Mr. DADDARIO. This concludes the discussion we had earlier when Mr. Conable pointed out we should not wait until we have available to us all the technology. The converse, that we should not be spending money in areas where there is a chance that through research and development we can come up with a more practicable and less costly type of program, also must be recognized.

Dr. WEINBERGER. Sir, this is in any technological field a decision concerning at what point one moves ahead.

Mr. DADDARIO. We sometimes give the impression that we are moving ahead by spending money only because a program happens to be a popular one at the moment although the technology is not being advanced.

Dr. WEINBERGER. I would certainly agree with that and point out that when one moves ahead, one should plan the remedial facilities so they can be modified in the event there are some technological advances made. Whether it be in waste treatment or whether it be in the problem of combined sewers.

The analytical tools, scientific knowledge, and engineering controls which were sufficient for the problems of the past are proving increasingly inadequate in dealing with present pollution problems and will become even more inadequate to cope with foreseeable future problems. Thus, water pollution control research must develop an effective new technology while program administrators attempt to control pollution with available knowledge. It must be pointed out that in addition to research and development, there are a number of other very important elements in an effective water pollution control program, namely; competent manpower, adequate planning and administration, economic resources to construct and operate pollution control facilities, and a strong enforcement effort.

The trend in needed research in water pollution is clear. We need or will need in the near future, an arsenal of practical methods by which all man-made or man-induced impurities can be kept from our water resources. Municipal, industrial, and agricultural users of water may have to return water at a quality at least as good as that of the water withdrawn. Land users will have to modify their practices to insure no deleterious changes in the quality of runoff water. And natural processes, such as erosion, which adversely affect water quality will have to be controlled. The goal of water pollution control research is to develop these methods. When we can practice this total pollution control of municipal and industrial wastes, urban runoff, rural runoff resulting from man's activities, and natural sources, continual reuse of water will be a reality, and except in those locations where there is a large consumptive use, water shortages need not occur.

The following are some of the major practical problems and research needs in water pollution for which current technology is not adequate.

I have listed in my prepared statement, Mr. Chairman, a list of some 14 areas where there is further research and development needs.

The recent publication prepared by the Committee on Pollution, National Academy of Sciences—National Research Council "Waste Management and Control" is an excellent summary of the research needs and the status of technology for water pollution control.

As Dr Spilhaus is to be one of your witnesses, I will not go into that