"Consciously or subconsciously evaluation is an inseparable part of human life and one of the characteristics that distinguishes the behavior of the cerebrating homosapiens from the insect-guided, reflex-conditioned behavior of the lower forms of animal life. Objective, critical, self-evaluation is said to be a hallmark of the emotionally mature adult.

Evaluation is not new in public health. It predates Lemuel Shattuck's report and probably also predates Biblical references to public health. One cannot plan or administer public health programs properly without evaluating them. Although evaluation is not new, methods and tools of measurement change as do attitudes toward and emphasis on evaluation. Thus it is timely in an age when we can measure the energy released by synthetic nuclear fission to renew our efforts and programs."


Public health officials and agencies have a long history of concern with the problem of evaluation of health services and program. The American Public Health Association developed the Appraisal form for health services which was in widespread use from 1924 through 1942. In 1938 and 1939, the W. K. Kellogg Foundation in conjunction with the Environmental Sanitation Program of the seven counties in Southwestern Michigan developed extensive evaluation schedules for the major environmental health programs. These schedules were intended to provide a means of instruction for health department personnel as well as for the operators of establishments and the public in general. The American Public Health Association Evaluation Schedule was developed in 1942 and received a widespread use on a nationwide basis. As a result of this schedule, the indices of accomplishment were developed as measuring guides for program evaluation.

In 1955, the first national conference on evaluation in public health was held at the University of Michigan, School of Public Health and laid the groundwork for further development of evaluation methods, tools and techniques. The second national conference on evaluation was held at the University of Michigan in September of 1960. In August of 1963, the American Public Health Association Program Area Committee on Administration completed the preliminary draft of "Indices for Community Health Services."

The National Commission on Community Health Services, jointly sponsored by the American Public Health Association and the National Health Council is currently developing a nationwide program involving the evaluation of pertinent information concerning health service problems, trends and resources for today's needs and future demands.

The long-continued interest of public health personnel throughout the years has indicated a concern for the development of tools with which to measure the effectiveness of public health programs and to evaluate activities of public health agencies. The Public Health Service has recognized this widespread need for evaluation and has approved a grant of approximately $2 million for a seven-year study at the University of Michigan, School of Public Health which will concern itself with the "Evaluation of Public Health Practices."

In this discussion, we are primarily concerned with the evaluation of environmental health programs. Therefore, it becomes necessary to define environmental health. This is one of the broad areas of public health practice which involves all those phases of the environment which may in any way affect the health or well-being of man. If we are to accept the definition of public health which has been developed by the World Health Organization namely, "A program to promote the complete physical, mental and social well-being of mankind and not merely to provide for the absence of disease," then we have an extremely broad area of concern in the field of sanitation. A list of all the programs of environmental health is an extremely long one and is well known to most practitioners in the field of sanitation. Stead (4) in his presentation of a schematic approach to environmental sanitation has divided the large field of environment into four major program sectors which include water, food, air, and the space-shelter contact area. Incorporated in each of these program sectors are the many sub-program areas which have become traditional programs in some health jurisdictions and which are emerging and becoming more important in other parts of the nation. Let us assume, in developing methods of evaluation for environmental sanitation programs, that we consider the broad aspects of environmental sanitation with its many ramifications.

Now that we have defined the scope of interest in environmental sanitation, it is appropriate to carefully scrutinize the meaning of evaluation. If we are to evaluate the effectiveness of environmental...
sanitation programs, we need to review the programs from a number of different points of view. Involved in this study would be a consideration of four major areas of concern:

1) Communication problems
2) Motivation and perception problems
3) Health practice problems
4) Administrative problems.

The effectiveness of any program depends upon the ability of those in administrative capacity as well as those operating in the field to communicate to the public and to the operators of individual establishments the objectives of the sanitation activity. Careful attention must be given to the motivation and perception aspects of the program as they affect the members of the health department or operating agency as well as the general public. We need also to make a careful review and analysis of the procedures and practices which are followed in the routine administration of the program. And lastly, an analysis of the administration patterns of operation within the department and within the governmental structure of a community are extremely important in order to thoroughly understand the basis for evaluation.

Numerous attempts have been made by organizations, groups and individual operating agencies to evaluate programs in current operation. Some evaluation studies have been made which have been limited to a determination of the scope of coverages of the field of environmental sanitation. These studies have been aimed primarily at determining whether or not the particular agency is accomplishing the task of providing a broad environmental health program which serves all facets of the community environmental problems.

A second method of study or evaluation which is commonly used concerns the amount of activity which has been carried on by the sanitation division. This is the usual report of the number of visits made, the number of samples taken, the number of establishments in which corrections have been made, etc.

A third evaluation procedure which has been used by some departments has included special studies of efficiency of environmental health personnel. These studies are basically time studies to determine the number of services rendered by the individual staff members and are used to determine the time required for various types of sanitation services.

A fourth evaluation procedure which has not received as widespread use as the others is the measure of effectiveness of environmental health programs. We have been so interested in the number of visits made and the number of corrections accomplished that frequently we have neglected to concern ourselves with the very important and probably the most essential aspect of evaluation which is the determination of whether or not the sanitation program has been effective in attaining the goals which have been established for the environmental sanitation activity.

One of the most essential aspects of a sanitation evaluation program is to first of all clearly define the goals which are expected to be attained if the sanitation program is effective. There is a need for clearly defining the aims and objectives of each individual environmental health program prior to the establishment of such programs. A study of a number of local health departments has indicated that in many cases goals for final accomplishment have not been clearly defined. Occasionally the goals of the administrator are not clearly understood by many of the staff people in the sanitation division.

Once the goals have been established and agreed upon by the health department and the governing body of the community, the task of measuring effectiveness of environmental programs becomes more clearly definable. We may then assess the degree of achievement toward these established objectives. Salvato (3) discussed evaluation from the standpoint of measuring the effort expended as compared to the results obtained in various sanitation programs. A good case has been made for the measurement of inspection service including man-hours of effort required to secure the various accomplishments. Reference should be made to Figure 1 which indicates the program activities versus the improvement in facilities. It will be noted that as the program starts that there is considerable effort expended with a minimum of increase in improved facilities. Gradually as the program progresses results are obtained at a more rapid rate with less effort on the part of the sanitation personnel. There is a time, however,

![Figure 1](http://meridian.allenpress.com/jfp/article-pdf/27/2/30/2396510/0022-2747-27_2_30.pdf)
at which the increase in improvement falls off as more and more of the establishments meet the recommend-
ed standard established by the inspection agency. At this point considerable effort is required to secure a minimum number of improvements. As a matter of fact, it has been observed in some areas that re-
sults may even decrease as the efforts to obtain these improvements have increased. If we have es-
established our goals on the basis of securing the installation of various kinds of equipment or upon the objective of securing compliance with various standards based on physical requirements, then we have a measurable entity with which to deal and the evaluation of the program becomes fairly simple. However, if our goals are set at the elimination of various types of infection, or if we have a goal to provide a community in which man may thrive rather than merely survive, then the degree of accomplish-
ment becomes extremely difficult to measure.

Many of us have selected programs for our sani-
tation division which are based not primarily on the established needs of a community but which are based more realistically on the traditional programs of health departments throughout the nation. On the other hand, some of us become so enamoured with the new, exotic developments of science which involve the environment that we are busy exploring the unknown areas of sanitation and tend to neglect some of the areas of well-known hazards. An ex-
ample of this might be found in departments which are active in the field of radiological health but neglect to develop adequate concern for the septic tank installations which are invading their coun-
side by the thousands. Any discussion of evaluation of effectiveness of the total environmental health program needs to be closely related to the selection of program objectives and total program coverage.

If we are to measure the change in attitudes and change in action of the individuals with whom we deal, then we must develop a yardstick for measure-
ment which is truly objective. We must ask our-

ourselves, "What do we want people to do after we have worked with them in a particular environmental sanitation program?" We must develop a means of measuring whether or not the people with whom we have dealt have actually been motivated to do those things which are contained within the statement of our program objectives.

A proposal has been made and preliminary work started in one health department in which it was agreed that the program objective in the field of food sanitation would be to meet the standards es-
established by the United States Public Health Service Food Service Sanitation Manual. It was decided that the particular health jurisdiction would be divid-
ed into a number of geographical areas and various types of food sanitation programs conducted in each of these areas. A Public Health Service rating was made of all areas prior to development of the pro-
gram and it anticipated at the end of a two-year period that a similar rating will be made to determine the effectiveness of the various kinds of programs as conducted in these four or five geographical sections of the health jurisdiction. Such a procedure is commendable from the standpoint of studying methods of administration to accomplish an improved food serv-
vice rating in the various areas. There is a serious question, however, as to whether or not this is the type of goal which actually meets the needs of the community.

The 1962 edition of the Public Health Service Food Service Manual places an increased stress on the operating procedures and handling methods. This is certainly an improvement in the direction of changing attitudes and action on the part of the food service employees. In previous edi-
tions, greater emphasis was placed on the physical components of the sanitation program which is only a part of the program if we are truly concerned with the protection of the health of the people of the community.

Studies made by L. M. Fisher (2) indicate that 60% of our sanitation program time is spent in activities related to food and milk. Water and liquid waste activities take approximately 15%. A total of 75% of the total effort of environmental health programs in the 42 local health departments studied was spent on these four traditional programs.

Similar evaluation studies were made in Michigan of 15 health departments for a period of 1946 to 1951 and indicated that 61% of the total time of sani-
tarians in these departments was spent on food and milk sanitation. There would appear to be a nation-
wide opinion that the most important aspect of en-
vironmental sanitation is involved in the inspection programs of food and milk activities. It is difficult to find data, however, which indicates that the tremendous amount of time and effort spent on these programs is commensurate with a resultant improve-
ment in the general health of the country. There is certainly evidence to indicate that morbidity and mortality statistics show a decrease over a period of years from outbreaks of food and milk origin. There is no definitive data which clearly indicates that the same amount of improvement might not have occurred with less effort on the part of the field staff of the health agencies involved.

One of the most outstanding appraisal techniques which has been developed in the field of environ-
mental health is the Housing Survey Technique de-
veloped by the Committee on Hygiene of Housing of the American Public Health Association (1). This appraisal technique is widely used throughout the
nation in studying the housing problems of various communities and determining areas in need of rehabilitation and clearance. This technique has provided an exceptional method of evaluating housing conditions but does not provide a means for evaluating the effectiveness of a housing program conducted by the sanitation division of the health department. Again we must emphasize the importance of determining first of all the objectives which the health agency wishes to accomplish before an adequate appraisal program can be applied.

The evaluation and appraisal methods for various types of establishments which were developed by the W. K. Kellogg Foundation in 1938-1940 approached the method of evaluation of environmental health status in an entirely different manner. In the documents which were prepared for the various types of establishments under the inspection service of the local health department, there was developed an inspection report form of considerable length and with rather extensive detail. Each item of sanitation was listed and a compliance standard for good, fair or poor was listed in detail. The purpose of this detailed document was to provide uniformity on the part of the inspectional staff and at the same time provide material which would be available to the operator of the establishment for purposes of comparison, education and communicative techniques. A more detailed analysis of this approach was provided through a system of weighting which assigned different values to various aspects of the environmental health program. For example, the structure, water supply, sewage disposal, and handling were given a major priority while items such as heating, ventilating, lighting, hand washing, etc. were given a somewhat lesser degree of importance. This system provided an excellent means of evaluating accomplishment toward the goal of general sanitation compliance from a physical point of view. Here again, however, no effort was made to extend the evaluation to accomplishing the long-term objective of providing an environment for the community in which the population could thrive rather than merely survive. No effort was made to compare the effectiveness of the program against the incidents of food-born infections, nor was any attempt made to indicate the attitude of the public toward the general food sanitation activities.

In more recent years, there have been increasing attempts to approach the evaluation of environmental health programs on a broader base. There has been increased concern for the attitudes of the public toward the accomplishments of the environmental sanitation section of the health agency, and efforts have been made to provide a means by which community attitude toward the environment can be measured. The Public Health Service has developed the "Environmental Health Planning Guide" (5) which has been receiving widespread acceptance throughout the country. This guide provides a means for local groups to study the environmental conditions of the community. Although this planning guide has not been promoted primarily as an evaluation technique, it carries with it a number of excellent appraisal and evaluation advantages. If the guide is used by local officials, citizens groups and individuals within the community, they will discover, in the process of filling in the questions in the guide, an understanding of the environmental health problems of the community. The guide is aimed primarily at problems of water supply, sewage disposal, refuse collection and disposal, radiological health, housing and air pollution. Upon completion of the data gathering aspect of the guide, plans for future development are made in conjunction with the health agency involved and recommendations for community action are included.

If a similar community appraisal technique could be used a number of years after the development of recommendations based on the preliminary use of the guide, an appraisal of the efforts of the health and planning agencies could be accomplished. Here again it must be pointed out that the preliminary use of the planning guide would involve a study of the existing problems and the determination of aims objectives and ultimate goals for the environmental health conditions of the community. The subsequent appraisal of the community conducted a number of years later would indicate the accomplishments made by the community in attaining the goals thus established.

A similar approach has been attempted in the development of the American Public Health Association proposed "Indices for Community Health Services" which is now in the preliminary draft stage. In the environmental health section, a number of the major environmental health program areas have been selected and the material indicated under a number of major categories. First, the existing facilities to implement the program are enumerated. Second, the status of the program is listed with an outline of information required in order that the status of the program may be properly assessed. A third section involves suggested levels of performance which is essentially the public health reasons for the development of the program. It is expected that such a community study would be made by citizens' groups in conjunction with local health authorities and by so doing a program of information to the citizenry would be accomplished. Joint objectives could then be developed by the governmental unit, by the health agency concerned and the public at large. Sub-
sequent use of the "Indices for Community Health Service" could be used to appraise the levels of accomplishment of the various objectives established.

In summary it might be said that, in the past, the major efforts of appraisal have been directed toward measuring the efforts made by health agencies in the implementation of environmental health programs. The need of our present-day health agencies is for a means of measuring the effectiveness of the programs in producing results. We need a measure of the degree of accomplishment of the goals established by the health agency, the community, and the governing body. Such a plan requires that clearly defined objectives for health programs be established and that these objectives be well understood by all parties concerned: the governing body, the health agency, the inspecting staff, the public at large, and the operators and personnel of establishments within the community.

Satisfactory tools for measuring the degree of accomplishment of such goals have not been well developed and there is a need for research and study in this important field of public health administration. In order that we may properly allocate the time and efforts of environmental health personnel toward the increasing demands of new environmental health problems, it is essential that we develop methods of measuring effectiveness of the more traditional programs in line with our already established techniques of measuring the effort expended in the various programs of sanitation.

The true measure of statesmanship and administrative ability comes with the ability of the health agency to re-direct its efforts away from traditional programs to less spectacular activities when it can be shown that the effort expended on the more traditional pays less public health dividends than is expected on the newer and more pressing problems that confront the communities of our rapidly growing areas. We must ask ourselves penetrating and searching questions in reference to each of the environmental health programs in which we are involved.

1. What are the objectives of the program?
2. Is the program worth the effort being expended?
3. Can we expect to accomplish our objectives with our present methods of approach to the problem?
4. Are there other areas of environmental health in which we might more profitably be spending our time and effort?

When these questions are answered, we are in a position to plan and administer the environmental health program in a more rational method. Far too many of the present-day environmental health programs are based upon tradition and what has been expected of the health agency over a period of many years. Some program emphasis can be traced to the early days of prevention of epidemics and the control of widespread pestilence. Technological and scientific advancement in the field of environmental health, the increasing demands for service and the limited availability of trained personnel demand that we approach administrative program planning, evaluation, and administration with a critical, inquisitive, scientific and coldly analytical attitude. Such a fearless approach is long overdue in environmental health and demands the efforts of all practicing sanitarians. Research is needed to develop the tools for adequate evaluation and for methods of application of these tools to existing programs. The results of such action should assure the more rapid expansion of environmental health programs into the new and developing areas of health protection and should provide an increased justification for the support of environmental sanitation activities.

References