

# Evaluation of Sanitation Programs in a City-County Health Department

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Objective evaluation of the environmental sanitation programs conducted by State and local health departments serves many purposes. It can provide the basis for integrating, adjusting, and balancing the programs. It can be used to demonstrate the need for obtaining and retaining competent personnel. It aids the administrator of the programs in determining whether available personnel are being utilized to do the work considered most important. It can provide facts for supporting program recommendations and policy determinations.

To be of value, evaluation studies should consider workload, work done, quality of the work, and its effectiveness. The data assembled must, of course, be reliable, and they must be interpreted in the light of thoroughness and competence of the inspections.

Continual evaluation of environmental sanitation programs has been carried on in the Erie County (N. Y.) Health Department for the past 4 years. It has proved to be effective in showing which programs need more inspection time, which are receiving too much inspection time, and which are not producing results.

## Uniformity of Inspection

It must be recognized that inspections can be made with varying degrees of completeness, depending upon such factors as amount and kind

of supervision, training and experience of personnel, policies and customs of the health department, and inspection procedures. Inspection work and accomplishments can be summarized and the various environmental sanitation programs compared, however, only if all inspections are conducted with the same degree of thoroughness. Therefore, a basic requirement for evaluation studies is the establishment of uniform quality inspection based upon accepted public health principles. This necessitates the development and proper use of satisfactory compliance guides, including inspection forms or checklists, for each activity inspected and the provision of continuing in-service training for inspectors and supervisors.

The inspection-compliance forms prepared by the Michigan Department of Health in cooperation with the Kellogg Foundation; the "Recommended Guide for Satisfactory Operation of Camps" developed by the Poughkeepsie district office of the New York State Department of Health, the Public Health Service's recommended "Ordinance and Code Regulating Eating and Drinking Establishments" and its recommended "Milk Ordinance and Code," and "A Proposed Housing Ordinance," prepared by the American Public Health Association Committee on the Hygiene of Housing incorporate useful compliance guides. Manuals and guides, of course, are not a substitute for intelligent and mature judgment, but they are indispensable administrative aids which, with constant supervision, will help maintain uniform quality enforcement of a sanitary code.

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**Figure 1. Sample tabulations from the statistical summary form used for recording inspection data in the Erie County Health Department.**

Activity	Fourth quarter	Total, 1952
1. Multiple dwellings—3 or more families:		
a. Number of places on record . . . . .	7,083	7,083
b. Number inspected of total on record—original for year . . . . .	319	3,180
c. Number of inspections made . . . . .	2,284	9,391
d. Number of places with deficiencies . . . . .	316	1,653
e. Number of places eliminating all deficiencies . . . . .	350	1,079
2. Camps—recreational, trailer, tourist:		
a. Number of places on record . . . . .	129	129
b. Number inspected of total on record—original for year . . . . .	10	129
c. Number of inspections made . . . . .	93	715
d. Number of places with deficiencies . . . . .	19	106
e. Number of places eliminating all deficiencies . . . . .	2	83
f. Number of permits issued . . . . .	9	98

**Workload and Work Done**

In analyzing the work of a department, inspection data should be organized so that the status of every activity under supervision is readily given. For this purpose, the Erie County Health Department developed a special statistical summary form. At first completed monthly, this form is now completed quarterly. It shows not only the work accomplished during the reporting period but also a cumulative total for the year.

Two examples of the tabulations on the statistical summary form are shown in figure 1. Breakdowns similar to these may be used for all activities under routine supervision—rooming houses and hotels, nursing homes, public places, schools, swimming pools, pasteurizing plants, dairy farms, slaughter houses, restaurants, public water supplies, and so forth. A modification of these breakdowns is needed for special program activities, such as rodent control, nuisance inspections, stream pollution studies, private water supply and sewage disposal inspections, legal actions, and plan reviews.

The sum of the “Number of places on record” (fig. 1, a) for each activity is the workload of the bureau in connection with places for which it has routine responsibility. The total workload is determined by adding to this figure

the number of special program services provided.

The “Number inspected of total on record—original for year” (fig. 1, b) indicates what part of the work has been done and what part remains to be done if each place is to receive an annual inspection. This information is very valuable in planning future work. For example, the multiple dwelling tabulation shows that less than half the structures on record were inspected by the end of the year. If all structures are to be visited annually, more emphasis will have to be placed on the inspection of this activity.

The “Number of inspections made” (fig. 1, c) tells where inspection time is being spent and the average number of inspections each place has received. This information may indicate a need for redirecting inspection time or for greater field supervision. It must of course be considered in relation to the results produced. In the camp tabulation for example, all places were inspected during the year about 5½ times. This figure might be considered high, but the high percentage of places eliminating deficiencies tends to confirm that the time was well spent.

A need for redirecting inspection time, however, was found at the end of 1949 when the rec-

ord of the number of inspections made in each activity revealed that 75 percent of the general sanitation time in Buffalo was being spent investigating complaints, work which is not usually productive of lasting improvements. Inspection of multiple dwellings on a planned program basis was not possible under these circumstances. By deliberate redirection of inspection time toward multiple dwellings, it was possible over a 3-year period to inspect every multiple dwelling on a planned followup basis for the first time in the history of the city. In 1952, only about 45 percent of the housing inspector's time was spent investigating complaints, and this percentage may be reduced further when a modern minimum standards housing code recommended by the health department is adopted.

The "Number of places with deficiencies" (fig. 1, d) and the "Number of places eliminating all deficiencies" (fig. 1, e) show the progress being made and the condition of the places under supervision. If a place removes all deficiencies and on subsequent inspection is found to have slipped back, it would again be listed as a place with deficiencies. When progress is unsatisfactory, additional inspection, supervision, or review of the program may be indicated. The key may be a lack of direct supervision, poor quality of supervision, departmental policy, lack of promotional opportunities, or poor morale. Interpretation or definition of deficiencies, of course, may vary with the individual, unless adequate inservice training is given and satisfactory compliance guides are developed and used.

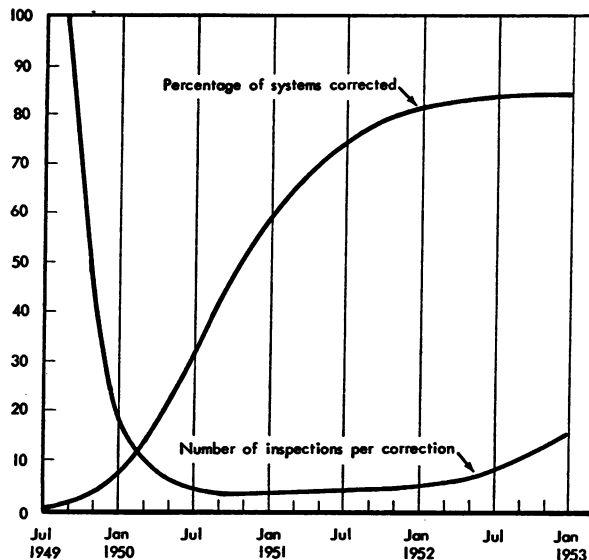
When places with deficiencies removed are compared with the number of inspections, an indication is obtained of the number of inspections per place corrected. The point of diminishing returns can thus be seen (fig. 2).

The "Number of permits issued" (fig. 1, f) shows those places under supervision which on inspection were found in compliance with the existing regulations, assuming that annual permits are issued only after report of satisfactory compliance is received.

#### Frequency of Inspection

The amount of time spent in making original inspections can be expected to vary widely from

**Figure 2. Percentage of individual systems corrected and number of inspections per correction in a community sewerage survey, Erie County, N. Y., 1949-53.**



the "average," dependent upon the size of the establishment, problems, missionary work done, and so forth. An original inspection requires a complete inspection report and letter confirming recommendations.

Reinspection calls for reviewing previous correspondence and corrections made, completing an inspection checklist summarizing some 25 to 50 specific items, answering identification questions, listing specific deficiencies, noting steps taken in the field to correct the deficiencies, and writing practical recommendations for correcting specific deficiencies. Major deficiencies and recommendations for corrections are confirmed in writing to the responsible person by administrative personnel. With experience and proper training the inspector can do much of the paper work, with resultant increased efficiency and accuracy of reporting.

The conditions found at the time of the last inspection should determine the time and frequency of reinspection. For some activities, an average of 3 inspections per year is needed to maintain a satisfactory operating level of sanitation. Other activities, such as rooming houses, may require only 2 inspections per year after the third or fourth year of continuous supervision, whereas private sewage

disposal systems may require 6 or 8 inspections per correction or per installation.

### Inspection Supervision

Review of inspection reports by trained, experienced, and competent sanitary engineers or sanitarians directly responsible for specific activities will aid in evaluating the field work from day to day. Incomplete reports, a high percentage of "no violations," sketchy explanation of the deficiencies observed, and no recommendations, or vague and nonspecific ones, readily become apparent. An unusually large or small number of inspections made in a day may indicate whether or not an inspector is trying to do a good job.

The ratio of supervising engineers or sanitarians to inspectors will depend upon such factors as the difficulty of the work, its newness, and the degree of progress already made in obtaining satisfactory compliance. In a going housing or restaurant program, the ratio may be 1 supervisor to 6 or 8 inspectors; in a farm labor camp or recreation camp inspection program, it may be 1 to 4; a special housing appraisal or stream pollution survey may require a ratio of 1 to 2. Since environmental sanitation activities are of a wide range of difficulty, broad generalizations are usually incorrect.

### Production

Information useful in the planning and management of an operating program may be obtained from the inspection data assembled on the statistical summary form, as follows:

$$\text{Average number of inspections per man-day} = \frac{\text{Number of inspections}}{\text{Number of man-days}}$$

$$\text{Average number of hours per inspection} = \frac{\text{Number of productive hours per day}}{\text{Number of inspections per man-day}}$$

The number of inspections is given on the statistical summary form. The number of man-days can be determined from payroll and attendance records; and the number of productive hours per day, by subtracting hours spent in office routine from the total working hours.

An example will illustrate the procedures for these determinations. During 1952, approxi-

mately 25,000 inspections were made in the cities of Buffalo and Lackawanna and 10,000 in the remainder of suburban and rural Erie County, not including inspections of public water supplies, sewage treatment plants, food, and food-selling places. There were 5,067 man-days on duty in the cities and 2,777 in the remainder of the county. The net average annual work year was 241 days. Analysis of a typical day showed the following "nonproductive" work: 1 hour in writing reports, discussing special problems, making appointments, receiving inservice training, and so forth; 1/2 hour in getting to the first assignment, and 1/2 hour in maintaining good public relations; therefore, of a 7-hour workday (exclusive of the lunch hour), 5 hours were spent in "productive" work. Thus:

$$\text{Average number of inspections per man-day (cities)} = \frac{25,000}{5,067} = 4.9$$

$$\text{Average number of inspections per man-day (county)} = \frac{10,000}{2,777} = 3.6$$

$$\text{Average number of hours per inspection (cities)} = \frac{5}{4.9} = 1.02$$

$$\text{Average number of hours per inspection (county)} = \frac{5}{3.6} = 1.39$$

These figures, which may be determined for a total program or for one activity, have many uses. Annual comparison of this information on an overall and activity basis will indicate trends and may show where special attention is needed. The figures also can be used to determine the approximate number of personnel needed to carry out existing inspection responsibilities or new program activities; an adjustment must be made, of course, if the activity is of more or less than "average" difficulty. For example, an analysis of a general sanitation bureau showed that it had an annual workload of 17,685 places, and that 11,271 of them were inspected during the year a total of 35,145 times. Each place was therefore inspected an average of 3.1 times. The places not inspected (17,685 - 11,271) amounted to 6,414. If an average of 3.1 inspections is required for reasonable control, 19,883 (6,414 × 3.1) additional inspections would be needed. Since this work is in the city of Buffalo, where experience has shown that 4.9 inspections can be made per man-day, 4,058 additional man-days

(19,883 ÷ 4.9) or 17 men (4,058 ÷ 241) would be needed, in addition to supplementary supervisory staff. Of the 6,414 places not inspected, however, 2,164, or one-third, represent barber and beauty shops, the inspection of which is being deemphasized. Hence the number of men needed might be reduced by one-third.

### Efficiency

The inspection data may also be used in evaluating the efficiency of the sanitation bureau or of a particular program. It is first necessary to have determined by an impartial expert the amount of time that should be required to make each type of inspection. Multiplying the number of inspections actually made by the time required for each type will give the total time that should have been spent to do the work reported. The ratio of the time required to the time actually spent will give the percentage efficiency. It is not inconceivable that an efficiency of 200 or 300 percent may be found where quantity rather than quality has been emphasized.

The following calculations illustrate the procedure for determining the percentage efficiency.

The amounts of time required to make inspections in three activities, adjusted to allow for travel time, were determined separately by an impartial expert, and the total number of hours theoretically required to make the inspections reported in these activities was calculated as shown in the table. The actual time spent in making 25,000 inspections in Buffalo during 1952 was 5,067 man-days, as previously determined. Thus, the actual time spent in making the 19,640 inspections in these three activities, which represented 93 percent of the total, was 4,720 man-days. Since the number of productive hours per day was 5, the total number of hours spent in the field was 23,600 (4,720 × 5). The efficiency of the inspection work in Buffalo in 1952 was therefore 83 percent (19,640 ÷ 23,600).

In 1951, the efficiency of the inspection work in Buffalo was 76 percent; in 1950, approximately 87 percent; and in 1949, approximately 140 to 200 percent. During 1949, the first year

### Theoretical time required to make inspections reported in 3 activities, Buffalo, 1952

Activity	Number of inspections made	Time required per inspection <sup>1</sup>		Total time required (hours)
		Minutes	Hours	
Rooming houses:				
Original inspection..	1, 359	65	1. 08	1, 470
Reinspection .....	1, 644	50	. 83	1, 365
Multiple dwellings:				
Original inspection..	3, 180	65	1. 08	3, 440
Reinspection .....	6, 122	50	. 83	5, 090
Complaint investigation.....	11, 021	45	. 75	8, 275
Total.....	23, 326	-----	-----	19, 640

<sup>1</sup> Determined by an impartial expert.

of actual operation of the city-county health department, inspections were not based upon any uniform inspection report form or checklist. During 1950 and 1951, reorganization, inservice-training, full-time operation of the Public Health Service-New York State-Erie County sanitary inspectors training school and the development of uniform inspectional procedures received first priority. These efficiency figures show the changing emphasis from quantity to quality inspection. Such figures must, of course, be interpreted with caution, as figures in themselves may be valueless.

### Summary

The development of satisfactory compliance guides and inspection report forms and the provision of inservice training and adequate, competent program supervision are essential for inspection data to be significant. Environmental sanitation programs and activities in different health departments can be compared only if the quality of the work, accomplishments, and supervision are on the same level. Analyses mentioned here are subject to different interpretations dependent upon local conditions. The evaluations are valuable administrative guides which, when properly used, will serve the administrator well.