

Sanitation Accomplishments

in

Local Health Departments

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Administrators of local health units, State and Federal health authorities, appropriating bodies, organized groups of citizens interested in the progress of public health, and ordinary taxpayers are all at some time concerned with the quality of the services performed by local health departments. In regard to sanitation services, they ask specifically: How many sanitation workers are needed to do the sanitation work in a local health department? What qualifications should these workers have?

It is believed that the studies in sanitation administration conducted by the Engineering Section Project, American Public Health Association, with funds provided through a research grant from the Public Health Service, are providing answers, at least in part, to these questions. These studies also suggest an objective method for evaluating sanitation programs in regard to adequacy of staff and general over-all efficiency.

Forty-two local health departments throughout the country participated in these studies (1-4). Each health department supplied factual data on health department personnel

and time data. Some of these data are presented and analyzed here.

Recording Methods

The environmental sanitation personnel of each participating health department recorded every activity requiring 5 minutes or more and the time required in minutes. Each activity was assigned two code numbers. One number indicated the kind of activity, such as a written inspection, a sample collection, a field trip, or a field visit; the other indicated the program in which the activity was carried on, such as food sanitation, milk sanitation, water, or sewerage (18 programs in all).

The same previously prepared code was used by all personnel, and the code numbers were checked by the health department's supervisor of sanitation. The daily activity reports were reviewed and edited by the same person throughout the study.

The daily reporting was carried out usually for 1 week, 3 weeks were skipped, and the reporting resumed for another week. The average time of participation by a health department was about 10 weeks, and the average number of men participating in the study was 370.

Field data were collected through November 1951. For each activity reported on the daily activity reports, an electrical machine accounting card was punched. Approximately 18 cards were punched for each daily activity re-

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port, resulting in a total of approximately 250,000 cards reporting some 8 million minutes of time. This gave an average length of time for each activity of about 33 minutes. The punching of the cards received for the first quarter of 1951 was verified. Because of the small number of punching errors found, verification of cards subsequently punched was omitted. This cut the processing expense approximately in half. The accuracy of the unverified punching was deemed sufficient for our purposes. The total time punched for a given health department was usually within 5 percent of the figure called for by the official workday.

Evaluation of Services

Although it is generally accepted among public health workers that high-quality work is done by well-trained men, it seems to have been assumed in some quarters in the field of sanitation that anyone can make sanitary inspections. Many health officers have been obliged to accept the assignment of inadequately trained men because of the difficulty of showing that competently trained sanitarians accomplish more than persons less adequately trained. Furthermore, there is lack of agreement regarding the number of trained men needed to do a "good" job.

One of the chief obstacles in answering these questions has been the difficulty of determining when a job is well done. An approach to the solution of the problem of evaluating sanitation services is the use of milk sanitation ratings. If one accepts the thesis that a local health department has done a good job in milk sanitation when it attains a rating of 90 percent or better, using the formula contained in the sanitation evaluation schedule (5), a basis is provided for studying, analyzing, and comparing characteristics of health departments.

The quality of milk sanitation work is periodically rated by State or Federal health authorities in areas where the standard milk ordinance is enforced. Results of such ratings are expressed numerically, according to the procedures recommended by the Public Health Service (6). Approximate uniformity in rating by State health department personnel is accomplished by the periodic checking of ratings made by the Public Health Service at

Comparison of groups of health departments, based on over-all milk sanitation ratings

| Characteristics | Upper third | Middle third | Lower third |
|---|-------------|--------------|-------------|
| Median rating----- | 91.2 | 87.6 | 79.2 |
| Minutes of sanitation services per capita per year----- | 9.63 | 8.38 | 7.43 |
| Percent of sanitation workers who were college graduates----- | 35 | 35 | 28 |
| Percent of units directed by masters of public health----- | 67 | 44 | 33 |
| Average educational ratings of men----- | 13 | 13 | 13 |
| Average educational ratings of supervisors----- | 27 | 35 | 35 |
| Percent of time in field--- | 42 | 37 | 34 |
| Percent of time in preparation----- | 58 | 63 | 66 |

¹ Graduation from high school and the completion of 1 year of college work.

² Graduation from college and completion of 1 year of postgraduate study for which an advanced degree was awarded.

³ Graduation from high school and completion of 3 years of college work.

places selected at random against ratings made similarly and at the same time by State personnel.

The sanitation evaluation schedule provides a formula for combining the percentage of milk pasteurized, the rating of retail raw milk, the rating of raw milk sold to pasteurization plants, and the rating of pasteurization plants into a single over-all rating. This rating was used in the present study to divide 27 health departments operating under the standard milk ordinance into three groups: upper, middle, and lower thirds (see table).

The ratings for the three groups ranged from 97.5 to 67.8. All nine of the health departments in group 1 (the upper third) had over-all ratings of 90 or better; the average was 92.4, and the median was 91.2. The average for group 2 (the middle third) was 86.7, and the median was 87.6. Similar figures for group 3 (the lower third) were 78.8 and 79.2, 12 points below group 1.

Analysis of Characteristics

These three groups were studied to discover characteristics which might have a bearing

upon the quality of accomplishments. The principal characteristics investigated included time spent on general sanitation services, kind of leadership provided, educational qualifications of personnel, numerical adequacy of personnel, and activities which might reflect efficiency of effort.

The ability to make an adequate number of inspections is an important factor in maintaining sanitation at high levels. Therefore, the groups were compared with respect to the number of minutes of general sanitation services per capita per year provided. It was found that group 1 devoted more time to the whole field of sanitation than did groups 2 or 3, the average figures for the groups being 9.6, 8.3, and 7.4, respectively. The average for the upper third corresponds approximately to one sanitation worker serving 12,000 people, working 8 hours a day, 5 days a week, allowing 15 days' leave.

With respect to the qualifications of the health officer, it was found that 67 percent of those in group 1 had either a master or doctor of public health degree; 44 percent in group 2 and 33 percent in group 3 had such degrees.

The educational ratings of the supervisors of sanitation were 7 for group 1 and 5 for groups 2 and 3, according to the arbitrary scale set up for this study (see table).

There were seven engineers supervising sanitation in group 1 and three in group 3.

The percentages of college graduates among the sanitation workers in the three groups were 35 percent in group 1, 35 percent in group 2, and 28 percent in group 3.

The educational rating of the men was about the same for each group—approximately 3 (see table). The fact that there was no sharper differentiation in educational ratings for sanitation workers in the three groups may have been due to the fact that our method for determining educational ratings did not give any more credit, for example, for completion of several short courses, each of several months' duration, over a period of 10 years of service than for completion of a 3-day course during the first 6 months of service. This is an obvious weakness in our method.

Figures which may indicate efficiency of personnel are shown in the last two items of the table. For all sanitation programs for which

figures were reported in the time study, group 1 devoted 42 percent of its time to field work, compared with 34 percent for group 3, and took only 58 percent of its time to prepare for field work, compared with 66 percent for group 3.

Food Sanitation Ratings

It did not seem profitable to make a similar study based on food sanitation ratings (7) because only 16 health departments reported these ratings. However, a comparison of health departments attaining a rating of 85 percent or more with those attaining a rating of less than 85 percent showed that the first group had a higher percentage of college graduates than the second group and that the educational ratings of the sanitation workers and the sanitation supervisors were higher for the first group. The comparison also revealed that a larger percentage of the health departments attaining an 85-percent or higher rating were supervised by engineers than those in the lower group and that the upper group provided more minutes of general sanitation services per capita than the lower group. In addition, the average age of the worker was lower for the first group than for the second group.

Sanitation Ratings

Many who have followed the history of milk sanitation ratings closely are convinced that this rating system is useful for measuring the quality of milk sanitation. It is being used increasingly to judge the quality of milk coming from distant sources for local consumption, and is playing an increasingly important part in the interstate shipment of milk (8). These ratings make it possible to put milk sanitation discussions on a scientific and factual basis. The need for establishing such ratings in other fields of sanitation seems highly important.

In establishing sanitation ratings, a sound public health reason should be stated for every sanitary requirement, and there should be a reasonably accurate method by which a qualified person can determine when satisfactory compliance has been attained. When satisfactory compliance as reported by local personnel

checks approximately with compliance as understood by regional or national personnel, the development of a standard is begun. If the degree of attainment can be expressed in figures, there is evidence that the problem has been well analyzed. Evaluation of a program in general terms, such as excellent, good, fair, poor, or satisfactory, indicates that our knowledge is not well systematized, and such evaluation is of less value since what one person may consider to be good another may consider only fair or even poor. Even when ratings are expressed in figures, however, we must not attempt to make too fine distinctions. For some time yet, until all our standards are well defined and their use widely understood, we must be content to deal in numerical approximations.

In this study we believe we see the beginnings of processes which will make it possible to support with actual statistics conclusions based upon judgment and experience. It seems evident that in order that this may be done more effectively it is necessary to establish ratings in other fields of sanitation such as those developed for milk and food sanitation.

Use of the over-all milk sanitation rating as a tool for evaluating sanitation programs must be made cautiously. Experience in the use of this tool still needs to be developed. It should not be used, for example, to compare health departments operating under the standard milk ordinance with those not operating under it. Such a comparison would be unfair, since the two classes of health departments are not on the same basis.

It should not be used to compare individual health departments with each other, but it should be further tested in investigating groups of health departments in order to see whether trends which are indicated in this study will continue when larger groups are studied and also to ascertain whether other differences may be noted between groups.

Only recent ratings should be used, since the quality of health department personnel is never static: it either improves or deteriorates.

Summary

1. Comparison is made of certain characteristics of health departments attaining high milk

sanitation ratings with the same characteristics of departments attaining lower ratings. In general, the health departments having high ratings showed more time devoted to sanitation services, higher educational ratings of supervisors, more time spent on field work, and less time spent in preparation for field work than those having lower ratings.

2. The differences noted seem to set a pattern which suggests the need for more extensive study of the over-all milk sanitation rating, described in the sanitation evaluation schedule, as a tool for differentiating between efficient, well-staffed health departments and less efficient ones.

3. The development of additional standards in other fields of sanitation is urged in order that the effectiveness of sanitation programs may be measured.

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REFERENCES

- (1) Elder, Francis B.: Engineering section project. *In American Public Health Association Year Book, 1949-50.* Am. J. Pub. Health 40: 101-103 (Part II, May 1950).
- (2) A statement of the objectives of the engineering section project. *In Association news.* Am. J. Pub. Health 41: 241 (1951).
- (3) The ESP reports. *In Association news.* Am. J. Pub. Health 41: 1027 (1951).
- (4) Studies in sanitation administration—Engineering section project. *In Association news.* Am. J. Pub. Health 42: 328 (1952).
- (5) American Public Health Association, Committee on Administrative Practice: Sanitation evaluation schedule. New York City, 1948.
- (6) U. S. Public Health Service: Milk ordinance and code: 1936. Public Health Bulletin No. 220. Washington, D. C., U. S. Government Printing Office, 1939. (Amended, 1941 and 1942.)
- (7) U. S. Public Health Service: Ordinance and code regulating eating and drinking establishments, 1943. Public Health Service Publication No. 37, Washington, D. C., U. S. Government Printing Office, 1950.
- (8) Scheele, Leonard A., and Hanson, Harry G.: National program for interstate milk shipments. Pub. Health Rep. 67: 260-267 (1950).