

EPA file



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March 9, 1979

JOSHUA LEDERBERG

PRESIDENT

Ms. Lucille Light
Extramural Program Assistant
Municipal Environmental Research Laboratory
United States Environmental Protection Agency
Cincinnati, Ohio 45268

Re: EPA No. S-880032-01

Dear Ms. Light:

As you requested by telephone, I am responding to the proposal by the Denver Water Commissioners for a Cooperative Agreement to conduct a "Potable Water Reuse Demonstration Project".

This project addresses an issue of the greatest importance to the national economy and public health. The approach of the orderly development of demonstration projects in which considerable commitment is made to analysis and evaluation is an essential and commendable aspect of a national plan for the exploitation of reuseable waters.

The part of this proposal that is within my professional competence concerns the health effects studies (summarized on pages 33-36 and page 41).

The present document gives only enough detail on the health effects study to justify a level of effort of the order of \$1.2M. The agreement explicitly states that:

" The Health Effects Program will be developed by the end of the first year of demonstration plant operation, at a time when data will be available to accurately develop the specifics for a valid Health Effects Research Program.

" The chosen program shall be mutually acceptable to the U.S. Environmental Protection Agency and the Denver Board of Water Commissioners. The development of the Program will involve input from E.P.A. and Denver Water

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Department staff as well as appropriate outside consultants and others known to be expert in the field of health effects research."

The approach outlined here, and the justification for level of effort, are entirely reasonable since scientific standards for toxicological evaluation of trace substances are in a state of turbulent flux. If anything, the level of effort may be minimal; but this depends on the extent of support that will be furnished by the assertedly "extensive quality control laboratory" facilities.

What is not adequately revealed in the proposal is the procedure by which "appropriate outside consultants and others known to be expert in the field of health effects research" will be brought into the study. It is in fact remarkable that substantial scientific expertise which is available at the University of Colorado Medical Center (for example Professor T. T. Puck) has not evidently been consulted in the preparation of this proposal.

The proposal is governed by a rather prevalent doctrine, in this field in contrast to what is demanded in food and drug safety, that safety can be presumed on the basis of the overall engineering design of the facilities. The general literature is relied upon implicitly, but not explicitly, for the framing of the sources of possible or probable hazards and exceptions and the specific safeguards that are then to be built against these. Page 30 does refer to the expectation that "the system will be developed such that any malfunction could be corrected and influent quality upsets detected without discharging potentially harmful substances to the product stream". It is not clear exactly how this objective will be met; and the absence of a fault tree analysis makes it impossible to offer confirmatory judgements about the adequacy of the safeguards that are intended to be designed and built. From both a microbiological and toxicological standpoint, waste water reuse obviously poses more critical requirements for unremitting vigilance than for many other water supply sources. Logistic problems in the handling of carbon; the possibilities of influent pulses of organics; saturation of the adsorbent and spillover

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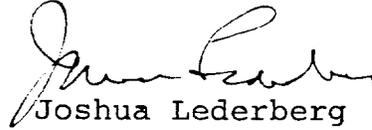
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are just a few of the issues that will have to be addressed. I am sure that these are all in mind, but it is hardly possible to divine the depth of analysis and design that will be the outcome of the project from the limited language provided.

It is perhaps unreasonable to expect so much of the outcome of a demonstration project to be in hand at the time of application. The qualifications and quality of the people involved are of course the essential resource and I will close by simply referring again to the requirement for more specification on the health effects advisory teams.

My net recommendation is to fund with substantial revision along the lines indicated.

Yours sincerely,


Joshua Lederberg