

and technological opportunities, the answer will vary, and is best administered by individual firms or industry research associations. Second, it will not be until effluent treatment is regarded as an integral part of each industrial process, so that the distinction made in the question disappears, that we will have adequate—and adequately balanced—consideration of industrial pollution. When that time comes, product changes will also be important.

If the question is about Government-supported research in industry, then we must add at least two more areas to those in question: (1) new and better monitoring and warning devices, and (2) deeper understanding of the meteorological and hydrological phenomena as they occur in specific areas. I do not believe anyone can give a simple formula for making the resulting division into four parts. I am sure I cannot.

I do question, however, in this time of increasing public arousal about pollution, the extent to which Federal financing of research on an industry's own problems is necessary. There are undoubtedly some industries where, for financial or historical reasons, the stimulus of Federal support will be needed, but this need not be true generally. There are enough needs associated with municipal and agricultural effluents, and with effluents from other industries, to make good use of Federal funds for industrial R. & D. related to pollution in supporting work for which the industry doing the work has no obligation to do it on its own.

Turning now to question 24, the second question from paragraph C(3):

How should the distribution of research and development effort among sources and types of pollution be balanced?

While I am not prepared to speak about the question of detailed balancing between objectives, a matter that clearly deserves the best judgment we can muster, I must point out the major omissions inherent in any subdivision into "biological effects, monitoring techniques and abatement." Biological mechanisms are at least as important, and as poorly known, as the biological effects themselves. Physical problems—meteorological, hydrological, and oceanographical—are vital. Abatement must be interpreted as including the development of new ways to do things that now cause pollution.

Turning to questions 25 and 26, the first two questions from paragraph C(4):

Should Federal funding of technology development stop at the proof of principle stage or extend on to hardware prototypes and demonstrations? Should cost sharing be required in such research contracts?

In the area of municipal treatment systems there appears to be no sensible alternative for very substantial Federal support of novel demonstrations, though this could perhaps be of somewhat more of an insurance character. As elected representatives, the members of this subcommittee will understand the position that city councils and other local authorities must take about major local expenditures on untried facilities and techniques. Progress beyond a snail's pace demands collective risk taking through some form of Federal support, directed through the municipalities and other local governments.

In going beyond research to development and then to hardware prototypes we should be clear that we have passed from "research con-