mutagenicity.

Finally, the name Buncher in reference 13 is misspelled.

*C. Ralph Buncher, ScD  
Director, Division of Epidemiology and  
Biostatistics  
Department of Environmental Health  
Kettering Laboratory  
University of Cincinnati Medical  
Center*

### REFERENCE

1. Okun, D. A. Drinking water for the future. *Am. J. Public Health*, 66:639-643, 1976.

### Author's Response

Dr. Buncher's questioning of the statistics as to the number of small water supply systems is certainly justified and in fact supports my general thesis. If these small systems cannot even be adequately counted, how can they be given proper surveillance? The first draft of my paper showed a present total of 37,000 systems, based on a 1975 EPA survey. When I submitted that draft to EPA for review of the data, they suggested that I use the 40,000 figure.

However, while the figures may not be precise, their order of magnitude cannot be disputed. The principal change since 1963 has been the proliferation of small systems to serve small housing developments, mobile home parks and the like, where the population served by each would be in the hundreds. These are among those that inevitably provide a poorer water service.

The inference that Dr. Buncher draws from the data, that there would be 20,000 *new* systems of an average of 1,500 each, is not justified. A good many of the new systems of over 1,000 may well have been in the "under 1,000" category in 1963. Those uncounted in both the 1963 and 1975 surveys were likely the very smallest systems.

With regard to the chemicals found in fresh water, Dr. Buncher's comment is appropriate but, as he points out, the numbers are correct. The significance of the presence of synthetic organic chemicals in fresh water is not in a precise quantitative measure of their number but rather in the fact that their number is large and many are of health con-

sequence. A survey 20 years later might well reveal entirely different chemicals in different numbers, but inevitably they will be present and many of them will have health significance.

*Daniel A. Okun  
Kenan Professor of  
Environmental Engineering  
UNCSPH  
Chapel Hill*

## Do-It-Yourself Pregnancy Tests: The Tip of the Iceberg?

I was very interested to read the paper by Dr. Baker and colleagues (*AJPH* February 1976) reporting their observations regarding the efficacy of the Ova II in pregnancy testing. It is unusual for commercial clinical products to perform quite so poorly, and I have a high regard for the technical competence of the chemists so employed in reducing otherwise tedious and complex methods to facile, standardized kits. Nevertheless I am becoming increasingly worried by the escalating use of such kits by non-technical staff such as nurses, receptionists, and clerical employees in health centers and in private practice, and especially, as in this case, by the patient herself.

It is my experience that such users do not in general have sufficient training to detect malfunctions in these materials, and not understanding the complex nature of the reactions involved, often try to modify the procedure to suit themselves, with predictably catastrophic results. Pregnancy tests, being the most widely used of these kits by lay staff are therefore the most frequently abused in this way, and the manufacturers' package inserts do not always emphasize strongly enough the need to adhere strictly to the stated procedure.

In the United Kingdom the practice of employing non-technical staff to perform what were hitherto laboratory tests is increasing, and is causing some concern to the Institute of Medical Laboratory Sciences and its members. As it seems likely that the growth of small private clinical laboratories will continue both in the UK and in the USA, I