UNITED STATES DEPARTMENT OF LABOR
BULLETIN OF THE WOMEN'S BUREAU, No. 87

SANITARY DRINKING FACILITIES

WITH SPECIAL REFERENCE TO DRINKING FOUNTAINS

[PUBLIC—No. 259—66TH CONGRESS]

[H. R. 13229]

An Act To establish in the Department of Labor a bureau to be known as the Women's Bureau

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be established in the Department of Labor a bureau to be known as the Women's Bureau.

SEC. 2. That the said bureau shall be in charge of a director, a woman, to be appointed by the President, by and with the advice and consent of the Senate, who shall receive an annual compensation of $5,000. It shall be the duty of said bureau to formulate standards and policies which shall promote the welfare of wage-earning women, improve their working conditions, increase their efficiency, and advance their opportunities for profitable employment. The said bureau shall have authority to investigate and report to the said department upon all matters pertaining to the welfare of women in industry. The director of said bureau may from time to time publish the results of these investigations in such a manner and to such extent as the Secretary of Labor may prescribe.

SEC. 3. That there shall be in said bureau an assistant director, to be appointed by the Secretary of Labor, who shall receive an annual compensation of $3,500 and shall perform such duties as shall be prescribed by the director and approved by the Secretary of Labor.

SEC. 4. That there is hereby authorized to be employed by said bureau a chief clerk and such special agents, assistants, clerks, and other employees at such rates of compensation and in such numbers as Congress may from time to time provide by appropriations.

SEC. 5. That the Secretary of Labor is hereby directed to furnish sufficient quarters, office furniture, and equipment for the work of this bureau.

SEC. 6. That this act shall take effect and be in force from and after its passage.

Approved, June 5, 1920.

UNITED STATES DEPARTMENT OF LABOR
W. N. DOAK, SECRETARY
WOMEN'S BUREAU
MARY ANDERSON, Director

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BY

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LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
WOMEN'S BUREAU,
Washington, March 23, 1931.

SIR: I have the honor to submit the report of this bureau's study of drinking facilities. The promulgation of standards for equipment to protect the health of employees is an important phase of the work of the Women's Bureau. This report develops and amplifies the bureau's recommendation, unchanged since 1918, that "Drinking water should be cool and accessible, with individual drinking cups or sanitary bubble fountain provided."

A presentation of the extent of legislation in the various States on the subject of drinking facilities constitutes a valuable part of the study from the point of view of securing uniform regulations of working conditions.

Every effort should be made to extend the use of sanitary facilities for the serving of drinking water. Employers aware of the savings to be effected by a standardization of equipment will appreciate the value of such standardization in the important matter of sanitary drinking fountains.

The bureau appreciates the courtesy and promptness with which information has been furnished by State departments of labor and of health. Grateful acknowledgment is made also of the assistance given by the persons following, who were consulted in the preparation of this report: Mr. Sheppard T. Powell, of the American Water Works Association; Messrs. Abel Wolman, C. A. Holmquist, Joel I. Connolly, and other members of the American Public Health Association; Dr. A. J. Chesley, secretary-treasurer, Mr. H. A. Whittaker, and other members of the Conference of State and Provincial Health Authorities of North America; Dr. L. R. Thompson, Assistant Surgeon General, and other officers of the United States Public Health Service.

The report was prepared by Marie Correll, of the division of research.

Respectfully submitted.

MARY ANDERSON, *Director.*

Hon. W. N. DOAK,
Secretary of Labor.

RECOMMENDATIONS FOR DRINKING-WATER SERVICE

Source of water.—Should be absolutely pure. Consult local health department. Water not suitable for drinking should be so marked. Should not be in containers except where local supply is impure and bottled water is used.

Sanitary service.—Either A or B, as follows:

A. Bubbling fountains meeting these standards:[1]

1. Fountain shall be of impervious material, as vitreous china, porcelain, enameled cast iron, other metals, or stoneware.

2. Jet shall issue from nozzle of nonoxidizing, impervious material set at an angle from the vertical. Nozzle and every opening in pipe or conductor leading to nozzle shall be above edge of bowl, so that nozzle or opening will not be flooded if drain from bowl becomes clogged.

Note.—It is understood that the angle be such that the water can neither fall back nor be forced back onto the point of discharge. The Women's Bureau desires to make this very emphatic.

3. Nozzle shall be protected by nonoxidizing guards to prevent mouth or nose of drinker from coming in contact with nozzle.

4. Jet of water shall not touch guard.

5. Bowl of fountain shall be free from corners difficult to clean or collecting dirt.

6. Bowl shall be so proportioned as to prevent unnecessary splashing.

7. Drain from fountain shall not have direct physical connection to waste pipe unless trapped.

8. Water-supply pipe shall have adjustable valve fitted with loose key or automatic valve permitting regulation of rate of flow of water to fountain so that valve manipulated by drinker will merely turn water on and off.

9. Height at drinking level shall be convenient to most persons using fountain. Step-like elevations may be provided for children.

10. Waste opening and pipe shall be large enough to carry off water promptly. Opening shall have strainer.

NOTE.—Under date of Feb. 26, 1931, the United States Treasury Department, in which is the Office of the Supervising Architect, states that specifications for drinking fountains to be installed by that department in Federal buildings will be in accordance with these standards.

B. Individual paper cups furnished free by employer.

Proper use.—Hands, mouth, or face should not touch any part of faucet, bubbler head, or guards of fountains. Individual paper cups should be protected from dirt, supply should be adequate, and means of disposal provided.

Location.—Should be convenient, well lighted, clean.

Temperature.—Water should be cool but not iced. If ice is used for cooling, it should not come in direct contact with the water.

Maintenance.—Facilities should have frequent cleaning and disinfecting; also repair and adjustment as necessary.

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[1] Summarized from Essential Features in the Design of Sanitary Drinking Fountains, final report of the joint committee on plumbing of the public health engineering section of the American Public Health Association and the Conference of State Sanitary Engineers, October, 1930. U. S. Public Health Service, Public Health Reports, vol. 46, No. 4, Jan. 23, 1931, pp. 170–171. For verbatim standards and for other authorities see pp. 7 to 9 of the present study.

SANITARY DRINKING FACILITIES

WITH SPECIAL REFERENCE TO DRINKING FOUNTAINS

INTRODUCTION

Some arrangement for supplying drinking water must be made in every place of employment. A fundamental requirement for such water is that it be free from harmful bacteria—it must be suitable for drinking. In addition it must be served in a sanitary way to prevent its contamination.

This report is not concerned with the question of the quality of drinking water, since purity may be assured by using water that has been tested and approved by health authorities. Instead, the present study discusses the methods by which drinking water is served.

Comparatively few persons are aware of the dangers of contamination that exist in the serving of water by the ordinary drinking fountain. Employers who would not offer their employees a common drinking cup will supply a vertical-jet fountain without realizing that they are providing a drinking facility with the same dangers as a common cup. Until recently any person who, recognizing this danger, has tried to buy a sanitary fountain has faced the problem of making a selection from the many types manufactured without satisfactory information about features essential for sanitation. The Women's Bureau has met this situation and the resulting problems in its investigations of establishments and its interviews with employers. The bureau, therefore, has two purposes in the publication of this bulletin: First, to help employers to select fountains of sanitary design by making available to them the best standards that have been formulated, and second, to call attention to the dangers to health that exist in insanitary drinking facilities.

SUMMARY AND CONCLUSION

Tests of the sanitation of drinking fountains show that all types of vertical-jet fountains are easily contaminated and retain disease germs for some time and that many angle-jet fountains may be contaminated by improper use. The American Public Health Association's standards for the design and construction of drinking fountains list the features that are essential for their sanitation. (See opposite page.) The majority of the State laws and regulations on the matter of drinking facilities do little more than prohibit the use of the common cup.

Most of the fountains in use at present do not meet these requirements. Of about 1,500 places of employment in 21 States inspected

by the Women's Bureau from 1923 to 1929, more than 40 per cent had fountains for all or some of their employees, but less than 15 per cent of those for which the type of fountain was reported had any of the angle-jet type. The common cup was found in about one-fourth of the establishments.

A committee of the American Water Works Association reported after inspecting a large number of fountains installed in 1923 that less than 10 per cent were of the design that prevents infection being transmitted directly from one person to another.

Buyers informed on the subject could change these conditions by refusing to install vertical-jet fountains. In many cases an angle-jet nozzle can be attached to the existing fixture in place of the vertical-jet nozzle with little or no other change.

Because of their importance to health the Women's Bureau recommends that only the most sanitary drinking facilities be used by employers, and it suggests that the standards of the American Public Health Association be required in the fountains installed in places of employment.

IMPORTANCE OF THE TYPE OF DRINKING FACILITY USED

The importance of drinking water in relation to health is emphasized by medical authorities.[1] Water is essential to the proper functioning of the body. But it is recognized also that water may be a carrier of disease.

"The water supply, when polluted at its source, is usually responsible for the spread of such diseases as typhoid, cholera, and dysentery."[2] Water will carry not only disease germs due to impurities in the source of the supply but any others with which it may come in contact before it reaches the drinker's mouth. It may be contaminated at its source, during its storage or distribution, while it is cooled, or by the way in which it is served to the drinker. "* * * syphilis, tuberculosis, diphtheria, tonsillitis, and pneumonia are frequently spread, not by the water but by the depositing upon drinking devices of mouth secretions and sputa of people who are carrying the germs which cause these diseases."[3] Influenza, diphtheria, scarlet fever, measles, whooping cough, cerebrospinal meningitis, poliomyelitis or infantile paralysis, smallpox, chickenpox, mumps, German measles, septic sore throat, and the common cold are other diseases that may be conveyed by secretions from the mouth or nose.[4]

Many of these diseases are respiratory in character, a group that is one of the most important causes of employee illness and absenteeism. At the Edison Electric Illuminating Co. of Boston, during the 10-year period ended December 31, 1924, 54 per cent of the men's and 45 per cent of the women's absences of one day or longer on account of sickness were due to respiratory diseases, which were the

[1] Rosenau, Milton J. Preventive Medicine and Hygiene. D. Appleton & Co., New York and London, 1927, pp. 929–932; and Vedder, Edward B. Medicine: Its Contribution to Civilization. The Williams & Wilkins Co., Baltimore, 1929, pp. 143–144.

[2] King, Frank R., and Stovall, W. D. Water Supplies and Drinking Devices. Domestic Engineering, Dec. 10, 1921, p. 484.

[3] Idem.

[4] U. S. Public Health Service. Dangers of the Common Drinking Cup. Public Health Broadcast No. 266. Mimeographed.

cause of 47 per cent of the time loss of men and 43 per cent of that of women.[5] Similar conditions existed in other plants. An analysis of the reports of a group of industrial sick-benefit associations, of cases of illness causing disability for eight consecutive days or longer among the male members of the associations, showed that—

> respiratory diseases caused 47 per cent of the illnesses. In these reports, which covered the period from 1921 to 1926, inclusive, the number of men included averaged nearly 100,000 annually, or a total of approximately 570,000 years of life under observation during the 6-year period.
>
> Thus, whether we consider all cases of disabling sickness or only those which caused disability for a period longer than one week, we find that respiratory diseases constituted approximately one-half of the cases. From the standpoint of effect upon the absence rate in industry, no other disease group approached in importance the respiratory diseases. Among employees of the Edison Co. diseases of the respiratory system cause more absences from work than all other diseases put together.[6]

Naturally it is not maintained that insanitary drinking-water services are responsible for all the sickness and lost time due to respiratory diseases, but since they contribute to these losses by spreading the bacteria that cause such illnesses, every effort should be made to remove this danger. Only the most sanitary service of drinking water should be offered to employees.

Drinking water can promote health or spread disease. Recognition of this fact has led to the development of many methods for the protection of drinking water. Water purification is one of the important phases of all public-health work. State laws and the work of health officials, engineers, and bacteriologists have developed elaborate and careful methods of controlling the sources of water supplies and of preventing contamination while it is stored, and skillful plumbing to deliver it to the consumer in condition suitable for consumption. But the consumer's drinking habits and many of the facilities available for his use allow the water to be polluted by the act of drinking. The last step, taking a drink of water, which it has been the object of both science and engineering to protect, becomes the method of contamination.

The drinking facilities in most common use at the present time are cups or glasses used by several persons without being sterilized, the so-called common cup; individual containers, often made of paper; and bubbling drinking fountains with either vertical or slanting streams of water.

The common drinking cup, long recognized as a public-health menace, is prohibited by law in many States.[7] Individual cups, if kept in a sanitary condition and supplied in adequate numbers, without charge to employees, probably are a satisfactory method of serving drinking water. There remain the many models of two types of drinking fountains, the vertical-jet type in which the water flows out of an upright jet, and the angle-jet type in which the water issues from a jet set at an angle to the vertical. Bacteriological tests of these fountains have determined that the vertical jet is not sanitary and that many fountains with angle jets can be contaminated.

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[5] U. S. Public Health Service. Importance of Respiratory Diseases as a Cause of Disability Among Industrial Workers. By Dean K. Brundage. Reprint No. 1214, 1928, pp. 1–2. From the Public Health Reports, Mar. 16, 1928, pp. 603–610.

[6] Ibid., p. 1.

[7] See pp. 18 to 20.

To be sanitary, fountains must meet certain requirements in design and construction.

When bubbling fountains were introduced to displace the common cup, little attention was given to their design or sanitation. Until Jane L. Berry, of the research laboratory of the department of health in New York City, in 1914, tested a vertical-jet fountain, it had been assumed that the flow of water flushed away any sputa deposited on the bubbler by one drinker before another person drank from it. Miss Berry found, however, that bacteria placed on the fountain were not removed even by a more thorough flushing than the fountain ordinarily received.[8] This showed the possibility of the spread of disease through contamination of this type of fountain. Miss Berry recommended a fountain with continuous flow regulated at the proper height. Experience and further study have shown that this recommendation was inadequate.

The results of this first investigation were verified by the research of Pettibone, Bogart, and Clark in the laboratory of medical bacteriology at the University of Wisconsin. After two studies, made in 1914 and 1915, of all the bubble fountains at the University of Wisconsin and laboratory experiments with various types of fountains, these conclusions were reached:

1. During an epidemic of streptococcus in a woman's dormitory at the University of Wisconsin, streptococci were found in the bubble fountains in this building and in the water issuing from these fountains.
2. The city water supply was at the time, and has been, excellent in its sanitary character. It is obtained from the underlying Potsdam sandstone. No streptococci were found on a Berkefeld filter through which water had been flowing continuously for one week.
3. Presumably the bubble fountains were a factor in transmitting the disease.
4. A survey of all the fountains of the university showed the presence of streptococci in over 50 per cent of the total number. The streptococci varied in abundance from a few chains to an almost pure culture obtained in swabbings from the fountains in the women's dormitory.
5. In an experimental bubble fountain, B. prodigiosus when introduced either by means of a pipette or by the moistened lips remained in the water from 2 to 135 minutes, depending partly on the height of the "bubble."
6. Most of the organisms are flushed away, but some remain dancing in the column much as a ball dances on the garden fountain even though the bubble be increased to the impractical height of 4 inches.
7. To avoid the difficulty always present in the vertical column, a simple fountain with a tube at an angle of 50° from the vertical was constructed. B. prodigiosus was never found in the plates from this type of fountain even when samples were taken immediately after the introduction of the organisms.
8. We believe that this type of fountain should be generally adopted. Its simplicity, low cost of construction, and freedom from lurking danger should recommend it to all.[9]

Additional evidence of the public-health menace of insanitary drinking fountains was secured by a study at the University of Minnesota, the findings of which were published in 1917. H. A. Whittaker, who made this investigation of 77 fountains of 15 types of vertical jet, reported as follows:

* * * (*a*) That a large proportion of the fountains were infected with streptococci, which it is reasonable to assume came from the mouths of the con-

[8] Berry, Jane L. Bubble Fountain Tests. Collected Studies from the Bureau of Laboratories, city of New York, 1914–15, Vol. VIII, pp. 135–136.
[9] Pettibone, Dorothy F., Bogart, Franklin B., and Clark, Paul F. The Bacteriology of the Bubble Fountain. Journal of Bacteriology, September, 1916, pp. 479–480.

sumers, as these organisms were not found in the water supplying these fountains; (*b*) that streptococci were actually present in the water discharged from the fountains and could be transmitted to the mouth of a consumer, even though the lips were not touched to the infected parts. These facts suggest the possibility of the fountains being a factor in the transmission of certain communicable diseases, and that certain changes should be made in their construction to eliminate this danger.

The principal defect in construction was the vertical discharge of water from the fountain. This made it necessary for the consumer to place the mouth directly over the point of discharge, and the majority of persons drank with the lips touching the discharge nozzle of the fountain. This was especially true where the water jet was low, but even when it was high enough to avoid this practice the average consumer placed the mouth over the jet and then lowered the head until the lips touched the discharge nozzle or adjacent parts of the fountain.

Experiments were conducted with the various types of fountains which were designed with the view of correcting the defects noted in those already in use. It was found that the most practical construction to obviate the principal defect mentioned was to discharge the water from the fountain at such an angle that the consumer could drink without approaching the point of discharge, thus eliminating the possibility of water falling back from the mouth onto parts of the fountain at or near the point of discharge. * * *

It was found necessary in a practical design to entirely protect the point of discharge and to guard the nozzle against the approach of the consumer * * *.

* * * These results indicate that drinking fountains may be a factor in the transmission of communicable diseases, a condition which should be remedied.[10]

In the Health Department of the District of Columbia other tests were made, supplying further proof that vertical-jet fountains were insanitary and finding that the angle-jet type also could be contaminated. These studies, conducted by Dr. Joseph J. Kinyoun and Mr. Louis V. Dieter and covering a period of several years, included—

First. The methods used by drinkers and their bearing on the sanitation of the fountain.

Second. Tests of all types of fountains on the market (over 90 types were studied).

Third. The danger from finger contamination.

It was found that the misuse of the fountains, whether by the fingers or the mouth, caused contamination by the drinkers. Mr. Dieter reports that—

In observations of the methods used by some 1,500 to 2,000 drinkers from practically all types of fountains, we were at once struck by the large proportion of drinkers that not only will not or can not use these devices unless they grasp the nozzle with their lips and suck the water. * * * [Some persons] protrude their lips down beyond the guard which is placed on some of these devices and grasp the nozzle with the lips before drinking. We have seen such drinkers actually extend their lips down for fully 2 inches, after first contorting their necks in the most ludicrous manner in order to grasp the nozzle under the so-called guard of some of the new slanting-stream type fountains. Unfortunately, they accomplish their purpose in a good many instances, and even where they are not successful in their attempt the close proximity of their lips to the nozzle allows the washings and mucus to fall back upon it. Then again the "guards" on most of the new-type fountains consist simply of strips of material attached to the nozzle end of the bowl, about an inch, or possibly two, above the nozzle and either in a direct line above it or slightly back of it. The upward flow of the water as it describes

[10] U. S. Public Health Service. Drinking Fountains: Investigation of Fountains at the University of Minnesota, by H. A. Whittaker. Reprint No. 397, 1917, pp. 5–7. From the Public Health Reports, May 11, 1917, pp. 691–699.

its arc passes very close to the edge of this guard. Actual observations show that at least 40 per cent of the drinkers place their mouths directly on the guard and by thrusting their heads in the direction of the nozzle, not only allow drippings from the mouth to flow over it but seriously contaminate the guard itself with mouth organisms. This guard, not having even the rather doubtful advantage of being flushed with water, serves the next erratic drinker with the contaminating organisms direct and undiluted.[11]

The Kinyoun-Dieter tests showed that all vertical-jet fountains retained bacteria for some time, one type showing positive tests from 25 to 48 hours after the bacteria were introduced. The tests of the angle-jet fountains showed that if they were used properly there was no danger of contamination. However, the observations of the methods actually used by many drinkers proved that the fountains often were misused. These observations and tests showed the danger of contaminating the jet and guards of angle-jet fountains unless they were constructed to prevent the drinker from touching the orifice and its guard. Mr. Dieter concludes that—

To our amazement we discover that instead of being a protection, our supposedly sanitary substitute for the common drinking cup [bubbling fountain] is distinctly a menace to public health fully as great as the cup itself.[12]

The principle of the side-stream fountain is good and forms the nucleus of much experimental work that can be done in the right direction. The fact that the fountains tested did not come up to the required sanitary standard was not because the principle involved defied a basic physical law, as in the case of the vertical-nozzle types, but simply because very little, if any, attention had been given to the most important point; that is, the proper guarding of the nozzle or source of supply.

* * * * * * *

With our present knowledge of the subject, gleaned from actual experience and observations, the choice of a strictly sanitary fountain—and nothing less than this should have even a moment's consideration—should not be a difficult matter, nor does it require any special or technical knowledge. The only requirements necessary are an honest desire to obtain such a fixture, and a careful consideration of the following five points:

1. Is the fountain "foolproof?" That is, will it be absolutely safe to use it at all times, even immediately after the most careless or diseased drinker, and not to depend even to the slightest degree upon the personal element?
2. Is it possible for organisms or other foreign particles to dance on the bubble?
3. Is it possible for washings from the mouth to fall back upon or splash on the nozzle, regardless of the idiosyncrasies of the drinker?
4. Is it possible to touch the nozzle with the mouth or with the fingers?
5. Are the guards so situated that any part of the mucous membrane of the mouth could come in contact with any part of the guard during the process of drinking, and thus convey infection from one erratic drinker to another?

If the fountain in question fails to comply with any of the five indicated essentials, it is not a strictly sanitary fountain and should be rejected. Surely we have had enough experience with the pseudosanitary types to last us for all time, and, now that the interest of health authorities and the public in general has been aroused to the existing conditions and a demand has been made for drastic improvement, we must not feel satisfied until we have adopted something that is beyond reproach or sensible criticism.[13]

These four studies are the only reported bacteriological examinations of drinking fountains. Since no basic criticisms have been made of the methods used or the findings obtained by these studies, they stand as indictments of most bubbling drinking fountains.

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[11] Dieter, Louis V. The Relative Sanitary Values of Different Types of Drinking Fountains. Part II. The American City, December, 1919, p. 549.
[12] Ibid., Pt. I. The American City, November, 1919, p. 452.
[13] Ibid., Pt. II. The American City, December, 1919, p. 554.

STANDARDS OF NATIONAL AGENCIES FOR THE DESIGN OF SANITARY DRINKING FOUNTAINS

The fact that most bubbling drinking fountains offer possibilities of contamination presents the problem of securing standards for the construction of sanitary facilities. Three standards for the sanitary construction of drinking fountains have been established by national agencies. The first was by the American Water Works Association, the second for the railroads, sponsored by the United States Public Health Service, and the third a standard of the American Public Health Association.[14]

Following the presentation of a paper on the sanitary drinking fountain by J. H. Dunlap before a joint meeting of the Illinois and Iowa sections of the American Water Works Association on October 10, 1916,[15] the Iowa section appointed a committee to draw up recommendations for a sanitary type of fountain. The conclusions of this committee, reported by the Iowa section on October 23, 1919, and indorsed by the entire association in 1923, were as follows:

1. All types of drinking fountains with vertical jets are to be condemned.
2. Most types of drinking fountains with slanting jets are to be condemned.
3. To be sanitary, drinking fountains should conform to the following specifications:

(*a*) The jets shall be slanting.

(*b*) The orifices of the jets shall be protected in such a manner that they can not be touched by fingers or lips, or be contaminated by droppings from the mouth, or by splashings from basins beneath the orifices.

(*c*) The guards of the orifices shall be so made that infectious material from the mouth can not be deposited upon them.

(*d*) All fountains shall be so designed that their proper use is self-evident.[16]

In addition to indorsing these standards the association committee recommended that —

All sanitary drinking fountains installed in public places should be of the standard design as set forth herein, or of such a design as to fulfill the sanitary requirements made necessary by the improved type.

Legislative regulations in all States, where these are not now in force, should specify the type of sanitary fountain to be permitted.

Copies of this report should be sent to technical papers, having a circulation among manufacturers of drinking fountains, requesting that the report be published in full.

Stricter supervision by health authorities of the type of drinking fountains installed in new buildings should be brought about.[17]

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[14] The Public Health Service is a bureau in the Treasury Department of the United States. One of the duties of its division of domestic quarantine is to control the water supplies used for drinking and culinary purposes on interstate carriers.

The American Public Health Association, an organization of persons concerned in the administration of public-health measures, sponsors the advancement of sanitary science and the promotion of organizations and measures for the practical application of public and personal hygiene. It is the largest and best known public-health organization in the United States.

The American Water Works Association, whose members are officers of waterworks systems or are engaged in other work relating to water supplies, promotes the advancement of knowledge of the design, construction, operation, and management of waterworks.

[15] Dunlap, J. H. The Sanitary Drinking Fountain. Journal of the American Water Works Association, March, 1917, pp. 65–69.

[16] American Water Works Association Journal, March, 1924, pp. 483–484.

[17] Ibid., pp. 485–486.

These standards and recommendations of the American Water Works Association were the first attempts on a national scale to stop the use of insanitary drinking fountains. Although the standards were reprinted in the association's Manual of Water Works Practice [18] and given some publicity, not much attention was given to the matter by manufacturers nor by fountain buyers.

The second standard for fountain sanitation was that of the Railway Sanitary Code. This code, sponsored by the United States Public Health Service, approved by the Conference of State and Provincial Officers of Health, and recommended to the States for adoption May 25, 1920, and amended June 2, 1921, contained the following recommendation for drinking fountains:

SEC. 61. *Drinking fountains.*—If drinking fountains of the bubbling type are provided in any railway station, they shall be so made that the drinking is from a free jet projected at an angle to the vertical and not from a jet that is projected vertically or that flows through a filled cup or bowl.[19]

New impetus was given to the movement for sanitary fountains by a report of the committee on plumbing to the public health engineering section of the American Public Health Association at the annual meeting in October, 1929, that contained standards for the design of sanitary drinking fountains.[20] The executive council of the Conference of State and Provincial Health Officials indorsed these standards at their meeting in Washington, D. C., in June, 1930, and several State boards of health began to recommend that fountains meet these standards. Finally, at the meeting of the American Public Health Association in Fort Worth, Tex., in October, 1930, the progress report was modified slightly and adopted as a final report. The essential features in the design of sanitary drinking fountains are given in this report as follows:

1. The fountain shall be constructed of impervious material, such as vitreous china, porcelain, enameled cast iron, other metals, or stoneware.
2. The jet of the fountain shall issue from a nozzle of nonoxidizing, impervious material set at an angle from the vertical. The nozzle and every other opening in the water pipe or conductor leading to the nozzle shall be above the edge of the bowl, so that such nozzle or opening will not be flooded in case a drain from the bowl of the fountain becomes clogged.
3. The end of the nozzle shall be protected by nonoxidizing guards to prevent persons using the fountain from coming into contact with the nozzle.
4. The inclined jet of water issuing from the nozzle shall not touch the guard, thereby causing splattering.
5. The bowl of the fountain shall be so designed and proportioned as to be free from corners which will be difficult to clean or which will collect dirt.
6. The bowl shall be so proportioned as to prevent unnecessary splashing at a point where the jet falls into the bowl.
7. The drain from the fountain shall not have a direct physical connection to a waste pipe unless the drain is trapped.
8. The water-supply pipe shall be provided with an adjustable valve fitted with a loose key or an automatic valve permitting the regulation of the rate of flow of water to the fountain so that the valve manipulated by the users of the fountain will merely turn the water on or off.

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[18] Water Works Practice. Manual issued by the American Water Works Association, the Williams & Wilkins Co., Baltimore, 1925, p. 714.
[19] U. S. Public Health Service. Standard Railway Sanitary Code. Supplement No. 46 to the Public Health Reports, May, 1924, p. 9.
[20] American Public Health Association. Report of Committee on Plumbing: Essential Features in the Design of Sanitary Drinking Fountains. American Journal of Public Health and the Nation's Health, November, 1929, pp. 1224–1225.

9. The height of the fountain at the drinking level shall be such as to be most convenient to persons utilizing the fountain. The provision of several steplike elevations to the floor at the fountain will permit children of various ages utilizing the fountain.

10. The waste opening and pipe shall be of sufficient size to carry off the water promptly. The opening shall be provided with a strainer.[21]

The Women's Bureau recognizes that industrial establishments often have difficulty with their drinking-water systems and that many problems peculiar to individual plants affect the water and the facilities used; nevertheless, certain fundamental conditions for health should be guaranteed in all places of employment.

The bureau's recommendations (see p. vi of this report), in addition to recommending that drinking fountains be constructed according to the requirements of the American Public Health Association, include the following suggestions:

1. The source of water should be absolutely pure. If there is a question, consult local health department. Water not suitable for drinking should be so marked.

2. It is understood that the angle be such that the water can neither fall back nor be forced back onto the point of discharge. The Women's Bureau desires to make this very emphatic. If there is any doubt as to whether certain fountains meet all the requirements, the advice of the State department of labor or board of health should be secured.

3. People should be instructed to use a fountain properly. Hands, mouth, or face should not touch any part of the faucet, bubbler head, or guard.

4. Individual paper cups furnished free by the employer may be a sanitary and satisfactory method of serving drinking water. They should be protected from dirt, the supply should be adequate, and means of disposal should be provided. The Women's Bureau considers it important that the cups be furnished by the firm, because when each employee is supposed to supply his own, it too frequently happens that common use is made of some improvised receptacle by the workers in the plant.

5. Drinking water should be located in convenient, well lighted, and clean places.

6. Drinking water should be cool but not iced. If ice is used for cooling, it should not come in direct contact with the water.

7. All drinking facilities should be cleaned and disinfected frequently and repaired and adjusted as often as is necessary.

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[21] Essential Features in the Design of Sanitary Drinking Fountains. Final report of the joint committee on plumbing of the public health engineering section of the American Public Health Association and the Conference of State Sanitary Engineers, October, 1930. U. S. Public Health Service, Public Health Reports, vol. 46, No. 4, Jan. 23, 1931, pp. 170–171. Printed by permission of the American Public Health Association.

STATE LAWS, RULES, AND REGULATIONS PERTAINING TO DRINKING FACILITIES IN PLACES OF EMPLOYMENT

Since most people are uninformed of the risks involved in drinking from public fountains, or if so informed are more or less indifferent and will drink from whatever facility is available, it follows that only sanitary equipment should be provided for public use. Sanitary facilities will not be provided universally until required by law.

In most States the laws, rules, and practices for the regulation of drinking facilities in places of employment do not demand that they meet the best standards of bacteriologists and sanitary engineers. The regulation most frequently found is the prohibition of the common drinking cup. Following the action of Kansas in 1909,[22] 45 States and the District of Columbia have adopted some general prohibition of the common cup. Georgia, Nevada, and Tennessee, the three States that have no general prohibition of the common cup, have adopted the railway sanitary code prohibiting its use in stations and on railway trains.

In a number of States manufacturing and mercantile establishments are not covered in the prohibition of the common cup. From Chart I (see p. 18), which shows by State the places covered, the type of regulation, and the enforcing agency, it is apparent that besides the three States of Georgia, Nevada, and Tennessee, that have no prohibition of the common cup, Idaho, Indiana, Maryland, New Jersey, and Utah do not prohibit its use in manufacturing and mercantile establishments, although the recommendation of the Department of Labor of New Jersey that the common cup be abolished may be partially effective in that State. Furthermore, some States have prohibitory regulations that apply only to certain parts of these places of employment. Alabama, Delaware, New Mexico, North Carolina, and Wyoming limit the prohibition to places where females or minors are employed, or to that part of the establishment that is open to the public. Illinois and South Carolina have no prohibition applying to mercantile establishments. Connecticut's only cognizance of manufacturing plants is a recommendation of the department of labor. The only manufacturing plants covered by the Montana regulation are canneries and food establishments. There are, then, 17 States that do not prohibit the common drinking cup in all parts of all manufacturing and mercantile establishments.

Where the use of the common cup is prohibited, individual cups or drinking fountains must be provided. A few States, realizing that other drinking facilities than the common cup may spread disease, have described the type of facility to be used in its place. A number of States specify that the facility used must be "sanitary" or mention certain requirements about its condition or cleaning. Others

[22] U. S. Public Health Service. Common Drinking Cups and Roller Towels. By J. W. Kerry and A. A. Moll. Public Health Bulletin No. 57, 1912, p. 8.

have some law, rule, or recommendation about the type of drinking fountain to be used. These provisions, which are especially significant for this report, are given in Chart II. (See p. 22.) Of the 10 States and the District of Columbia that have some law or regulation with the force of law regarding drinking fountains, 8—Alabama, California, Delaware, Kansas, Missouri, Montana, Ohio, and Wisconsin—specify that the fountain must be "sanitary." California requires, in addition, that the orifice from which the jet of water issues be protected from contact with the drinker's lips and from being submerged in waste water, and that the jet of water be at least 2 inches high. New Hampshire's only requirement is a type of bubbler that will not permit a drinker's mouth to touch the orifice.

Unless supplemented by standards for their construction, the statement that drinking fountains must be "sanitary" does not prohibit the installation and use of insanitary facilities. Louisiana, where a board of health recommendation of angle-jet fountains has the force of law, is the only State that requires angle-jet fountains. In the District of Columbia that type has for some time been required in new installations in buildings under the supervision of the District government. (This does not, of course, cover buildings of the Federal Government in the District of Columbia.)

Since only one State and the District of Columbia require individual cups or angle-jet fountains, most State laws pertaining to drinking facilities do not prohibit insanitary methods of serving drinking water. The recommendations of departments of labor and boards of health, however, show that in 17 States in addition to Louisiana and the District of Columbia the angle-jet fountain is recognized as more sanitary than the type with a vertical jet. Boards of health in Connecticut, Illinois, Iowa, and Missouri at the date of this inquiry—April, 1930—were recommending the most complete standards then available for drinking fountains, those presented to the public-health engineering section of the American Public Health Association in October, 1929. (See p. 8.)

The Minnesota recommendation (see Chart II) is supplemented by the following detailed resolution, adopted by the State board of health, on January 15, 1929:

> Whereas public drinking fountains have largely replaced the common drinking cup, and are provided in a great many places accessible to the public; and
>
> Whereas investigations have shown that disease-producing bacteria may be transmitted from one person to another through the use of improperly constructed or improperly operated drinking fountains; and
>
> Whereas the observations made by the State board of health have revealed the presence of insanitary types of drinking fountains in many public and semipublic places throughout the State: Therefore be it
>
> *Resolved*, That the attention of the public be drawn to the fact that not all drinking fountains are satisfactory, and that to be sanitary drinking fountains should conform with the following general requirements:
>
> 1. The jet of water emerging from the fountain should be slanting, so that discharged water does not fall back onto the orifice;
>
> 2. The orifice from which the water emerges should be protected in such a manner that it can not be touched by the lips or be contaminated by droppings from the mouth or splashings from the base beneath the orifice; and

3. An adequate supply of pure water under sufficient pressure, properly controlled, should be provided in order to insure satisfactory operation of the fountain.[23]

Other State boards of health that recommend angle-jet fountains are those of Arkansas, Georgia, Idaho, Maine, Nebraska, North Carolina, Tennessee, and Texas. Wisconsin is the only State whose board of health has a recommendation approving both vertical-jet and angle-jet fountains, the board maintaining that sanitation depends largely on the height of the stream.

Although these recommendations of boards of health do not apply specifically to manufacturing and mercantile establishments, and many boards seldom inspect these places, the recommendations may be used to influence any person installing a drinking fountain. The Alabama Child Welfare Department, Kentucky Department of Agriculture, Labor, and Statistics, New Jersey Department of Labor, North Carolina Child Welfare Commission, and the Woman and Child Labor Department of the Wisconsin Industrial Commission are the only State labor authorities that have made recommendations suggesting the use of angle-jet fountains. The Tennessee Department of Labor approves only sanitary fountains with coil coolers, but does not state that fountains must be angle jet.

Most State departments of labor have inspection forces that are visiting places of employment; therefore standards for drinking facilities that such departments are recommending could improve conditions in places of employment. But in 1930, as just described, only five such departments were recommending the installation of angle-jet fountains. In many States the powers of the department of labor are limited, or they are not charged with the duty of requiring sanitary drinking facilities. In any case, the health agencies can set community standards for sanitary facilities.

In addition to the three types of regulation of drinking facilities that have been discussed—the prohibition of the common drinking cup, requirement of "sanitary" facilities, and some description of the type of drinking fountain to be used—a few States have other requirements. In several the supply of water must be sufficient. One State limits the number of employees per fountain. This is Ohio, where one fountain must be supplied for each 100 employees in plants where employees are exposed to lead. Some States mention the location of the drinking facility, requiring it to be convenient, accessible, or not in a toilet room. Some require that the fountain be cleaned. Keeping the floor around the fountain clean and furnishing containers for discarded cups are other regulations. That water be supplied without charge to the employees is a requirement in several States. This study is not concerned with the specifications of the amount and quality of water provided for drinking, its distribution, and its cooling. Some States have special regulations for schools, hotels, food establishments, and new buildings, and some city boards of health and local school boards have taken action to prohibit the use of insanitary fountains, but with the exception of the standards in Minneapolis and in the District of Columbia these laws or rules are not included in this study.

[23] The American City, May 1929, p. 167.

The Minneapolis Board of Education, in February, 1930, after more than two years' investigation, approved the following reasonable requirements for the selection of drinking fountains to be installed in the Minnesota public schools.

REASONABLE REQUIREMENTS CONSIDERED IN THE SELECTION OF DRINKING FOUNTAINS

A. Sanitary requirements of the health authorities.

1. The drinking fountain must have a slant-stream jet having an angle of not less than 15° or more than 30° from the vertical.
2. The projector must be so designed as to make it impossible for the lips of the drinker to touch the projector.
3. The projector must be safely guarded against contamination, either by hands or sputum.
4. The projector must be so designed that the water falling from the mouth of the drinker can not fall back into the orifice and thus contaminate the stream for the next drinker.
5. All water in the projector must drain away from the projector when the fountain is not in use in order that fresh water will not bubble up through stagnant water.
6. The orifice in the projector must be not less than one-eighth inch above the lip of the bowl, so that any stoppage of the drain may not contaminate the orifice.
7. The projector must be absolutely nonsquirting.
8. The fountain shall be fitted with automatic pressure control on the water supply to the fountain which will provide a uniformly high drinkable stream unaffected by change in pressure, either due to low pressure of the water supply to the building or due to the flushing of other fixtures in the building.
9. The design of the drinking fountain shall be such that all surfaces may be easily cleaned, both the bowl and the bubbler head itself.
10. The drinking fountain shall have a free and open construction without any sharp corners which will permit the harboring of germ life.

B. Operation and maintenance requirements of the board of education.

1. The drinking-fountain bowl must be made of vitreous china.
2. The drinking-fountain bowl must have four bolt holes through the back of the fountain for securing it to the wall with through bolts, two of these bolt holes to be at the top of the fountain and two near the bottom of the fountain.
3. The drinking-fountain bowl shall be open and accessible at the bottom to secure ease in installation and provide sufficient room around traps, regulators, and water connections so that standard plumbing tools can be used in the installation or in making necessary repairs after installation.
4. The drinking fountain must be equipped with a self-closing valve having a good substantial stuffing box on the handle and located on the right-hand side of the drinking fountain.
5. This self-closing valve must be operated by a lever handle so that it can be easily operated by the smallest of children.
6. The design of the slant-stream projector with guard should be such as to minimize danger of damage to teeth or lips caused by any child pushing the head of the drinker downward.
7. The design of the projector should be such that there are no exposed adjusting screws or adjusting device in the projector head itself. All adjustments should be made to the regulating valve in the water supply.
8. The slant-stream projector and regulating valve shall be of such design that they can be equally well installed in present bowls in our present school building installations, as well as used on new work.

9. In operation the projector shall be absolutely noiseless. There must be an elimination of all jet and orifice noise which occurs in some fountains and which is transmitted through the water lines and the building in such a way as to disturb classes.[24]

To summarize: Considering the State regulations of drinking facilities in places of employment, it is found that in most States the only regulation is the prohibition of the common drinking cup. Even this basic requirement for the sanitary service of drinking water has not been adopted in all States. Three have no prohibition of the common drinking cup, five others have not prohibited its use in manufacturing and mercantile establishments, and nine more have not completely prohibited it in all manufacturing and mercantile establishments. This makes a total of 17 States with inadequate prohibition of the common cup in places of employment. Only one State and the District of Columbia require that drinking fountains be angle jet in construction, and only 17 States recommend such fountains in preference to the vertical-jet type. Since tests have shown that vertical-jet fountains are as dangerous in spreading disease as is the common cup, it is evident that most States do not prohibit all insanitary methods of serving drinking water to employees.

Under present conditions of enforcement the existence of a law or recommendation does not indicate that unlawful facilities are not used, but laws can set standards that may be accepted. There is no doubt but that real progress has been made in prohibiting the use of the common cup and that other facilities that spread disease may eventually be abolished.

[24] Mimeographed report on Drinking Fountains for Use in the Minneapolis Public Schools. Printed by permission of the Minneapolis Board of Education. Copies may be secured from the Women's Bureau.

TYPES OF DRINKING FACILITIES USED IN PLACES OF EMPLOYMENT

A comparison of the drinking fountains seen on the streets, in public buildings, in offices, factories, and other places of employment with the standards for sanitary fountains is all that is necessary for conviction that the drinking facilities in use are far from the best available, that existing laws should be enforced, and that laws and regulations should establish more rigid requirements.

This observation is verified by studies that have been made of drinking facilities. A committee of the American Water Works Association reported, after inspecting a large number of new drinking-fountain installations during 1923, that—

> Less than 10 per cent of the number of fountains inspected were of the design that prevents infection being transmitted directly from one person to another, and only 5 per cent might pass section 61 of the Railway Code. Not one of these installations could meet the requirements specified by the Iowa section.[25]

The Women's Bureau in all its surveys of conditions of employment has studied the types of drinking facilities offered to employees. Of 1,506 establishments inspected in 21 States the facilities were angle-jet fountains throughout in only 49.

Findings on drinking facilities from Women's Bureau surveys, 1923–1929 [a]

Number of States surveyed	21
Number of establishments	1,506
Number of employees	266,000
Of all establishments—	
Bubbling drinking fountains were used in over 40 per cent.	
(Of the establishments for which the type of fountain was reported, less than 15 per cent had angle-jet fountains.)	
Bubbling drinking fountains were used exclusively in about 33 per cent.	
Angle-jet drinking fountains were used exclusively in less than 4 per cent.	
Individual cups were used in less than 10 per cent.	
The common cup was used in over 25 per cent.	
(It was found in each State.)	
No cups were provided in about 30 per cent.	

More than one-half of the establishments either did not provide drinking cups for their employees or offered them the common cup. The common cup was found in every State and in about one-fourth of the establishments, in spite of the fact that all but two of the States had laws or regulations prohibiting its use. Where no cups were supplied, the facilities for drinking were as insanitary as the use of a common cup. This report of one plant is true of many others: "No cups were provided, and the workers simply put their mouths over the faucet, which was turned up part way." [26] Tomato cans, barrels, kegs, open pails, and molasses jugs were reported as being used for drinking water in some places. Although the 56 per cent of the establishments inspected that had no cups or used common

[a] Many establishments used several types of facilities.

[25] American Water Works Association Journal, March, 1924, p. 485. (See p. 7 of this report.)

[26] U. S. Department of Labor. Women's Bureau. Women in Mississippi Industries. Bul. 55, 1926, p. 41.

cups offered the most insanitary conditions, the facilities were far from sanitary in a large proportion of the other plants.

Over 40 per cent of all the establishments had some bubbling drinking fountains, about 33 per cent using them exclusively, but less than 4 per cent of the total number had angle-jet fountains for all facilities. In other words, of the establishments having the type of fountain reported, less than 15 per cent had any with the angle jet. The other sanitary drinking facility, the individual cup, was used in about 10 per cent of the places inspected—in about 8 per cent it was the only drinking facility.

The percentages of fountains and other facilities naturally give no indication of their sanitary condition. Since the vertical-jet fountain may spread disease, it is significant to find so large a per cent of the establishments with type of fountain reported having those with vertical jet for all or some of their employees. Many plants with angle-jet fountains have them for only some of their employees, and many are careless in the maintenance of the fountains they have.

The statement following shows the conditions found in a large plant surveyed by another agency than the Women's Bureau.

Data in reference to sanitation of drinking facilities in a factory employing more than 2,000 persons

[Furnished by S. T. Powell, consulting engineer, Baltimore, Md.]

Location	Type	Sanitary condition	Number of employees having access to facility
1. Power house ground floor	Vertical jet	Bad	79
2. Power house second floor	do	do	
3. Power house basement	Homemade ⅜ inch pipe turned up vertically.	do	
4. Store house	Homemade ¼ inch vertical pipe	do	90
5. Ground floor, power house	Vertical jet	do	
6. Firing floor, power house	do	do	
7. Shop	do	do	178
8. Shop	do	do	52
9. Shop	do	do	104
10. Shop	do	Fair	39
11. Shop	do	Bad (guard broken off).	(1)
12. Main factory	Homemade 1½ inches pipe cap with ¼ inch hole permitting vertical jet.	do	73
13. Main factory	Homemade vertical pipe (apparently discontinued).	do	(1)
14. Factory	Vertical jet	do	85
15. Factory	do	do	109
16. Factory	Homemade ½ inch brass pipe turned up.	do	(1)
17. Factory	Vertical jet	do	(1)
18. Factory	do	Fair	(1)
19. Factory	do	Bad	(1)
20. Factory	do	Fair	(1)
21. Warehouse	do	Bad	(1)
22. Factory	do	do	(1)
23. Factory	do	do	(1)
24. Office	do	do	(1)
25. Office	Valve on end of pipe, using drinking cup.	Safe, as common drinking cup is banned.	(1)
26. Factory	Spigot, using milk bottle	Insanitary, should be prohibited.	(1)
27. Factory	Homemade vertical pipe (unprotected)	Bad	(1)
28. Factory	do	do	(1)
29. Factory	Homemade ⅜ inch vertical pipe (unprotected).	do	(1)

[1] No record of number of employees having access to facility.

Of the 29 places where employees were securing drinking water, 19 were vertical-jet fountains, while in 10 places spigots, valves, or the ends of pipes were used. Only three of the fountains were in even fair sanitary condition. Similar statements might be made of large numbers of manufacturing establishments. Such practices are clearly recognized as health hazards and are condemned by health authorities and by many employers. The recognition that they still exist should lead to steps to eliminate these dangers to health. That this is possible is shown by the experience of many employers whose drinking-water service is as nearly sanitary as is possible of attainment.

Since it has been known for so many years that the angle jet is a great improvement over the vertical jet, one might expect to find its use becoming more common. As a matter of fact, however, many of the newest fountains and the bubblers used in new cooling systems are vertical-jet. Buyers informed of the sanitary features of bubbling fountains could change this condition by refusing to install vertical-jet fountains and insisting that only the best type of angle jet be used. Many employers are installing new cooling systems for their drinking water. Some of these systems have fountain heads. When investments are being made in new equipment it should be the most sanitary available. In some cases a vertical-jet nozzle can be replaced by one correctly guarded and of the angle-jet type with little or no other change being made in the fixture. Drinking fountains should meet the standards of the American Public Health Association and the Women's Bureau, given on pages 8 and 9 of this report.

CHART I.—*State prohibitions of the common drinking cup in places of employment,*[1] *April, 1930*

[State laws and correspondence with State boards of health and State departments of labor]

State	Common cup prohibited [2]			Type of prohibitory measure [3]	Enforcing agency	Source
	Factories	Stores	Other places			
Alabama	Yes [4]	Yes [4]	Yes	Law	Child welfare department; boards of health.	Code, 1923, Vol. I, ch. 31, sec. 1133, and Vol. II, ch. 99, sec. 3520.
Arizona	Yes	Yes	Yes	do	Boards of health	Session laws, 1917, ch. 55, p. 76.
Arkansas	Yes	Yes	Yes	Regulation, State board of health	Department of labor; boards of health	Rules and regulations, State board of health, No. 283, p. 4.
California	Yes	Yes	Yes	Law; regulation, industrial welfare commission.	Department of industrial relations; boards of health.	Session laws, 1917, ch. 744, sec. 1, p. 1517; industrial welfare commission orders 4 and 13.
Colorado	Yes	Yes	Yes	Law	Boards of health	Laws and regulations, State board of health, 1927, pp. 200–201.
Connecticut	No [5]	Yes	Yes	Regulation, department of health	do	Sanitary code, May 1, 1927, Ch. II, reg. 116, p. 16.
Delaware	Yes [6]	Yes [6]	Yes [6]	Law	Labor commission, women's labor division.	Sanitary law for female employees, Labor Commission of Delaware, secs. 7 and 1, pp. 32, 29.
District of Columbia	Yes	Yes	Yes	Regulation of commissioners	District department of health	Laws and regulations relating to public health in the District of Columbia, in force Oct. 1, 1916, p. 234.
Florida	Yes	Yes	Yes	Regulation, State board of health	Boards of health	Sanitary code, revised to Feb. 8, 1921, rule 33, p. 99.
Georgia	No	No	No			Letters from the department of commerce and labor and the department of health.
Idaho	No	No	Yes	Law; regulations, department of public welfare.	Boards of health and State sanitary inspectors.	Session laws, 1925, ch. 69, sec. 7, p. 101; regulation of the board of health, June 21, 1917. In U. S. Public Health reports, Supplement No. 37, p. 110.
Illinois	Yes	No	Yes	Law	State's attorneys of counties	Session laws, 1911, secs. 1–4, p. 289.
Indiana	No	No	Yes	Regulation, State board of health	Boards of health	Book of instructions to health authorities, Oct. 1, 1925, rule 32, pp. 52–53.
Iowa	Yes	Yes	Yes	Law; regulation, State board of health.	Bureau of labor refers violations to boards of health.	Letters from State department of health quote Rule 1, ch. 5, special rules and regulations of the department; Code of Iowa, 1927, ch. 133, sec. 2827.
Kansas	Yes	Yes	Yes	Regulation, State board of health	Commission of labor and industry; boards of health.	Laws, rules, and regulations relating to public health, bulletin of the Kansas State Board of Health, March, 1928, p. 60; women workers in Kansas, industrial welfare orders of the commission of labor and industry, 1930, pp. 5, 7, 9.
Kentucky	Yes	Yes	Yes	Law	Boards of health; department of labor refers violations to State board of health.	Public health manual, 1928, sec. 1376e, p. 92.
Louisiana	Yes	Yes	Yes	Regulation, State board of health	Boards of health	Sanitary code, 1923, art. 240, p. 88.

Maine	Yes	Yes	Yes	Regulations, public health council	do	Public health council: Regulations relating to common drinking cups and common towels, Oct. 1, 1922; industrial code rules and regulations relating to sanitation of factories and mercantile establishments, Sec. IV, p. 11, Dec. 29, 1925.
Maryland	No	No	Yes	Law; regulation, State board of health.	do	Session laws, 1912, ch. 156; regulation No. 2 of the board of health, as amended Feb. 21, 1924.
Massachusetts	Yes	Yes	Yes	Regulation, department of labor and industries.[7]	Department of labor and industries	Industrial Bulletin No. 19, department of labor and industries, May 1, 1929.
Michigan	Yes	Yes	Yes	Law	Department of labor	Laws relating to public health, revision of 1927, p. 20, sec. 5189; session laws, 1913, act 93, secs. 5189–5190.
Minnesota	Yes	Yes	Yes	do	Industrial commission cooperates with board of health.	General statutes, 1923, ch. 99, secs. 10277–10278.
Mississippi	Yes	Yes	Yes	Regulation, State board of health	Boards of health	Rules and regulations governing sanitation, 1927, State board of health, art. 188, p. 21.
Missouri	Yes	Yes	Yes	do	Labor commission; boards of health	Public health manual, sanitary code, 1929, Book V, sec. 4, p. 9.
Montana	Yes [8]	Yes	Yes	do	Boards of health	Regulation State board of health, Mar. 9, 1920, Part III, Rule III(a), in U. S. Public Health Report Supplement No. 43, p. 226; food and drug laws, rules and regulations, April, 1927, canneries regulation No. 80, pp. 42–43.
Nebraska	Yes	Yes	Yes	Regulation, bureau of health, department of public welfare.	do	Rules and regulations, bureau of health, department of public welfare, Aug. 1, 1928, p. 32.
Nevada	No	No	No			Letters from department of labor and State board of health.
New Hampshire	Yes	Yes	Yes	Standard, bureau of labor; regulation, State board of health.	Bureau of labor; boards of health	Bureau of labor standards, No. 6 (1930); regulation, State board of health, in Health (monthly bulletin), June, 1929.
New Jersey	No [9]	No [9]	Yes	Regulations, State board of health	Boards of health	Regulations of the State board of health, June 27, 1911.
New Mexico	No [10]	No [10]	Yes	Regulation, State board of public health.	Bureau of public health	Regulations of the State board of health, Jan. 28, 1920.
New York	Yes	Yes	Yes	Regulation, department of labor; regulation, public health council.	Department of labor; boards of health.	Sanitary code, public health council, 1929, Ch. VII, reg. 3, pp. 26–27; industrial code bulletin, department of labor, No. 9, pp. 21–22.
North Carolina	Yes [11]	Yes [11]	Yes	Regulation, State board of health; recommendation, State child-welfare commission.	Boards of health; State child-welfare commission.	Laws, rules, and regulations governing the sanitary management of hotels, special bulletin State board of health, May, 1921, p. 11; biennial report, North Carolina State Child Welfare Commission, July 1, 1926, to June 30, 1928, Part II, p. 18.
North Dakota	Yes	Yes	Yes	Law	Boards of health	Compiled laws, 1913, Vol. I, ch. 38, art. 49, secs. 2952–2954.
Ohio	Yes	Yes	Yes	Regulation, public health council	Department of industrial relations	Public health manual, 1925, p. 595, regulation 137 of Ohio sanitary code.
Oklahoma	Yes	Yes	Yes	Regulation, State department of health.	Boards of health	Laws, rules, and regulations governing sanitation, 1929, rule 68, p. 41.
Oregon	Yes	Yes	Yes	Regulation, State board of health	Boards of health; bureau of labor	Oregon laws on public health and rules and regulations of State board of health, 1926, sec. 78, p. 37.
Pennsylvania	Yes	Yes	Yes	Regulation, department of labor and industry.[7]	Department of labor and industry	Regulations for industrial sanitation, department of labor and industry; rule 144, 1928 edition, p. 25.

See footnotes at end of chart.

CHART I.—*State prohibitions of the common drinking cup in places of employment,*[1] *April, 1930*—Continued

State	Common cup prohibited[2]			Type of prohibitory measure[3]	Enforcing agency	Source
	Factories	Stores	Other places			
Rhode Island	Yes	Yes	Yes	Law; regulation, public health commission.	Office of factory inspection; boards of health.	Session laws, 1923, ch. 85, sec. 16; regulation, public health commission.
South Carolina	Yes	No	Yes	Regulation, State board of health	Department of agriculture, commerce, and industries; boards of health.	Bulletin No. 58, labor laws, p. 23, department of agriculture, commerce, and industries.
South Dakota	Yes	Yes	Yes	Laws; regulation, State board of health.	Boards of health	Session laws, 1915, ch. 215, sec. 12, pp. 412–413; public health laws and regulations, 1929, regulation No. 46, p. 158.
Tennessee	No	No	No			Letters from department of labor and State board of health.
Texas	Yes	Yes	Yes	Verbal orders, department of labor (have force of law).	Department of labor	Letter from State bureau of labor statistics.
Utah	No	No	Yes	Regulation, State board of health	Boards of health	State health laws and regulations, 1925, p. 33.
Vermont	Yes	Yes	Yes	do	do	Report, State board of health, 1912–13, p. 58.
Virginia	Yes	Yes	Yes	Law	Department of labor and industry; boards of health.	Labor laws of Virginia, 1929, sec. 4722–a, p. 28.
Washington	Yes	Yes	Yes	Regulation, State board of health	Boards of health	Rules and regulations of the board of health, 1927, sec. 57 (a), p. 41.
West Virginia	Yes	Yes	Yes	Law	do	Barnes's Code, Annotated, 1923, ch. 150, sec. 20h.
Wisconsin	Yes	Yes	Yes	Law; order, industrial commission	Industrial commission; boards of health.	General orders on sanitation of the industrial commission, reprint, 1927. Order 2217, p. 38; Wisconsin Statutes, 1923 (containing all general statutes in force at the close of the general session of 1923), Vol. I, sec. 146.07.
Wyoming	No [10]	No [10]	Yes	Regulation, State board of health	Boards of health	Revised rules and regulations governing the reporting and control of communicable diseases. July, 1927, pp. 72–73.

[1] Some States have additional prohibition; e. g., the railway sanitary code.
[2] Factories and stores vary by State definition, usually including all manufacturing, mechanical, and mercantile establishments; "other places" includes so-called "public places," hotels, restaurants, soda fountains, parks, schools, etc.
[3] Most of the regulations included have the force of law.
[4] Where minors are employed, the common cup is prohibited if 20 or more persons are employed.
[5] Department of labor recommends that common cup be abolished in factories.
[6] Common cup prohibited where women are employed.
[7] Department of health also has regulations prohibiting common cup in places of employment.
[8] In canneries and food establishments only.
[9] Department of labor recommends the abolition of common cup in all places of employment. Sanitary and engineering industrial standards, 1927, p. 8.
[10] Common cup prohibited in part open to public.
[11] Where women or minors are employed.

CHART II.—*State laws, regulations, and recommendations pertaining to drinking fountains in places of employment, April, 1930*

[State laws and correspondence with State boards of health and State departments of labor. The Railway Sanitary Code and regulations for schools not included]

State	Statute or regulation having force of law	Recommendation [1]
Alabama	"* * * sanitary drinking fountains shall be provided in such number as the inspector may deem necessary."—Child Labor Law, Code of Alabama, 1923, ch. 99, sec. 3520. Applies to establishments where minors are employed if 20 or more persons are employed. (Minors are excluded from certain industries and occupations considered dangerous to health.)	Child welfare department standards—The "bubble" type of drinking fountains where the jet of water flows straight up is to be discouraged. Therefore, fountains should be so constructed that a person shall drink from a stream or jet of water flowing at an angle. The nozzle from which the water issues should be protected so that no person can place the mouth on the orifice from which the water comes. Water for drinking purposes should be cooled. Some few establishments in Alabama have installed a circulatory system of refrigeration. This is very expensive. Drinking fountains with a "frigidaire attachment" are proving more practicable than the "ice chamber and coil system." The floor around the fountain shall be kept dry and clean.
Arkansas		Board of health—Slanting stream type more sanitary than other types.
California	"Each place of employment shall be supplied with pure drinking water so placed as to be convenient to the employees. Common drinking cups are prohibited. Individual cups must be used or sanitary drinking fountains of an approved design must be installed. Drinking fountains shall be kept in a sanitary condition and shall be of such design that it is impossible to place the lips in contact with the orifice from which the jet of water issues, or for the supply orifice to become submerged by the waste water. The water supply of drinking fountains shall be so regulated and maintained that a jet of at least two (2) inches in height shall be constantly available."—Orders No. 13 and No. 4 amended, industrial welfare commission. Apply to mercantile, laundry and manufacturing industries where women and minors are employed.	Board of health—Favors nonleakable protected bubbler head with a jet at an angle.
Connecticut		Board of health—Angle-jet fountains meeting the standards of the committee on plumbing as presented to the public health engineering section of the American Public Health Association, Oct. 1, 1929.
Delaware	"A sufficient supply of clean and pure water and individual drinking cups or a sanitary fountain shall be provided in every establishment named in section 1 of this act in which females are employed or permitted to work. If drinking water is placed in receptacles, such receptacles shall be properly covered to prevent contamination and shall at all times be kept thoroughly clean. No employer in any such establishment shall collect from any employee money for ice or water furnished for drinking purposes."—Session laws, 1917, ch. 231, sec. 7, pp. 745–746. Applies to mercantile, mechanical, or manufacturing establishments, laundry, baking, printing, or dressmaking establishments, places of amusement, telephone or telegraph offices or exchanges, hotels, restaurants, or offices in which females are employed or permitted to work.	
District of Columbia	The fountains in all District government buildings must be of a design approved by the District Board of Health. One model of angle-jet fountain is required.	

Georgia		Board of health—"* * * we do recommend a drinking fountain with a diagonal jet with guards so placed that the mouths of the users can not touch the orifice, also a double diagonal jet with two streams meeting beyond the guards. We do not recommend a drinking fountain in which the water rises vertically and falls back from the drinker's lips to the orifice."
Idaho		Department of public welfare—Angle-jet fountains.
Illinois		Board of health—Angle-jet fountains meeting the standards of the committee on plumbing as presented to the public health engineering section of the American Public Health Association, Oct. 1, 1929.
Iowa		Board of health—Angle-jet fountains meeting the standards of the committee on plumbing as presented to the public health engineering section of the American Public Health Association, Oct. 1, 1929.
Kansas	"Sanitary drinking fountains or individual cups must be provided, in connection with an adequate supply of wholesome drinking water."—Order No. 1, public service commission. Applies to laundries, dyeing, dry cleaning and pressing establishments.	
Kentucky		Department of agriculture, labor, and statistics—A proper drinking fountain should conform to the following specifications: (*a*) The jet shall be slanting; (*b*) The orifice of the jet shall be protected in such a manner that it can not be touched by hands or lips, or be contaminated by drippings from the mouth or splashings from bowl beneath the orifice; (*c*) The guards of the orifice shall be so made that infectious matter from the mouth can not be deposited upon them; (*d*) All fountains shall be so designed that their purpose is self-evident.
Louisiana	"Fountains of the vertico-slant type of jet only considered satisfactory. Fountains with vertical jet or with orifice exposed not satisfactory."—Statement from the board of health.	
Maine		Board of health—Fountains which have a jet at an angle of 45°.
Minnesota		Board of health—Slanting-jet stream, protected-nozzle fountain.
Missouri	"* * * a sufficient number of sanitary drinking fountains containing wholesome drinking water, and providing ice for same, shall be provided and maintained for the use of the employees within reasonable access and without cost to them."—Session laws, 1913, sec. 8, p. 404. Applies in establishments where certain articles dangerous to health are used.	Board of health—Angle-jet fountains meeting the standards of the committee on plumbing as presented to the public health engineering section of the American Public Health Association, Oct. 1, 1929.
Montana	"Common drinking cups shall not be used. Individual drinking cups or sanitary drinking fountains shall be provided in convenient locations."—Food and drug laws, rules, and regulations, April, 1927. Regulation 80, pp. 42-43. Applies to canneries.	
Nebraska		Department of public welfare, bureau of health—Public drinking fountains of the bubbler type shall preferably be of such a design that the mouth can not touch the nozzle and such that the stream does not rise vertically, but at an angle of 30° to 45° with the vertical, in order that the water, after having been in contact with the lips, does not fall back on the nozzle. All bubblers shall be kept clean. Drainage from the same shall be so disposed of that no muddy or sloppy places are produced around the fountain.
New Hampshire	"Bubblers, where used, should be of a type which will not permit a person's mouth coming in contact with nozzle."—Bureau of Labor Standard. Applies to factories, mills, workshops, or other manufacturing or mercantile establishments in which three or more persons are regularly employed.	

[1] The recommendations of the boards of health do not apply to places of employment exclusively but may influence the type of fountain installed.

CHART II.—*State laws, regulations, and recommendations pertaining to drinking fountains in places of employment, April, 1930*—Continued

State	Statute or regulation having force of law	Recommendation[1]
New Jersey		Department of labor—Drinking water should be furnished by means of sanitary bubbling drinking fountains, provided with coils so arranged that they can be ice cooled during the summer months. The fountains should be of a type that prevents contamination from use. "* * * the side-stream type fountain that permits the user to drink from the running stream and prevents him from putting his lips to the orifice from which the stream runs, is, in our judgment, sanitary if it is kept clean. This is the only type fountain we recommend."
North Carolina		Board of health—Fountain angle jet with protecting guard. Child welfare commission—Angle-jet stream fountains or individual drinking cups provided by employer.
Ohio	"The employer shall provide and maintain a sufficient number of sanitary drinking fountains readily accessible for the use of the employees."—Session laws, 1913, house bill 483, sec. 3(e), p. 821. Applies to places where employees are exposed to lead. Requires one fountain for each 100 employees.	
Tennessee		Board of health—Fountain, angle jet from side of basin.
Texas		Department of labor—Approves any kind of a sanitary fountain. Board of health—Slanting-jet type of fountain with orifice protected from contact with lips of the user, with coil cooler.
Wisconsin	"Each place of employment must be supplied with sufficient pure drinking water and the faucets or outlets for same must be placed convenient to the employees. * * * Sanitary drinking fountains must be installed or individual cups must be provided by the employer."—Order 2217, industrial commission.	Woman and child labor department, industrial commission—Drinking fountains should be placed so that access to them is easy. A type of bubbler should be used which will not permit water to run back on jet. Board of health—Approves either vertical or slanting jet fountain, claiming that sanitary features depend largely upon height of stream.

[1] The recommendations of the boards of health do not apply to places of employment exclusively but may influence the type of fountain installed.

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