

United States
Environmental Protection
Agency

Office of the Administrator
Science Advisory Board
Washington, D. C. 20460

EPA SAB RSAC 89-025
August 1989



Report of the Skills Mix Subcommittee

Evaluating ORD's Preliminary Skills Mix Assessment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

EPA-SAB-RSAC-89-025

August 8, 1989

The Honorable William K. Reilly
Administrator
U.S. Environmental Protection Agency
401 M. Street, S.W.
Washington, D.C. 20460

OFFICE OF
THE ADMINISTRATOR

Dear Mr. Reilly:

The Skills Mix Subcommittee of the Science Advisory Board's Research Strategies Advisory Committee (RSAC) has completed its review of the Office of Research and Development's (ORD's) "Preliminary Analysis of the Skill Mix Inventory of Lab Researchers". This preliminary analysis is the first step in a process that will identify needed changes in EPA's work force to allow successful implementation of ongoing and future research. The review was requested by the Honorable James Scheuer, Chairman, Committee on Science, Space and Technology, Subcommittee on Natural Resources, Agricultural Research and Environment, at an oversight hearing on EPA's R&D FY'89 Budget held on April 21, 1988. The Subcommittee's findings were discussed in part with Rep. Scheuer at a March 21, 1989 hearing.

The SAB Subcommittee concludes that a significant decrease in research personnel has taken place since 1980, a period of escalating environmental problems and concern. Of remaining personnel, only 43% actually conduct research, as responsibilities shift to management of extramural research. In addition, analysis of the distribution of researchers indicates an aging population.

Recommendations are provided to clarify and refine the skills mix data to provide for a better assessment of skills needed to accomplish current and future tasks. These refinements will allow for better decision-making on new employment, staff training and extramural assistance.

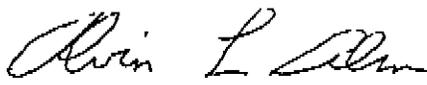
Finally, the Subcommittee recommends that the Agency reinstate or develop support mechanisms for graduate training programs. This support is essential for maintaining and improving the quality of researchers currently at EPA and also to insuring an adequate supply of future researchers with necessary environmental skills.

The Subcommittee appreciates the opportunity to conduct this scientific review. We request that the Agency formally respond to the scientific advice transmitted in the attached report.

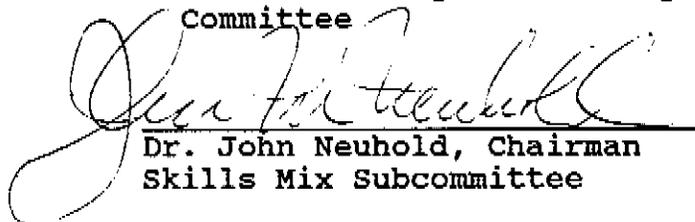
Sincerely,



Dr. ~~Raymond Loehr~~, Chairman
Science Advisory Board



Mr. Al Alm, Chairman
Research Strategies Advisory
Committee



Dr. John Neuhold, Chairman
Skills Mix Subcommittee

Enclosure

cc: Don Barnes
Tom Hadd
Joyce Stiles
Erich Brettauer

ABSTRACT

This report presents the conclusions and recommendations of the U.S. Environmental Protection Agency's Science Advisory Board summarizing a review of EPA's "Preliminary Analysis of the Skill Mix Inventory of Lab Researchers". The Board considers this preliminary analysis to be a logical first step in a process that will identify needed changes in EPA's work force to allow successful implementation of ongoing and future research. As a result of the analysis, the SAB concluded that a significant decrease in research personnel has taken place during a period of escalating environmental concern. Recommendations are provided to clarify and refine the skills mix data to provide a better assessment of the skills needed to accomplish current and future research tasks, and to develop support mechanisms for graduate training programs for insuring an adequate supply of researchers for solving future environmental problems.

Key Words: Research, Research Personnel, Skills

U.S. ENVIRONMENTAL PROTECTION AGENCY

NOTICE

This report has been written as a part of the activities of the Science Advisory Board, a public advisory group providing extramural scientific information and advice to the Administrator and other officials of the Environmental Protection Agency. The Board is structured to provide a balanced expert assessment of scientific matters related to problems facing the Agency. This report has not been reviewed for approval by the Agency; and hence, the contents of this report do not necessarily represent the views and policies of the Environmental Protection Agency or other agencies in Federal government. Mention of trade names or commercial produces does not constitute a recommendation for use.

U.S. ENVIRONMENTAL PROTECTION AGENCY
SCIENCE ADVISORY BOARD
SKILLS MIX SUBCOMMITTEE

ROSTER

CHAIRMAN

Dr. John Neuhold
Department of Fisheries and Wildlife
College of Natural Resources
Utah State University
Logan, Utah 84322-5200

MEMBERS

Mr. Richard Conway
Union Carbide Corporation
South Charleston Technical Center
3200 Kanawha Turnpike (Bldg. 770)
South Charleston, West Virginia 25303

Dr. Mort Lippmann
Institute of Environmental Medicine
New York University
Lanza Laboratory
Long Meadow Road
Tuxedo, New York 10987

Dr. Raymond Loehr
Department of Civil Engineering
8.614 ECJ Hall
University of Texas
Austin, Texas 78712

Dr. Rolf Hartung
Professor of Environmental Toxicology
3125 Fernwood Avenue
University of Michigan
Ann Arbor, Michigan 48108-1955

SCIENCE ADVISORY BOARD STAFF

Ms. Janis C. Kurtz
Environmental Scientist and Executive Secretary
U.S. Environmental Protection Agency
Science Advisory Board
401 M Street, S.W. - A101F
Washington, D.C. 20460

Mrs. Dorothy Clark
Secretary to the Executive Secretary

TABLE OF CONTENTS

1.0	Executive Summary	1
2.0	Introduction	2
2.1	Request for Science Advisory Board Review	2
2.2	Charge	2
2.3	Subcommittee Review Procedures	2
3.0	Current Status of ORD Personnel	3
3.1	Decline in Research Staff	3
3.2	Education Level	3
3.3	Skill Group Categories	4
3.4	GS/GM Level Distributions and Retirement Eligibility	4
3.5	Skills Mix Analysis Criteria	4
4.0	Training	5

APPENDICES

- A "Preliminary Analysis - Skills Mix Inventory of Laboratory Resources: Introduction"

- B Testimony of Dr. John Neuhold, March 21, 1989 to members of the Congressional Subcommittee on Natural Resources, Agriculture, Research and Environment

1.0 EXECUTIVE SUMMARY

EPA's Office of Research and Development (ORD) prepared a document entitled "Preliminary Analysis of the Skill Mix Inventory of Lab Researchers". This document was reviewed by the Skills Mix Subcommittee of the Science Advisory Board's Research Strategies Advisory Committee (RSAC). Both actions were in response to a request by the Honorable James Scheuer, Chairman, Committee on Science, Space and Technology, Subcommittee on Natural Resources, Agricultural Research and Environment, at an oversight hearing on EPA's R&D FY'89 Budget held on April 21, 1988.

The SAB Subcommittee concluded from the data provided that an overall decrease of about 17% has taken place in research personnel since 1980. Of the remaining personnel, only 43% are defined as actually conducting research. These trends have occurred during a time of escalating environmental problems and concern.

The Subcommittee also points to the need for additional clarification of the skills represented by researchers and the tasks actually being conducted. More refined analysis would allow more targeted assessment of the additional skills needed to accomplish current and future research tasks. Another conclusion from the data provided is that the Agency has a work force distribution characteristic of an aging population, with relatively few recent university graduates and many scientists approaching retirement.

The Subcommittee recommends that future skills mix analyses be more refined as to disciplinary categories and that these categories relate to the core research needs defined by the Agency's research strategy. This refinement will allow ORD to make better decisions on new employment, staff training requirements, and extramural assistance.

Finally, the Subcommittee recommends that the Agency provide or reinstate support for graduate training programs. These programs are essential to developing and retaining expertise among existing research staff, and in ensuring that an adequate supply of essential environmental skills is available for future research staff.

2.0 INTRODUCTION

2.1 Request for Science Advisory Board Review

The EPA Science Advisory Board Committee on Budget Review has, for a number of years, been recommending that the Office of Research and Development (ORD) critically assess its existing research manpower. Concern has been expressed that the work force was aging, that it did not have an appropriate mix of skills for the tasks it was asked to perform and that, in some disciplines, it was too weak to conduct effective research efforts.

During a hearing on EPA's 1989 ORD budget, the Congressional Committee on Science, Space and Technology Subcommittee on Natural Resources, Agriculture, Research and Environment requested that a skills mix analysis be undertaken by the Agency. The ORD subsequently produced a report entitled, "Preliminary Analysis - Skills Mix Inventory of Laboratory Resources", which is the first step towards fulfilling this request. The Science Advisory Board was asked to review this document, and the Skills Mix Subcommittee of the SAB's Research Strategies Advisory Committee was established to perform the review.

2.2 Charge

The Skills Mix Subcommittee was charged with evaluating the scientific and technical mix of personnel that are currently employed by EPA Research and Development Laboratories. The breadth of disciplinary coverage was examined in light of current research programs. The mix of scientific and engineering specialties was considered with regard to future directions and new core research program emphasis within ORD. In addition to the critique, the Subcommittee was asked to suggest criteria for doing an in-depth skills mix analysis.

2.3 Subcommittee Review Procedures

The Skills Mix Subcommittee met on March 23, 1989, in Washington, D.C. The document for review had been previously supplied to SAB Subcommittee members for background information. The Introductory chapter of this document is attached as Appendix A.

The SAB Subcommittee discussed the document, providing recommendations and conclusions to the Chairman prior to the meeting. These comments were assembled into a testimony, which was provided to the members of the Congressional Subcommittee on Natural Resources, Agriculture, Research and Environment on March 21, 1989. A copy of this testimony is provided in Appendix B. At the March 23rd meeting, SAB Subcommittee members questioned ORD staff, and held further discussions. A draft report

detailing their findings was circulated for concurrence prior to issuance of this final report.

3.0 CURRENT STATUS OF ORD PERSONNEL

3.1 Decline in Research Staff

The ORD personnel that are the subject of the analysis under review include laboratory researchers within ORD's sixteen research organizations. Not included are personnel assigned to Headquarters staff and support offices, contract support personnel, and personnel supported by cooperative or interagency agreements. This work force has declined from some 2300 in 1980 to just under 1800 people presently. This decline occurred during a period of mounting environmental issues, a burden that had to be carried with a seriously impaired budget in addition to the diminished work force. The result has been a greater reliance on extra-mural contractual and cooperative agreements and consequently an increased project management load on the Agency's research scientists.

This decrease in personnel, and the changes in responsibility of those remaining, is borne out in the analysis. Of the 1798 positions in ORD, 1134 are classified in the researcher series and only 767 or 68% (43% of the total ORD work force) are identified as actually engaged in research. Research organization managers and project officers are not included in the 767. This factor may have resulted in an under-estimation of the size of the actual work force, since at least project managers may actively participate in research. Planning and monitoring is part of the research process. Project managers must be competent scientists to write specifications for requests for proposal (RFPs), to evaluate proposals for research and to monitor the progress of research. An understanding of the limits of the science is necessary to accomplish this work effectively.

3.2 Education Level

The report does not clarify the specific technical skills that are represented among the 767 researchers identified, or what tasks they are engaged in. The level of education attained by the group would suggest that either an inordinate number of individuals are under educated for research activity in science (only 50% have terminal doctorates) or the number also includes technicians carrying out the directives of the scientists. Whichever is the case, and for the purpose of being explicit, the Subcommittee recommends that a distinction be made between the discipline of the scientist and the skill of the technician supporting the scientist. Both are needed for effective research but the levels of education and experience necessary are quite different.

In addition, the reason for the large variation in percent PhDs among the laboratories needs also to be clarified. Why does the ERL at Corvallis claim 94% PhDs among its researchers while RREL at Cincinnati only 23%? The difference might be due to the level of education necessary for skills specific to the laboratory, but future analyses should seek to explain those differences.

3.3 Skill Group Categories

The categories of skills presented by laboratory is not very revealing although it does give the sense that the ratio of research production workers to administrative staff is about right (4.7 to 1). It also shows that some 69 positions are vacant and suggests some flexibility in accomplishing a more appropriate skill mix for changing issues.

A more useful approach may be to identify disciplines within each skill group and compare these disciplines to the Agency's research tasks. Such an approach would allow determination of additional skills needed to accommodate the research tasks.

3.4 GS/GM Level distributions and Retirement Eligibility

An analysis of the distribution of the researchers among GS/GM grades, assuming a correlation between grade and age, would indicate that the Agency is suffering from a distribution characteristic of an aging population. GS/GM grades for entry level PhDs are usually at the GS/GM 11-12 grade levels but constitute only 12 and 19 percent of the total researcher population, respectively. The considerable variation that exists among the laboratories needs explanation.

Analysis of the other end of the population distribution shows that 16% of the researchers will be eligible for retirement within the next three years. Assuming an average lifetime tenure of 25 years, one would expect about 10% of the researchers to become eligible for retirement during a three year period. Again, considerable variation exists among the laboratories ranging from 0% to 35% eligible for retirement by 1992. Early retirement opportunities could exacerbate the problem.

3.5 Skills Mix Analysis Criteria

It is clear that this preliminary analysis does not address the skills mix question adequately. The assessment categories are too general to be of much value. Categories for future skills mix analyses should be based on much more refined criteria that are related to the disciplines defined by the core research needs of the Agency. These core research needs will be related to and determined by the Agency's research strategy.

To accommodate this multidimensional matrix, it will be necessary to identify the skills of the entire ORD personnel mix (including extramural contractual arrangements) to very specific disciplines, e.g.: engineers should be classified at least to civil, mechanical, environmental, etc.; biologists to soil bacteriologists, virologists, pharmacological toxicologists, ecotoxicologists, plant ecologists, etc.; social scientists to physical geographers, demographers, natural resource economists, etc. This level of specification is necessary to adequately accommodate the next level of the analysis matrix.

Research issues (initiatives, both ongoing and upcoming) must be identified and disaggregated into the disciplines necessary to achieve the objectives posed by each initiative. The disciplines should be identified at the same level of resolution as those for the skills mix above. The personnel needs identified by full time equivalents (FTEs) for each discipline needed to achieve the objectives within a given time frame must also be assessed. Together these factors can be applied to a comparison with the standing work force, including the extramural efforts, to identify the areas of deficiency (mismatches between skills needed and skills available). From this position of knowledge, the Agency will be better able to make decisions on new employment, staff training requirements, and extra-mural assistance.

4.0 TRAINING

In this section, an assumption is made that an analysis has been performed to reveal the mismatches between personnel available and personnel needed. These mismatches can be accommodated in several ways including expanded extra-mural efforts, retraining and upgrading existing personnel, and recruiting of new researchers. A large part of this effort, however, will be centered in the training area.

The Agency should make wider use of educational leaves or IPA assignments to retrain or enhance the training of its existing staff. If the education level is low, it should be upgraded using the IPA mechanism or staff should be otherwise encouraged to attain higher degree levels and increased knowledge through innovative programs promoting advancement opportunity.

Potential researchers are only available if the academic machinery has been functioning effectively to produce them. In recent years this production has been low, primarily as a result of a low market demand in the Federal Service. Not enough essential environmental skills are being developed in those currently being trained in the academic pipeline to meet the needs existing in the EPA and other agencies (both state and federal). Among the skills needed and not being produced in adequate supply are epidemiologists, ecotoxicologists, environmental engineers and ecologists.

Graduate training programs designed to meet the needs of the Agency (such as those the Agency supported at its inception) could well be reinstated and/or training budgets could be included with research grants and contracts to meet the demand.

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT

PRELIMINARY ANALYSIS
INVENTORY OF LABORATORY RESEARCHERS SKILL MIX

BACKGROUND

The Office of Research and Development has proposed the development of a Core Research Program to address a new generation of environmental and health issues. The Core Research Program constitutes a fundamental change to the existing national environmental research agenda. This preliminary analysis represents ORD's first step in a process to identify the required changes to our existing researcher workforce necessary to successfully implement the Core Research Program in combination with ongoing program support responsibilities.

METHODOLOGY

This preliminary skill mix inventory focuses on laboratory researchers within ORD's sixteen research organizations. These include:

- the six Environmental Research Laboratories within the Office of Environmental Processes and Effects Research;
- the Risk Reduction Engineering Laboratory and the Air and Energy Engineering Research Laboratory within the Office of Environmental Engineering and Technology Demonstration;
- the two Environmental Monitoring Systems Laboratories and the Atmospheric Research and Exposure Assessment Laboratory within the Office of Modeling and Monitoring Systems and Quality Assurance;
- the Health Effects Research Laboratory within the Office of Health Research; and
- the two Environmental Criteria and Assessment Offices, the Human Health Assessment Group and the Exposure Assessment Group within the Office of Health and Environmental Assessment.

This preliminary analysis does not include personnel assigned to Headquarters staff and support offices. Also excluded are on-site scientific personnel covered under EPA contracts, cooperative agreements and interagency agreements.

Information for the analysis was obtained from three sources:

- ORD Office Directors;
- ORD Laboratory Directors; and
- the Agency's personnel database.

Office and Laboratory Directors provided mission statements, 5 to 7 year research objectives based on the core research program proposal and listings of research areas in priority order. In

addition, for each individual they designated as a "researcher", the Laboratory Directors submitted biographical data and specified primary skill specialties. Based on the proposed objectives and research areas, Laboratory and Office Directors projected increases, decreases and additions to the existing skill mix inventory using the skill designations listed by the National Research Council. (See attached.)

CURRENT LABORATORY SKILL MIX

Characterization of the overall laboratory workforce is based upon job series data taken from the Agency personnel system. The Agency's personnel database was used to provide the framework for overall laboratory staff composition by job series classification. Supplementary information has been extracted from biographical sketches to identify those researchers who; in addition to filling a position with a researcher job series classification, were designated as researchers by the Laboratory Directors.

DISTRIBUTION OF TOTAL LABORATORY STAFF BY JOB CLASSIFICATION

The Agency's personnel database lists 1134 personnel, out of an ORD total of 1798, with researcher (scientists/engineers) job series classifications within the 16 research organizations. This represents 63% of the available workforce, including personnel onboard and unfilled vacancies. Approximately 16% of the available workforce are in technical support job series and 21% in administrative support job series.

DISTRIBUTION OF LABORATORY RESEARCHERS AS DESIGNATED BY LABORATORY DIRECTORS

Of the 1134 individuals who have researcher job series classifications within the Agency's personnel database, the Laboratory Directors have designated 767 as actual researchers. All actual researchers are in researcher job series. This represents 68% of individuals identified as having researcher job series. Excluded are personnel in scientist/engineer positions who exclusively manage extramural research activities. The remaining 32% of individuals who have researcher job series classifications include research organization managers, project officers, trainees and research support staff.

SUMMARY OF RESEARCHER CHARACTERISTICS

The following is a summary of the major characteristics identified for the 767 researchers designated as such by the Laboratory Directors:

Education Level	Percentage	Number
PhD	50 %	382
Masters	29 %	225
Bachelors & Below	21 %	160
Total	100 %	767

Science Disciplines	Percentage	Number
Life Sciences	47 %	360
Chemistry	28 %	218
Engineering	16 %	125
Other	9 %	64
Total	100 %	767

Grade Distribution	Percentage	Number
Commissioned Corps	5 %	34
GS-16 & Above	<1 %	3
GS-15	8 %	60
GS-14	24 %	182
GS-13	32 %	248
GS-12	19 %	146
GS-11 & Below	12 %	94
Total	100 %	767

Retirement Eligibility	Percentage	Number
By 1990	10 %	75
By 1992	16 %	123

Data summaries have been included in the preliminary analysis which address individual laboratory researcher characteristics.

PROJECTED CHANGES IN SKILL MIX

The Laboratory Directors have provided projected changes to the existing skill mix inventory to accomplish the 5 to 7 year research objectives of the laboratories. These preliminary estimates show a generally increased need for specialists in Life Sciences (epidemiologists, toxicologists, ecologists, biostatisticians, pharmacologists, environmental health scientists, etc.) and Analytical Chemists. These projected increases are based on preliminary estimates by laboratory staff. Detailed data for individual laboratories may be imprecise and/or subject to revision. A more detailed workforce analysis must be completed before ORD can begin to change its existing skill mix.

CONCLUSIONS

This preliminary analysis is the first step in an on-going process to focus on discreet staffing requirements to accomplish the newly defined research programs of each laboratory. A more in-depth laboratory-by-laboratory analysis is required to more accurately define staffing requirements and to develop strategies to acquire those skills once defined.

Next steps will include:

1. An expansion of detailed analyses to address entire ORD workforce;
2. Development of options for the establishment of a targeted recruitment, development and re-training program for ORD; and
3. Development of a system for ongoing strategic management of the ORD workforce.

STATEMENT BY
Dr. JOHN M. NEUHOLD
Chairman, EPA Science Advisory Board
Committee on The Office of Research and Development
Skills Mix Review
and
Professor of Natural Resources
Utah State University
Logan, Utah

March 21, 1989

Mr. Chairman and Members of the Committee: thank you for hearing my testimony on the efforts of EPA's Office of Research and Development (ORD) to assess and manage its personnel skill mix. At this point I wish to make clear that this statement is a personal statement based on my reading of the Environmental Protection Agency's Office of Research and Development report, "Preliminary Analysis - Skills Mix Inventory of Laboratory Researchers," and on telephone conversations with my committee members who gave me their preliminary impressions. We have not had the opportunity to discuss fully the document among ourselves and formulate our critique into an official report, although we will be meeting to accomplish just that on next Thursday. Our official report will be transmitted to you as soon as possible after that meeting.

I would like to preface a discussion of the skills mix analysis with the observation that the work force of the ORD has declined from some 2,300 scientists and support staff in 1980 to just under 1,800 people presently. This decline occurred during a period when new environmental issues, of increasing complexity, were being added to the Agency's responsibilities, creating a burden that had to be carried with a seriously impaired budget as well as a diminished work force. The result has been a greater reliance on extramural contractual and cooperative agreement arrangements, and consequently, an increased project management load on the Agency's research scientists.

This decrease in personnel and the concomitant changes in responsibility of those remaining is borne out in the ORD analysis. Of 1,798 positions in the research program, 1,134 are classified in job series defined as "research," of which only 767 or 68% (43% of the total ORD work force) are identified as actually engaged in research. Not included in this 68% are the research managers and project officers, which may be a mistake, since it is these personnel who must write specifications for proposal requests, evaluate the proposals and monitor project progress to maximize input to EPA's knowledge base. This can only be accomplished effectively by competent scientists who understand the possibilities and limits of their science.

Although it is not clear from the report what skills are represented among the 767 researchers or in what tasks they are engaged, the level of education attained by the group would suggest

that either an inordinate number of individuals are undereducated for research activity (only 50% have terminal doctorates) or the number also includes technicians carrying out the directives of scientists. Whichever is the case (and for the purpose of being explicit), I would recommend that, of those staff engaged in research activity, a distinction be made between the scientific discipline of the scientist and the skill of the technician supporting the scientist. Both are needed for effective research but the levels of education and experience necessary are quite different.

The reason for the large variation among the laboratories in the percent of the workforce holding the PhD degree also needs to be clarified. Why does the Environmental Research Laboratory at Corvallis claim 94% PhDs among its researchers, while the Risk Reduction Engineering Laboratory at Cincinnati reports only 23%? The differences might be due to the level of education necessary for skills specific to the laboratories, or in the way "researchers" were identified, but future analyses should seek to explain those differences.

The skill group breakout by laboratory is not very revealing, although it does give the sense that the ratio of research production workers to administrative staff is about right (4.7 to 1). It also shows that some 69 positions are vacant and suggests some flexibility in acquiring a more appropriate skill mix to address changing issues. Identifying the disciplines within each skill group needed to address the research tasks posed to the Agency would be a more useful approach to determining the additional skills needed.

An analysis of the distribution of researchers among the GS/GM grades, assuming a correlation between grade and age, would indicate that the Agency is suffering from a distribution characteristic of an aging population. GS/GM Grades for entry level PhDs are usually at the GS/GM 11-12 grade levels, but constitute only 12 and 19 percent of the total researcher population respectively. Again, considerable variation exists among the laboratories. We ought to know why.

Analysis of the other end of the population distribution shows that 16% of the researchers will be eligible for retirement within the next three years. Assuming an average lifetime tenure of 25 years one would expect only about 10% of the researchers to become eligible for retirement during a three year period. Considerable variation exists among the laboratories, ranging from 0% to 35% eligible for retirement by 1992. Early retirement opportunities would exacerbate the problem further.

I understand that the ORD report is preliminary, and is based upon a rather hurried analysis in face of a rapidly changing research scene. It is useful in revealing some broad personnel issues. However, the analysis needs to become much more specific to be a very meaningful in treating the skills mix question. One

might consider constructing a multidimensional matrix relating skill, discipline, and research issues among the several laboratories.

This type of an analysis is extremely important for achieving the appropriate skill mix for the Agency. It can serve to guide the Agency in its internal training program, including IPA assignments and educational leaves for upgrading and retraining; it can serve as the basis for new hires and for instituting extramural training programs designed to provide a source of appropriately trained people for the Agency. For a program the size of EPA's ORD, a personnel skills mix effort should become a permanently staffed and funded part of ORD's research management effort.

Thank you, Mr. Chairman. I would be pleased to answer any questions you may have.