LABORATORY PERFORMANCE EVALUATION REPORTS FOR MANAGEMENT*

Argonne National Laboratory, Argonne, IL 60439

and

S. W. Warren and R. W. Newberry
U.S. Department of Energy, Office of Environmental Management
Washington, DC 20585-0002

To be presented at the

Sixth International Environmental Quality
and Waste Management Conference
Denver, CO
April 17-20, 1995

*Work supported by the U.S. Department of Energy under Contract W-31-109-Eng-38.
DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.
Environmental restoration program and project managers of the Department of Energy's (DOE) Office of Environmental Management (EM) are responsible for making a number of important decisions based on sample analysis data provided by contracted analytical laboratories. These include 1) whether to perform remediation; 2) what type(s) of remediation technology should be used; and 3) when remediation is completed. In support of the DOE's environmental restoration efforts, the Analytical Services Division, EM-263, has been charged with developing and implementing a program to assess the performance of laboratories providing analytical services to EM programs. This program is called the Integrated Performance Evaluation Program (IPEP). The IPEP will interact with other programs being developed within EM-263 to provide a full spectrum of quality assurance measures. The IPEP is being designed to produce Laboratory Performance Evaluation Reports for management which will provide information to allow DOE Headquarters and field offices to assess and monitor whether contracted analytical laboratories have the capability to produce the environmental data of the quality necessary for making these decisions.

Performance Evaluation (PE) programs provide an independent check of a laboratory's ability to perform analytical tests. Successful participation in PE programs is one indicator of a laboratory's capability to produce analytical data of known quality. In contract, poor performance can identify data sets that require additional scrutiny to ensure data acceptability and may result in audits and corrective actions to address the problem areas within the laboratory. In addition, PE programs provide a measure of cost control through ensuring the quality of the data used to support remediation decisions. While participation in PE programs can be costly to laboratories due to the additional time and resources devoted to PE program analyses, this independent assessment process builds credibility in the data and can be used to identify laboratories which are not acceptably performing specified laboratory analyses. Data of poor quality could result in additional project costs and delays due to the necessity of resampling, reanalysis, or independent reverification of analytical data. More important, this could result in costly and unnecessary site remediation or overlooked site remediation which could threaten human health and the environment.

Results from several PE programs administered by the DOE and the U. S. Environmental Protection Agency (EPA) will be used to produce the reports. The DOE's Environmental Measurements Laboratory administers the Quality Assessment Program which provides typical environmental radioisotopes of interest and covers the general types of radiological techniques.
for five matrices; water, soil, vegetation, air filters, and tissues. EM-263 is in the process of developing a pilot study of the Mixed Analyte Performance Evaluation Program (MAPEP), which will provide a mixed suite of radiological, inorganic, and eventually, organic analytes in a single environmental matrix, such as soil or water. The EPA-administered PE programs are the Contract Laboratory Program Quarterly Blind (CLP QB) Inorganic and Organic Performance Evaluation Studies, the Water Pollution Laboratory Performance Evaluation Study (WP), and the Water Supply Laboratory Performance Evaluation Study (WS). Each PE program contains unique analytes not found in other PE programs, as well as analytes common to one or more PE programs.

The IPEP is developing various levels of reports that summarize the results of laboratories participating in various DOE and EPA PE programs; this presentation will concentrate on the management level reports. Three different report formats have been developed in the proposed program to provide information necessary for project and program managers at the Operations/Project Office level and at the Headquarters level to assess the analytical capabilities of laboratories providing services to EM.

The format of EM Operations/Project Office Reports is designed so that EM program and project managers in the field can assess the performance of individual laboratories. These reports provide information on laboratory performance for inorganic, organic, and radiological analyses. The reports also present information on the Operations/Project Office's laboratory capable capacity (the percent of an Operations/Project Office workload for a given laboratory times its percent acceptable results by matrix/analyte class). This, in effect, gives a weighted average for laboratory scores, such that a laboratory which does most of the analytical work would have its PE results weighted more heavily in the capable capacity of an Operations/Project Office than would a laboratory that is used for excess sample loads. These reports also summarize for the program/project manager information on specific and general laboratory performance areas where further investigation is recommended. For example, further investigation would be recommended for a laboratory that: a) did not determine the appropriate, EM-required, analytes in a matrix/analyte class or PE program or matrix/analyte class; b) performed poorly in a particular PE program or matrix/analyte class; c) scored unacceptably on a given analyte in multiple PE samples; or d) participated in a PE program, but the results were not available.

The Operations/Project Offices reports described above should be addressing performance issues of individual laboratories. However, if an Operations/Project Office is using a large number of laboratories with unsatisfactory performance in a PE program or if that Operations/Project Office is not addressing the recommended follow-up on unsatisfactory results, then the EM Area Program Office may need to investigate. The Area Program Offices report formats provide information to address these concerns. The EM Headquarters Area Program Office Reports assess the capable capacity of the Operations/Project Offices' laboratories by matrix/analyte class and identify areas needing further investigation. They present a regional picture of how Operations/Project Offices within an EM Area Program Office are addressing PE program issues for their contract laboratories. The reports do not contain information on specific laboratories, but do show the capable capacity for individual matrix/analyte classes by Operations/Project Office. They also provide comments relating to
general problems occurring throughout each Operations/Project Office and reflect the "general health" of each Operations/Project Office with respect to laboratory participation and performance in PE programs.

The highest level report belongs to the EM Deputy Assistant Secretary (DAS). This report represents a summary of the information presented in the EM Area Program Office Reports. The purpose of this report is to identify EM Area Program Offices that may have general problems, such as using a large number of laboratories that perform unsatisfactorily. The DAS Office Report further identifies national trends, such as shortcomings in critical areas that exist nationally. The report presents the laboratory capable capacity for individual matrix/analyte classes by Operations/Project Office in each Area Program Office and identifies areas where further investigation by the Area Program Offices may be warranted to address problems occurring throughout the EM Program; reflecting the "general health" of individual Area Program Offices and national trends associated with laboratory participation and performance in PE programs. EM Area Program Offices should be addressing performance issues for its Operations/Project Offices. However, if an EM Area Program Office has an unsatisfactory laboratory capable capacity in a PE program or if that EM Area Program Office is not addressing the recommended follow-up on unsatisfactory results, then the DAS Office may need to investigate.

All reports generated will be formatted to facilitate evaluation of possible problem areas. Also, distribution of the reports will be timed to allow interpretation of the data and corrective actions to be initiated prior to receiving inquiries from higher level managers. A pilot study will be conducted at one DOE Operations Office in fiscal year 1995.

This work was supported by the U.S. Department of Energy, Assistant Secretary for Environmental Management, under contract W-31-109-Eng-38.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.