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WATER ANALYSIS AND INTERPRETATION

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN

PH&W, GHQ, SCAP, APO 500

February 1951

This bulletin presents an explanation of standard procedures relating to water examination. Significant quantities of impurities found in water and the requirements for the measurement of a potable water are discussed.

I. GENERAL

A. All Public Health Officials should be able to interpret laboratory and field reports and records of water analyses and they should have some knowledge of the principles and techniques of the various tests. The water plant officials are required to make physical, chemical and bacteriological tests necessary for control of treatment processes and for providing adequate records of treatment efficiency. The Public Health Section (prefectural and health center) is responsible for performing any tests necessary for ascertaining the potability of water supplies. The Environmental Sanitary Inspector is particularly responsible for the supervision of water analyses to ascertain the following:

1. That the proper tests are performed with sufficient frequency.

2. That sample collection procedures are correct.

3. That all determinations are accurate and dependable.

4. That proper reports are made and adequate records maintained.

B. The above procedures may be conveniently considered in the following five classes:

1. Bacteriological tests to indicate indirectly the presence of pathogenic organisms or any impending threat of their presence.

2. Chemical analysis for the quantitative determination of any poisonous, injurious, or harmful chemical constituent, organic or inorganic.

3. Physical tests to indicate and measure certain physical properties or conditions.

4. Microscopic examinations for the identification and quantitative enumeration of objectionable tastes and odor-producing micro-organisms.

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5. The sanitary field survey, for the purpose of providing a physical picture of the entire water cycle in relation to potential sources of pollution.

It is only upon the entire evaluation of all five major examinations rather than upon the basis of any one specific procedure or test, that the quality of water for primary uses can be judged. However, the complete five evaluations are only recommended for advance planning of the necessary treatment facilities of a water supply, specific water problems, or in the case of a serious outbreak of a suspected water-borne disease. All five tests are not routine tests but each has its purpose in obtaining, providing, and maintaining a potable water supply. Usually the chemical content of water at its source remains nearly the same over a period of years. After the chemical content of water is determined to ascertain quality and recommend treatment designs, it is considered sufficient to complete chemical tests every six months for surveillance. Physical tests are usually completed with chemical examinations and when problems occasionally arise from water odors. Microscopic tests determine those microorganisms responsible for certain tastes and odors in water.

Actually, the bacteriological characteristics have come to be recognized generally as of most value in the sanitary examination of water supplies. They are also considered as the most important from the standpoint of public health. Bacterial tests, determining the presence of contamination indicators, are more indicative than chemical analysis. Standard water laboratory practice consider bacteriological tests, as recommended, routine procedures to assure a criteria of pollution or of water safety. The sanitary survey will depend upon reports of unpotable water from the various tests, as well as determining the physical or ground conditions existing prior to the use of any water source.

It is desirable that a person who makes the field investigation of the water supply also collect the samples for bacteriological analysis and interpret the analytical results. Special precautions are necessary in collecting the samples, and training and experience are also necessary in interpreting and evaluating the results. Therefore, the assistance of the prefectural or health center officials should be requested if there is any question concerning the safety of water.

Water for drinking and culinary purposes must be free from pathogenic bacteria, protozoa, and other disease producing organisms, as well as from physiologically harmful chemical or mineral substances. Clearness, softness, freedom from objectionable taste, odor, and low temperature are desired.

II. PRELIMINARY PROCEDURES

A. Sample Collection. Proper technique in sample collection is absolutely essential. Samples will be collected only by competently trained individuals. Some guiding principles are as follows:

1. Sampling taps should be selected providing representative samples. These will usually be in active parts of the water supply system.

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2. Taps, especially for bacteriological specimens, should be easily identifiable, should be non-leaking, preferably with small orifices. They should be so located that the specimen can be obtained with ease, avoiding spattering.

3. Only bottles supplied by the laboratory will be used. Sterile 120 ml. bottles are recommended. When water which contains residual chlorine is to be tested the sample bottles should be prepared in advance, with approximately 0.02 to 0.05 gm. of Sodium Thiosulfate added prior to sterilization.

4. Bottles for bacteriological examination must be tightly stoppered, chemically clean, and preferably glass stoppered, covered with a hood of muslin or strong paper, then sterilized either by authoclaving at 15 lbs. pressure (120°C.) for one-half hour, or in dry at 160-170°C. for one hour. For chemical examination, chemically clean 3 or 4 liter bottles will be used.

5. Before collecting samples, the water should be run sufficiently long to flush out the pipe line providing representative samples. Samples for chemical examination should ordinarily be collected as near the source as is practicable; not from dead-end lines or lines having little circulation.

6. For bacteriological examination, the orifice of the tap should be flamed, the water then permitted to flow until a representative sample can be obtained, then collected in the special bottle which is filled to the shoulder (leaving some air space). The lip of the bottle will not be brought in contact with the tap, nor will the stopper be contaminated. The hood is replaced and secured with the fastener.

7. The date, time, and place of collection will be marked on each bottle, and the proper forms requesting laboratory examination will be completely and clearly filled out and accompany the specimen bottle.

8. Specimens should be taken to the laboratory immediately. They should be kept in a refrigerator as long as possible if delay in making analyses is unavoidable.

9. Complete or special chemical analyses will not be made frequently as a matter of routine, but only for the purpose of securing confirmatory evidence concerning pollution and for the purpose of detecting significant changes in mineral content.

10. Bacteriological examination of specimens of drinking water will be made at least once monthly as a routine measure, and more frequently when indicated or directed by health officials. For large water supplies several samples should be analyzed daily or as stated in "Standard Methods".

B. Residual Chlorine Test. It is required that all urban water supplies be adequately chlorinated. It will therefore be necessary that the residual chlorine test be performed frequently and accurately. Water plant operators should daily make residual chlorine tests in the water distribution system to

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assure continuous chlorination and to check operation of chlorinating equipment.

When chlorine is added to water it is consumed by an unoxidized or inorganic matter present and the bactericidal efficiency thereafter depends upon several factors, such as the amount and nature of the residual chlorine (free or chloramine), pH, and the temperature of the water. Chlorinated water will also lose chlorine quite rapidly when exposed to direct or bright diffuse sunlight. It is therefore necessary to add sufficient chlorine to satisfy the demand of chlorine-consuming materials present, to allow for any quantity which might be lost, and still leave a measurable quantity of chlorine for a period of at least thirty (30) minutes for bactericidal action.

Experience has shown that if the quantity of chlorine added to water is sufficient to yield, after a ten (10) minute contact period, a residual concentration of one (1) part per million, a satisfactory bactericidal concentration will usually be maintained for at least thirty (30) minutes. The residual chlorine test, therefore, as the name implies includes the time factor of contact period between the time of chlorine dosage and the time of testing. Preliminary reports of chlorine residual tests should include statements such as; 10 minutes residual, 30 minutes, or 1-hour residual.

While not specific for chlorine, the orthotolidine test is the most reliable simple quantitative test for measuring small quantities of chlorine in water. The reagent is a colorless 0.1% solution of orthotolidine in approximately 1.2 normal hydrochloric acid and is prepared as follows:

1. Weigh out 1 gram of orthotolidine crystals, transfer to a 6-inch mortar and add 5 ml. "20 per cent" hydrochloric acid (Prepared by adding 100 ml. of concentrated hydrochloric acid, specific gravity 1.18 - 1.19 to 400 ml. of distilled water).

2. Grind to a thin paste and add 150 to 200 ml. of distilled water. The orthotolidine goes into solution immediately.

3. Transfer to 1000 ml. graduate and make up to 505 ml. with distilled water.

4. Make up to the 1000 ml. mark by adding the balance (495 ml.) of the 20 percent hydrochloric acid.

This reagent is commonly used in the proportion of 1 ml. of the reagent to 100 ml. of the sample. This is sufficient to give the correct color reaction in samples containing not more than approximately 3.3 ppm chlorine and approximately 500 ppm alkalinity. For higher concentration of chlorine a higher proportion of orthotolidine is required, and for samples having high alkalinity more of the acid reagent is needed in order to reduce the pH value to below 1.8.

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When the ratio by weight of orthotolidine to chlorine in a sample is equal to or exceeds 3 to 1, and if sufficient acid is present to lower the pH value of the sample to below 1.8, the color produced is yellow, and the depth of yellow color (shading into brown) is proportional to the concentration of chlorine in the sample. When the ratio is approximately 2 to 1 an orange red color is produced, and when the ratio is 1 to 1 or less a cherry red color is produced -- the depth of these colors being proportional to actual concentration of orthotolidine and chlorine involved.

One ml. of standard orthotolidine solution contains 1 milligram of orthotolidine or sufficient to form solely a yellow color with 0.33 milligrams of chlorine. This means that if 1 ml. of orthotolidine solution is added to 100 samples (not too highly alkaline) containing from 0.1 to 3.3 ppm chlorine, yellow colors will form with increasing depth of color in proportion to the concentration of chlorine. At concentrations up to approximately 1.5 ppm the yellow color will have a pale green tint, but at concentrations above approximately 1.5 and below 3.3 ppm the samples have a true yellow color becoming moderately deep at 2.0 ppm and only slightly deeper at 3.0 ppm. If one ml. of orthotolidine solution is added to 100 ml. samples containing in excess of approximately 3.5 ppm chlorine the color developed will be orange to orange red to cherry red, with the red color becoming quite pronounced at 5 to 6 ppm.

Unfortunately the orthotolidine reagent is not a specified test for chlorine. The reaction is an oxidation process and certain other materials, sometimes found in water, will produce similar reactions. As small quantities as 0.3 ppm of ferric iron, 0.01 ppm of mangenic manganese, or 0.3 ppm of nitrite nitrogen will give a false indication of the presence of chlorine. The reaction of ferric iron and nitrite nitrogen on orthotolidine is quite slow as compared with the reaction of chlorine, and the color produced is a brownish yellow instead of the typical clear deep yellow produced by chlorine. If samples being tested are placed in the dark for the five minute period for color development iron and nitrites will not produce enough color to interfere seriously with the residual chlorine test. The reaction of manganese is almost identical with that of chlorine on orthotolidine. The color development is rapid and as is the case with the chlorine reaches maximum development within 5 minutes, even in the dark.

It is advisable always to perform a blank orthotolidine test before chlorination to detect the presence of these interfering substances. Manganous manganese or ferrous iron may however be oxidized to the -ic form on chlorination. When suspected, a chlorinated sample should be tested before and after thorough aeration or boiling. The difference in values is due to the residual chlorine.

When a water supply is suspected of containing interfering quantities of iron, manganese, or nitrites, the orthotolidine test should be supplemented by the neutral starch-potassium-iodine test. Residual chlorine concentrations greater than 0.1 to 0.2 ppm will produce a positive blue color when a few milliliters of fresh neutral starch solution (0.3 to 0.5% solution) and a few milliliters of neutral potassium iodide solution (5 to 10% aqueous or alcoholic solution) are added to the sample. The ordinary interfering quantities of iron,

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manganese, and nitrites will not produce the blue color with starch-potassium iodide unless the pH value of the sample is reduced to below 5.0.

III. Bacteriological Tests. - Tests for bacteria of the Coli-Aerogenes Group.

No procedure has been developed for detecting minimum infectious numbers of typhoid or other intestinal disease bacteria in water. It has, however, been observed that almost invariably when water contains infectious quantities of intestinal disease organisms, measurable numbers of colon bacilli are present. Bacteria of the coli-form group (including both B. coli and the A aerogenes, referred to as the coli-aerogenes group) have therefore been chosen as indicator organisms for bacteriological examination of water.

The coli-aerogenes group includes all aerobic and facultative anaerobic gram-negative, nonspore-forming bacilli, which ferment lactose with gas formation. Micro-organisms of this group are not pathogenic, and are not necessarily harmful to the water, but are considered as evidence of fecal contamination, and the potential presence of pathogenic fecal organisms of dysentery-typhoid-Salmonella or Cholera groups which are not so readily detected in routine tests.

The standard procedure for carrying out the test for the presence of bacteria of the coli-aerogenes group on presumable potable water samples includes the following steps:

A. The Presumptive Test. Inoculate a series of lactose broth Durham fermentation tubes with graduated quantities of the water, but not more than 10 ml. in a tube (10 ml., 1.0 ml., 0.1 ml., etc.). Usually 5-10 ml. samples are planted and 1 - 1 ml., and 1 - 0.1 ml. for a single sample to be tested. The quantity of the medium must be at least twice that of the water. Standard sterile lactose broth is used. Incubate these tubes at 37 degrees centigrade for 48 hours. Examine them at 24 hours and 48 hours and record the formation of gas in the small inverted vials.

1. The formation within 24 hours of gas in the inverted vial constitutes a POSITIVE Presumptive Test.

2. If no gas is formed in 24 hours but is formed in 48 hours, the test is doubtful and must be confirmed.

3. If no gas formation occurs within 48 hours this constitutes a NEGATIVE Presumptive Test.

Very few bacteria other than those of the coli-aerogenes group occuring in water will ferment lactose broth within twenty-four hours, but several non-significient bacteria, particularly chlorine-resistent spore-forming bacteria may ferment lactose within 48 hours.

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B. The Confirmed Test. Make two or more Endo or Eosinmethylene Blue agar plates from the tube which contains the smallest amount of water showing gas. Transfers should be made as soon as possible after the formation of gas. Incubate the plates at 35 - 37 degrees C. for 24 hours. If typical colonies have developed upon the plate within this period, the Confirmed Test may be considered POSITIVE. If no typical colonies develop in 24 hours, the test cannot yet be considered Negative definitely. In such cases the test should be carried on to completion. (Part C)

An alternate CONFIRMED test can be made using a liquid medium such as Brilliant Green lactose Bile and Durham fermentation tubes as described for the Presumptive test above. The procedure is to transfer from a lactose broth tube showing gas the desired portion tube tested, by wire loop, sterile capillary tube or pipette, and add it to the fermentation tube containing B.G.I.B. Incubate these tubes for 48 hours at 35 - 37 degrees C. and observe the gas formed at the end of 24 and 48 hours.

1. The production of any gas in B.G.I.B. tubes in 24 hours is considered POSITIVE.

2. The development of no gas in 48 hours constitutes a NEGATIVE confirmed test.

C. The Completed Test. From the Endo or E.M.B. plates transfer two or more typical colonies, each to an agar slant and lactose broth fermentation tube. If no typical colonies have appeared after 24 hours incubate for another 24 hours, Then two or more colonies most likely to belong to the coliform group, whether typical or not, are transferred to agar slants and lactose broth fermentation tubes.

The inoculated tubes are incubated until the formation of gas or for 48 hours. The agar slants are incubated for 24 hours. Then at least one culture, corresponding to a tube which shows gas formation, is examined microscopically for identification.

The formation of gas in lactose broth and the demonstration of Gram-negative, non-sporing bacilli in the agar slants are COMPLETE proof of the presence of a member of the Coli-Aerogenes group.

The absence of gas formation or failure to demonstrate such bacilli constitutes a Negative test.

Bacteriological analyses on presumable potable water are almost invariably carried through the confirmed test, and usually through the completed test. An analysis of an individual sample showing a positive presumptive, positive, confirmed, or positive completed test on even one of the five 10-ml. portions tested indicates that the water supply at the point of collection at the time of collection was of unsatisfactory quality. Check samples should be taken at this point and adjustments made in water treatment, until bacteriological tests

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repeatedly and consistently show the absence of coli-aerogenes organisms in five 10 ml. portions. A water supply receiving proper treatment will not show more than one (1) unsatisfactory sample out of each one hundred (100) samples tested, indicating not more than one (1) bacteria of the coli-aerogenes group per 5000 ml. of water (1/5000 ml. less than 1 per gallon of water.) Many public supplies have a record of two to five years with no more than one unsatisfactory sample out of all samples tested, including three to five samples tested daily.

A laboratory report of a bacteriological analysis of a sample of water should include a brief simple interpretation of the results of the test in terms of the probable potability of the water. The use of one of the following statements is recommended:

1. Potable bacteriologically. No evidence of contamination has been found.

2. Not potable bacteriologically. Tests reveal evidence of contamination.

3. Not potable bacteriologically. Colony count is too high; suggest re-examination.

D. Test for Total Number of Bacteria. The approximate number of bacteria present in a sample of water may be determined by applying the nutrient agar plate count, referred to as the "total colony count". The test includes the following steps: (1) Transferring a portion, usually 1 ml., of the water sample to a sterile Petri dish; (2) pouring melted sterile nutrient agar over the portion of water, mixing and permitting the agar to solidify; (3) incubation at 35°- 37°C for 24 hours; and (4) counting the number of bacterial colonies developed.

The actual number of bacteria per ml. in a sample of water will probably always be greater than the number of colonies which develop on an agar plate from one ml. All bacteria present may not grow, and a colony does not necessarily develop from single bacterium. The test, however, gives a fair indication of total bacterial contents of water and is an excellent control test to measure effectiveness of water treatment processes. The bacterial content of water is progressively reduced by the consecutive treatment processes; sedimentation, filtration, and chlorination. An adequately treated water supply will consistently show an agar plate colony count of lower than 5 per milliliter.

The test for total number of bacteria is of little or no value unless initiated within two or three hours after the samples are collected, or unless the samples are held at low refrigeration temperature. The bacterial content of samples is not altered seriously in twelve to twenty-hours if the temperature is maintained below 40°F. Results reported from delayed tests often lead to erroneous ideas of water quality. Water treatment may render a supply almost completely free of bacteria of the coli-aerogenes group, but does not effect complete sterilization. Soon after a sample is collected any residual chlorine

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present is soon exhausted and bacterial multiplication starts. The bacterial content may rise to several thousands per milliliter within 24 hours and to millions per milliliter within 48 to 72 hours.

Frequently water supplies have been cordemned solely on the basis of a high total bacterial count and no allowance given to the time between collection and testing.

Although the "total colony count" or "plate count" technique is discussed here, experiences by bacteriologists have found that total counts have so little significance in a water examination that they are being abandoned in favor of the more specific coliform tests. Another method is the value determined by the most probable number interpretation, as found explained in "Standard Methods".

When water samples for bacteriological examination are enroute to laboratories in excess of 24 hours time interval, the possibility as reported by the laboratory should be determined only on the basis of the coliform bacterial content.

The presence therefore of a high count may or may not be of sanitary significance, but the presence of Coli-aerogenes is <u>always important</u>.

Frequently, the bacteriological examination of a sample of water collected prior to the disinfection of a well which has been recently constructed or repaired will show contamination. This is usually because surface contamination is carried into the ground water or well during construction or repair and does not mean that the ground water was contaminated before the well was constructed or repaired. If a well is properly located and constructed the water usually will be bacteriologically satisfactory after the well has been completed and disinfected. Samples of newly developed wells or wells which have been repaired should not be taken for bacteriological analysis until after completion and disinfection of the well.

IV. PHYSICAL CHARACTERISTICS

A. Turbidity

The turbidity or cloudiness of water is due to the presence of suspended matter which obstructs the passage of light through the water. Generally speaking, the <u>degree</u> of turbidity is proportional to the quantity of suspended material, but the size of the particles has an important bearing on the water's behavior during treatment. Coarse turbidity producing particles may settle rapidly, while the fine material may remain suspended for extremely long periods.

Turbidity producing materials usually are not toxic. But the more turbid the water, the higher the chlorine demand and the higher the total bacterial count are likely to be.

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Turbidity in water is measured by direct or indirect photometric comparison of a sample with standardized suspensions of Fuller's Earth or finely divided silica. Water having a turbidity of 5 is perceptibly cloudy in a drinking glass, and a turbidity of 20 is definitely objectionable. Turbidity measurements serve as an index of sedimentation and filtration efficiency. Properly executed coagulation, sedimentation and filtration processes will deliver a finished water having a turbidity of less than 5.

In various areas it may be necessary to use water having a turbidity as high as 100 with no other treatment than chlorination. This should be avoided if possible because it is difficult to render such water absolutely safe by chlorination alone and the water is almost certain to have an objectionable taste.

With adequate coagulation, sedimentation, filtration, and chlorination facilities it is possible to convert a highly turbid water (turbidity of 1000 to 10,000) to a crystal clear safe water having only slightly objectionable taste.

B. Color

True color in water originates in the organic matter leaching from swamps and forest-covered areas on watersheds. Sometimes it may be due to pollution from industrial sources. The color of water in itself is harmless, but its presence detracts from the physical appearance of the water and so may affect community complaints. It is not a serious problem from the health viewpoint.

Color in water is measured by direct or indirect colorimetric comparison with standardized platinum-cobalt solutions. A color of 10 is equivalent to the color produced by 10 milligrams of platinum per liter. "Apparent color" in water is that produced by both suspended and dissolved materials, and "true color" is produced only by dissolved materials. "True color", usually produced by dissolved organic matter and colloidial iron, is not particularly objectionable as color unless the color value exceeds approximately 20, but the color producing materials either produce objectionable tastes or are associated with taste producing materials. Natural water having "true color" in the range of 100 or greater should be avoided if possible.

C. Total Solids

The total amount of solids in water is measured by evaporating a measured portion of a sample, and weighing the residue after drying at 103°C. for one hour. A determination on a carefully filtered or centrifuged portion of a sample gives the total dissolved solids. The difference between the total solids and the dissolved solids is reported as total suspended solids. Unless the turbidity of a sample exceeds 10 it is not practicable to make both determinations.

Water containing total solids in excess of approximately 1000 ppm has a perceptible mineralized or salty taste which may be objectionable to individuals accustomed to water of very low mineral content. It may be necessary in various

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areas to use water containing more than 1000 ppm mineral matter but no adverse physiological difficulties will result unless a major portion of the solids are sulfate salts.

In routine analysis of water from the same source, such determinations are of value in the control of the operation of a water purification plant.

V. CHEMICAL TESTS

A. Alkalinity, Acidity and pH. Hydroxides, carbonates, and bicarbonates, which tend to hold the pH value of water above 7.0 are the common alkaline materials found in water. Mineral acids and carbon dioxide, which tend to keep the pH value below 7.0, are the common acid materials in water. Alkalinity and acidity are measured by titrating samples with standard acids or bases, using methyl orange and phenolphthalein as end-point indicators. Results are commonly reported as parts per million of equivalent calcium carbonate. That is, an analysis report of 150 ppm of bicarbonate alkalinity means that there is a quantity of bicarbonate iron present in the sample that is chemically equivalent of 150 ppm of calcium carbonate. A report of 100 ppm of carbon dioxide acidity means a quantity of carbon dioxide equivalent of 100 ppm of calcium carbonate. A total alkalinity of 300 ppm usually mostly bicarbonate, means a total quantity of the alkaline materials equivalent to 300 ppm of calcium carbonate. Carbon dioxide, however, is sometimes reported as ppm of carbon dioxide.

Hydroxide and carbonate alkalinity seldom occur except in water which has been subjected to lime or lime-soda-ash softening treatment. The presence of a measurable quantity of hydroxide alkalinity indicates that an excessive quantity of lime has been added. The amount of carbonate alkalinity in a lime or lime-soda-ash softened water depends upon the nature and quantity of hardness and alkaline materials originally in the water, and upon the degree of softening effected. In any case carbonate alkalinity seldom exceeds 100 ppm.

Bicarbonate alkalinity occurs in practically all natural waters, ranging from as small quantities as 5 or 10 ppm alkalinity to as much as 1000 to 1200 ppm in waters that are often used for human consumption.

The significant limits of alkalinity in water are less than approximately 50 ppm and more than approximately 500 ppm. A highly turbid natural water containing less than 50 ppm of alkalinity usually responds slowly and incompletely to coagulation treatment. If a heavy dose of coagulant is required for clarification it is necessary to add lime or soda ash to assure that there is sufficient alkalinity for the reaction with the acidic coagulant.

Water containing 500 ppm of alkalinity has a distinct "soda" taste. At a content of 1000 ppm the taste is particularly objectionable to many individuals, but even at this concentration of alkalinity it would produce only a very slight physiological reaction. An alkalinity of 1000 ppm is equivalent to approximately 1 teaspoon of soda per gallon.

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Mineral acidity seldom occurs in natural water. Its presence indicates pollution of water with acid industrial wastes. Carbon dioxide is present in varying quantities in most natural waters. It has no significance other than its corrosive action. As small a quantity as 2 to 3 ppm of carbon dioxide in a very soft water may render it quite corrosive, while 10 to 15 ppm of carbon dioxide may not be objectionable in a hard water.

The pH value of a water indicates the degree of acidity or alkalinity but tells little of quantities present. Certain pH values and ranges tell much of the types of alkalinity and acidity materials present in water:

1. Above the pH value of approximately 4.2 (methyl orange end-point) water contains no measurable quantity of mineral acidity; below this point the mineral acid and carbon dioxide content may be very high.

2. In the pH range of 4.2 to 8.3, of the common acid and alkaline materials, only carbon dioxide and bicarbonate are present in measurable quantities.

3. Above the pH value of 8.4 (phenolphthalein end-point) no measurable quantity of carbon dioxide is present in water.

4. Below the pH value of 10.0 a measurable quantity of hydroxide seldom occurs.

5. In the pH range of 8.4 to 10.0 carbonates and bicarbonates may be present but measurable quantities of both bicarbonates and hydroxides cannot be present together.

Knowledge and control of pH are useful to minimize the amount of chemicals needed in water purification, to increase the efficiency of bacterial removal, and to prevent corrosion.

B. Chloride. Chloride comes mainly from dissolved mineral chloride or harmless inorganic substances. A chloride content of 250 ppm gives to a water a perceptibly salty taste, but the taste does not become particularly objectionable unless the chloride content exceeds 600 to 700 ppm. Water having a salt content of 500 to 800 ppm (equivalent to 700 to 800 ppm of sodium chloride) might be advantageous to use for people in tropical areas or during extremely warm weather. A chloride content of 600 to 700 ppm is equivalent to the amount of sodium chloride (0.1%) recommended to be added to ordinary water as an aid in maintaining the proper salt content of body fluids of laborers engaged in activities producing heavy perspiration and resultant serious loss of salt.

The chloride test is precise and may be performed rapidly and reliably. It is therefore often used as an indicator test for changes in mineral content. Surface water, particularly streams, may have frequent and considerable changes in salt content, and such changes may or may not be of significance. Wells and springs, however, should have a uniform chloride content. If an appreciable change in chloride content of a well or spring occurs it is probably due to

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entrance surface water, or due to "over-pumping", or to defective well casing resulting in encroachment of water from undesirable water strata.

High chlorides indicate a possible pollution with sewage, particulary if the normal chloride is known. Urine contains about 6000 ppm of chlorides. Normal sea water has approximately 34,000 ppm of salt.

C. Sulphate. Water containing approximately 250 ppm of sulfate has a perceptible "Epsom Salts" taste, and may produce considerable temporary physical discomfiture for individuals not accustomed to drinking water of high sulfate content. A sulfate iron content of 250 ppm is equivelent to one teaspoon of Epsom Salts, or Glabers Salt per gallon of water. Water containing in excess of 500 ppm sulfate should be avoided if possible.

Calcium sulphate or gypsum causes hardness in water as it is more soluble in cold water than in hot. It separates from the water on boilers and forms scale on the boiler tubes.

D. Hardness. Most of the hardness in water is produced by calcium and magnesium salts. The total hardness of water can be determined approximately by titrating samples with standard soap solution. Total hardness is reported as ppm of equivalent calcium carbonate.

Hardness in water has no physiological significance but is objectionable because of its soap consuming and boiler incrusting properties. Hardness does not become objectionable unless the total hardness exceeds approximately 100 ppm. In various areas it may be necessary to use water having a hardness of several hundreds ppm but the softest available supply should be selected. Hardness above 300 ppm may be of considerable sanitary significance, because of the serious interference with effective use of soap in laundry, bathing, cooking, and washing facilities.

E. Iron and Manganese. A common and troublesome impurity found in deep-well water is dissolved iron in the form of ferrous bicarbonate. As soon as water containing this impurity is exposed to air, oxygen changes the iron into insoluable oxides which give the water a rust color and cause stains. The fine red particles settle out as a rusty sediment.

Iron in water in excess of approximately 0.3 to 0.5 ppm and manganese in excess of 0.1 to 0.2 ppm are objectionable for the following reasons:

1. Water will have an "inkish" sweet taste becoming quite objectionable when the iron content is as high as 0.3 - 0.5 ppm.

2. The taste of coffee and tea made with the water is seriously impaired.

3. Plumbing fixtures and laundry are objectionably stained.

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4. Serious interference with the orthotolidine test for residual chlorine may occur. As small a quantity as 0.01 ppm of manganese will produce a measurable color with orthotolidine.

5. Iron in the process water is most objectionable in certain industries, notably in the textile trades and in paper making.

F. Nitrite. Nitrites in water usually occur through bacterial oxidation of nitrogenous organic matter or bacterial reduction of nitrates. Their presence, therefore, indicates bacterial growth in water. As small a quantity as 0.001 ppm nitrite nitrogen may be of sanitary significance. An adequately treated and chlorinated water will seldom has this quantity. Nitrites in excess of approximately 0.3 ppm nitrite nitrogen may give a false positive test for residual chlorine when the orthotolidine test is used, particularly when the test is being made by an inexperienced individual. This interference with the residual chlorine test is often encountered when inadequate treatment is being applied to heavily polluted water or swimming pool water, or when the test is being used in connection with chlorination of sewage treatment plant effluents.

G. Nitrate. Since nitrates are produced by oxidation of nitrogenous organic matter, their presence in water may be of sanitary significance. The variation in the quantity of nitrate in a water (particularly a ground-water) and not the actual quantity is a significant factor. If the quantity is constant the nitrate is probably coming from the water bearing stratum which may have been formed millions of years before. A variable nitrate content in a ground water is an indication of fairly recent surface pollution.

H. Fluoride. Fluorine is sometimes found in water as fluorides. If present in sufficient amounts, over 1.5 parts per million of fluorine, it causes an incurable injury to teeth known as "mottled enamel" which is very disfiguring to the teeth in these cases where fluoride water has been consumed. The injury is done during the age period from birth to nine years, while calcification of the permanent teeth is in process. No harm is apparently done after that age.

Although a fluoride content of over 1.5 ppm has been found to be detrimental, less than that amount appears to provide protection against dental caries or tooth decay. Inspections of teeth in areas where the fluoride content is naturally 1.0 to 1.5 parts per million show 60% or less dental caries than where the water is fluorine-free. Several ten year studies and other experiments are in progress to increase knowledge of fluoride application.

I. Other Chemical Impurities. Water should not contain an excessive amount of soluable mineral substances, nor excessive amounts of any chemicals employed in treatment. Various amounts of the following chemical substances will constitute grounds for rejection of the supply: lead, arsenic, selenium, vanadium, boron, hexavalent chromium, copper, magnesium, zinc, and phenolic compounds. Ordinarily analysis for these substances need be made only semiannually. If, however, there is some presumption of unfitness because of these elements, periodic determination for the element in question should be made more frequently. Where experience, examination, and available evidence indicate that such

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substances are not present or likely to be present in the water supplies involved, semiannual examinations are not necessary, unless requested by health authorities.

J. Interpretation of Results of Chemical Analysis. It is impossible to determine the quality of a water from a chemical analysis alone. If chlorides, ammonia, and nitrates were due only to the decomposition of organic matter, water analysis would become an exact means of determining the degree of contamination. But since these various substances usually are not dangerous in themselves, and may be found to be present in a potable water in varying quantities, knowledge of the origin of the water is important in interpreting analyses.

From the public health standpoint the presence of materials which cause a high chlorine demand, which give rise to chlorinous tastes, which make the water difficult to treat, is important. Again it is emphasized that periodic chlorine residual tests throughout the distribution system of a water supply be coordinated by the health center inspectors and the water plant operators to maintain daily surveillance of actual operations and conditions.

Nitrites normally are present in very small amounts or are absent, because nitrites are transitory compounds that are soon converted into Nitrates. The results of the Nitrogen tests, when used collectively, help to show the possible presence of contaminating substances and the probable length of time they have been present in the water. The relative amounts, rather than the actual amounts of the nitrogen compounds indicate the state of pollution. If the organic matter is fresh, nitrites will not have formed; if it is old the nitrites will have turned into nitrates.

In general when a chemical analysis of water shows the presence of large amounts of chlorides, ammonia, nitrites or nitrates, pollution with sewage should be suspected. An examination of the water source should then be carefully made to determine the cause of the trouble, the suitability for treatment, and the type of treatment necessary.

VI. SIGNIFICANT QUANTITIES.

Comparison of American and Japanese maximum allowances for presumably potable water are listed below. These significant quantities are not standards. They are merely guides or rather indicators which are desirable, within limits or less, for a recommended quality of water.

TEST	AMERICAN	JAPANESE
Residual chlorine	0.05 - 0.1 1.0 - 2.0 (chloramines)	0.1 - 0.2 **
Bacteriological:		
Coli-aerogenes group	Gas formation in 10% of tubes planted	Gas formation in 10% of tubes planted
Total bacteria (See footnote 1)	5 per ml	100 per cc

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TEST	AMERICAN	JAPANESE
Odor	none	none
Taste	not objectionable	not objectionable
Temperature	50 - 55° F.	**
Color	20	1
Turbidity	10	2
Total solids	500 ppm	500 ppm
Alkalinity	120 ppm	**
pH	Less than 7.0 and over 10.6	Less than 5.8 and over 8.0
Hardness	100 ppm	300 ppm
Chloride	250 ppm	30 ppm
Sulphate	250 ppm	**
Nitrite	0.001 ppm	trace
Nitrate	Any measurable variable quantity	10 ppm
(See footnote 2)		
Iron and Manganese (total)	0.3 ppm	0.3 ppm
Fluoride	1.5 ppm	1.5 ppm
Lead	0.1 ppm	0.1 ppm
Arsenic	0.05 ppm	0.05 ppm
Selenium	0.05 ppm	**
Hexavalent chromium	0.05 ppm	0.05 ppm
Copper	3.0 ppm	0.7 ppm
Magnesium	125.0 ppm	**
Zinc	15.0 ppm	1.0 ppm
Vanadium.	1.0 ppm	**
Boron	1.0 ppm	**
Phenolic compounds	0.001 ppm	0.01 ppm
(See footnote 3)		

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NOTE: Tests as Dissolved Oxygen, Biochemical Oxygen Demand and Oxygen Consumed are not recommended for routine tests in the maintenance of potable water supplies. However, they are recommended for stream pollution studies, control of purification processes, sewage treatment observations, and specific water problems.

1/ Recommended routine tests are the chlorine residual and the bacteriological tests. Sole reliance in determining the safety of water supplies cannot be placed on the results of infrequent bacteriological analysis; supplies which are potentially hazardous may be erroneously judged to be safe if contamination is not present at the time the samples are collected although there may be faulty location, construction, or operation of the supply. Periodic examinations will provide better control in such cases.

2/ Ordinarily a chemical analysis of a domestic supply will include: the physical tests, total hardness, alkalinity, pH, sulphates, and chlorides. Determination of nitrate nitrogen content should also be made. Iron, manganese, and fluoride may also be determined in some cases.

3/ Mineral analyses have no sanitary significance and are seldom made in routine work. Generally, they are of importance for determining the value of the water as a source for an industrial supply. However, due to their toxicity the above substances should be guarded against in the concentrations exceeding those limits cited.

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WATER ANALYSIS AND INTERPRETATION

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN

PH&W, GHQ, SCAP, APO 500 February 1951

This bulletin presents an explanation of standard procedures relating to water examination. Significant quantities of impurities found in water and the requirements for the measurement of a potable water are discussed.

I. GENERAL

A. All Public Health Officials should be able to interpret laboratory and field reports and records of water analyses and they should have some knowledge of the principles and techniques of the various tests. The water plant officials are required to make physical, chemical and bacteriological tests necessary for control of treatment processes and for providing adequate records of treatment efficiency. The Public Health Section (prefectural and health center) is responsible for performing any tests necessary for ascertaining the potability of water supplies. The Environmental Sanitary Inspector is particularly responsible for the supervision of water analyses to ascertain the following:

1. That the proper tests are performed with sufficient frequency.

2. That sample collection procedures are correct.

3. That all determinations are accurate and dependable.

4. That proper reports are made and adequate records maintained.

B. The above procedures may be conveniently considered in the following five classes:

1. Bacteriological tests to indicate indirectly the presence of pathogenic organisms or any impending threat of their presence.

2. Chemical analysis for the quantitative determination of any poisonous, injurious, or harmful chemical constituent, organic or inorganic.

3. Physical tests to indicate and measure certain physical properties or conditions.

4. Microscopic examinations for the identification and quantitative enumeration of objectionable tastes and odor-producing micro-organisms.

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5. The sanitary field survey, for the purpose of providing a physical picture of the entire water cycle in relation to potential sources of pollution.

It is only upon the entire evaluation of all five major examinations rather than upon the basis of any one specific procedure or test, that the quality of water for primary uses can be judged. However, the complete five evaluations are only recommended for advance planning of the necessary treatment facilities of a water supply, specific water problems, or in the case of a serious outbreak of a suspected water-borne disease. All five tests are not routine tests but each has its purpose in obtaining, providing, and maintaining a potable water supply. Usually the chemical content of water at its source remains nearly the same over a period of years. After the chemical content of water is determined to ascertain quality and recommend treatment designs, it is considered sufficient to complete chemical tests every six months for surveillance. Physical tests are usually completed with chemical examinations and when problems occasionally arise from water odors. Microscopic tests determine those microorganisms responsible for certain tastes and odors in water.

Actually, the bacteriological characteristics have come to be recognized generally as of most value in the sanitary examination of water supplies. They are also considered as the most important from the standpoint of public health. Bacterial tests, determining the presence of contamination indicators, are more indicative than chemical analysis. Standard water laboratory practice consider bacteriological tests, as recommended, routine procedures to assure a criteria of pollution or of water safety. The sanitary survey will depend upon reports of unpotable water from the various tests, as well as determining the physical or ground conditions existing prior to the use of any water source.

It is desirable that a person who makes the field investigation of the water supply also collect the samples for bacteriological analysis and interpret the analytical results. Special precautions are necessary in collecting the samples, and training and experience are also necessary in interpreting and evaluating the results. Therefore, the assistance of the prefectural or health center officials should be requested if there is any question concerning the safety of water.

Water for drinking and culinary purposes must be free from pathogenic bacteria, protozoa, and other disease producing organisms, as well as from physiologically harmful chemical or mineral substances. Clearness, softness, freedom from objectionable taste, odor, and low temperature are desired.

II. PRELIMINARY PROCEDURES

A. Sample Collection. Proper technique in sample collection is absolutely essential. Samples will be collected only by competently trained individuals. Some guiding principles are as follows:

1. Sampling taps should be selected providing representative samples. These will usually be in active parts of the water supply system.

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2. Taps, especially for bacteriological specimens, should be easily identifiable, should be non-leaking, preferably with small orifices. They should be so located that the specimen can be obtained with ease, avoiding spattering.

3. Only bottles supplied by the laboratory will be used. Sterile 120 ml. bottles are recommended. When water which contains residual chlorine is to be tested the sample bottles should be prepared in advance, with approximately 0.02 to 0.05 gm. of Sodium Thiosulfate added prior to sterilization.

4. Bottles for bacteriological examination must be tightly stoppered, chemically clean, and preferably glass stoppered, covered with a hood of muslin or strong paper, then sterilized either by authoclaving at 15 lbs. pressure (120°C.) for one-half hour, or in dry at 160-170°C. for one hour. For chemical examination, chemically clean 3 or 4 liter bottles will be used.

5. Before collecting samples, the water should be run sufficiently long to flush out the pipe line providing representative samples. Samples for chemical examination should ordinarily be collected as near the source as is practicable; not from dead-end lines or lines having little circulation.

6. For bacteriological examination, the orifice of the tap should be flamed, the water then permitted to flow until a representative sample can be obtained, then collected in the special bottle which is filled to the shoulder (leaving some air space). The lip of the bottle will not be brought in contact with the tap, nor will the stopper be contaminated. The hood is replaced and secured with the fastener.

7. The date, time, and place of collection will be marked on each bottle, and the proper forms requesting laboratory examination will be completely and clearly filled out and accompany the specimen bottle.

8. Specimens should be taken to the laboratory immediately. They should be kept in a refrigerator as long as possible if delay in making analyses is unavoidable.

9. Complete or special chemical analyses will not be made frequently as a matter of routine, but only for the purpose of securing confirmatory evidence concerning pollution and for the purpose of detecting significant changes in mineral content.

10. Bacteriological examination of specimens of drinking water will be made at least once monthly as a routine measure, and more frequently when indicated or directed by health officials. For large water supplies several samples should be analayzed daily or as stated in "Standard Methods".

B. Residual Chlorine Test. It is required that all urban water supplies be adequately chlorinated. It will therefore be necessary that the residual chlorine test be performed frequently and accurately. Water plant operators should daily make residual chlorine tests in the water distribution system to

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assure continuous chlorination and to check operation of chlorinating equipment.

When chlorine is added to water it is consumed by an unoxidized or inorganic matter present and the bactericidal efficiency thereafter depends upon several factors, such as the amount and nature of the residual chlorine (free or chloramine), pH, and the temperature of the water. Chlorinated water will also lose chlorine quite rapidly when exposed to direct or bright diffuse sunlight. It is therefore necessary to add sufficient chlorine to satisfy the demand of chlorine-consuming materials present, to allow for any quantity which might be lost, and still leave a measurable quantity of chlorine for a period of at least thirty (30) minutes for bactericidal action.

Experience has shown that if the quantity of chlorine added to water is sufficient to yield, after a ten (10) minute contact period, a residual concentration of one (1) part per million, a satisfactory bactericidal concentration will usually be maintained for at least thirty (30) minutes. The residual chlorine test, therefore, as the name implies includes the time factor of contact period between the time of chlorine dosage and the time of testing. Preliminary reports of chlorine residual tests should include statements such as; 10 minutes residual, 30 minutes, or 1-hour residual.

While not specific for chlorine, the orthotolidine test is the most reliable simple quantitative test for measuring small quantities of chlorine in water. The reagent is a colorless 0.1% solution of orthotolidine in approximately 1.2 normal hydrochloric acid and is prepared as follows:

1. Weigh out 1 gram of orthotolidine crystals, transfer to a 6-inch mortar and add 5 ml. "20 per cent" hydrochloric acid (Prepared by adding 100 ml. of concentrated hydrochloric acid, specific gravity 1.18 - 1.19 to 400 ml. of distilled water).

2. Grind to a thin paste and add 150 to 200 ml. of distilled water. The orthotolidine goes into solution immediately.

3. Transfer to 1000 ml. graduate and make up to 505 ml. with distilled water.

4. Make up to the 1000 ml. mark by adding the balance (495 ml.) of the 20 percent hydrochloric acid.

This reagent is commonly used in the proportion of 1 ml. of the reagent to 100 ml. of the sample. This is sufficient to give the correct color reaction in samples containing not more than approximately 3.3 ppm chlorine and approximately 500 ppm alkalinity. For higher concentration of chlorine a higher proportion of orthotolidine is required, and for samples having high alkalinity more of the acid reagent is needed in order to reduce the pH value to below 1.8.

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When the ratio by weight of orthotolidine to chlorine in a sample is equal to or exceeds 3 to 1, and if sufficient acid is present to lower the pH value of the sample to below 1.8, the color produced is yellow, and the depth of yellow color (shading into brown) is proportional to the concentration of chlorine in the sample. When the ratio is approximately 2 to 1 an orange red color is produced, and when the ratio is 1 to 1 or less a cherry red color is produced -- the depth of these colors being proportional to actual concentration of orthotolidine and chlorine involved.

One ml. of standard orthotolidine solution contains 1 milligram of orthotolidine or sufficient to form solely a yellow color with 0.33 milligrams of chlorine. This means that if 1 ml. of orthotolidine solution is added to 100 samples (not too highly alkaline) containing from 0.1 to 3.3 ppm chlorine, yellow colors will form with increasing depth of color in proportion to the concentration of chlorine. At concentrations up to approximately 1.5 ppm the yellow color will have a pale green tint, but at concentrations above approximately 1.5 and below 3.3 ppm the samples have a true yellow color becoming moderately deep at 2.0 ppm and only slightly deeper at 3.0 ppm. If one ml. of orthotolidine solution is added to 100 ml. samples containing in excess of approximately 3.5 ppm chlorine the color developed will be orange to orange red to cherry red, with the red color becoming quite pronounced at 5 to 6 ppm.

Unfortunately the orthotolidine reagent is not a specified test for chlorine. The reaction is an oxidation process and certain other materials, sometimes found in water, will produce similar reactions. As small quantities as 0.3 ppm of ferric iron, 0.01 ppm of mangenic manganese, or 0.3 ppm of nitrite nitrogen will give a false indication of the presence of chlorine. The reaction of ferric iron and nitrite nitrogen on orthotolidine is quite slow as compared with the reaction of chlorine, and the color produced is a brownish yellow instead of the typical clear deep yellow produced by chlorine. If samples being tested are placed in the dark for the five minute period for color development iron and nitrites will not produce enough color to interfere seriously with the residual chlorine test. The reaction of manganese is almost identical with that of chlorine on orthotolidine. The color development is rapid and as is the case with the chlorine reaches maximum development within 5 minutes, even in the dark.

It is advisable always to perform a blank orthotolidine test before chlorination to detect the presence of these interfering substances. Manganous manganese or ferrous iron may however be exidized to the -ic form on chlorination. When suspected, a chlorinated sample should be tested before and after thorough aeration or boiling. The difference in values is due to the residual chlorine.

When a water supply is suspected of containing interfering quantities of iron, manganese, or nitrites, the orthotolidine test should be supplemented by the neutral starch-potassium-iodine test. Residual chlorine concentrations greater than 0.1 to 0.2 ppm will produce a positive blue color when a few milliliters of fresh neutral starch solution (0.3 to 0.5% solution) and a few milliliters of neutral potassium iodide solution (5 to 10% aqueous or alcoholic solution) are added to the sample. The ordinary interfering quantities of iron,

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manganese, and nitrites will not produce the blue color with starch-potassium iodide unless the pH value of the sample is reduced to below 5.0.

III. Bacteriological Tests. - Tests for bacteria of the Coli-Aerogenes Group.

No procedure has been developed for detecting minimum infectious numbers of typhoid or other intestinal disease bacteria in water. It has, however, been observed that almost invariably when water contains infectious quantities of intestinal disease organisms, measurable numbers of colon bacilli are present. Bacteria of the coli-form group (including both B. coli and the A aerogenes, referred to as the coli-aerogenes group) have therefore been chosen as indicator organisms for bacteriological examination of water.

The coli-aerogenes group includes all aerobic and facultative anaerobic gram-negative, nonspore-forming bacilli, which ferment lactose with gas formation. Micro-organisms of this group are not pathogenic, and are not necessarily harmful to the water, but are considered as evidence of fecal contamination, and the potential presence of pathogenic fecal organisms of dysentery-typhoid-Salmonella or Cholera groups which are not so readily detected in routine tests.

The standard procedure for carrying out the test for the presence of bacteria of the coli-aerogenes group on presumable potable water samples includes the following steps:

A. The Presumptive Test. Inoculate a series of lactose broth Durham fermentation tubes with graduated quantities of the water, but not more than 10 ml. in a tube (10 ml., 1.0 ml., 0.1 ml., etc.). Usually 5-10 ml. samples are planted and 1 - 1 ml., and 1 - 0.1 ml. for a single sample to be tested. The quantity of the medium must be at least twice that of the water. Standard sterile lactose broth is used. Incubate these tubes at 37 degrees centigrade for 48 hours. Examine them at 24 hours and 48 hours and record the formation of gas in the small inverted vials.

1. The formation within 24 hours of gas in the inverted vial constitutes a POSITIVE Presumptive Test.

2. If no gas is formed in 24 hours but is formed in 48 hours, the test is doubtful and must be confirmed.

3. If no gas formation occurs within 48 hours this constitutes a NEGATIVE Presumptive Test.

Very few bacteria other than those of the coli-aerogenes group occuring in water will ferment lactose broth within twenty-four hours, but several non-significient bacteria, particularly chlorine-resistant spore-forming bacteria may ferment lactose within 48 hours.

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B. The Confirmed Test. Make two or more Endo or Eosinmethylene Blue agar plates from the tube which contains the smallest amount of water showing gas. Transfers should be made as soon as possible after the formation of gas. Incubate the plates at 35 - 37 degrees C. for 24 hours. If typical colonies have developed upon the plate within this period, the Confirmed Test may be considered POSITIVE. If no typical colonies develop in 24 hours, the test cannot yet be considered Negative definitely. In such cases the test should be carried on to completion. (Part C)

An alternate CONFIRMED test can be made using a liquid medium such as Brilliant Green Lactose Bile and Durham fermentation tubes as described for the Presumptive test above. The procedure is to transfer from a lactose broth tube showing gas the desired portion tube tested, by wire loop, sterile capillary tube or pipette, and add it to the fermentation tube containing B.G.I.B. Incubate these tubes for 48 hours at 35 - 37 degrees C. and observe the gas formed at the end of 24 and 48 hours.

1. The production of any gas in B.G.I.B. tubes in 24 hours is considered POSITIVE.

2. The development of no gas in 48 hours constitutes a NEGATIVE confirmed test.

C. The Completed Test. From the Endo or E.M.B. plates transfer two or more typical colonies, each to an agar slant and lactose broth fermentation tube. If no typical colonies have appeared after 24 hours incubate for another 24 hours, Then two or more colonies most likely to belong to the coliform group, whether typical or not, are transferred to agar slants and lactose broth fermentation tubes.

The inoculated tubes are incubated until the formation of gas or for 48 hours. The agar slants are incubated for 24 hours. Then at least one culture, corresponding to a tube which shows gas formation, is examined microscopically for identification.

The formation of gas in lactose broth and the demonstration of Gram-negative, non-sporing bacilli in the agar slants are COMPLETE proof of the presence of a member of the Coli-Aerogenes group.

The absence of gas formation or failure to demonstrate such bacilli constitutes a Negative test.

Bacteriological analyses on presumable potable water are almost invariably carried through the confirmed test, and usually through the completed test. An analysis of an individual sample showing a positive presumptive, positive, confirmed, or positive completed test on even one of the five 10-ml. portions tested indicates that the water supply at the point of collection at the time of collection was of unsatisfactory quality. Check samples should be taken at this point and adjustments made in water treatment, until bacteriological tests

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repeatedly and consistently show the absence of coli-aerogenes organisms in five 10 ml. portions. A water supply receiving proper treatment will not show more than one (1) unsatisfactory sample out of each one hundred (100) samples tested, indicating not more than one (1) bacteria of the coli-aerogenes group per 5000 ml. of water (1/5000 ml. less than 1 per gallon of water.) Many public supplies have a record of two to five years with no more than one unsatisfactory sample out of all samples tested, including three to five samples tested daily.

A laboratory report of a bacteriological analysis of a sample of water should include a brief simple interpretation of the results of the test in terms of the probable potability of the water. The use of one of the following statements is recommended:

1. Potable bacteriologically. No evidence of contamination has been found.

2. Not potable bacteriologically. Tests reveal evidence of contamination.

3. Not potable bacteriologically. Colony count is too high; suggest re-examination.

D. Test for Total Number of Bacteria. The approximate number of bacteria present in a sample of water may be determined by applying the nutrient agar plate count, referred to as the "total colony count". The test includes the following steps: (1) Transferring a portion, usually 1 ml., of the water sample to a sterile Petri dish; (2) pouring melted sterile nutrient agar over the portion of water, mixing and permitting the agar to solidify; (3) incubation at 35°- 37°C for 24 hours; and (4) counting the number of bacterial colonies developed.

The actual number of bacteria per ml. in a sample of water will probably always be greater than the number of colonies which develop on an agar plate from one ml. All bacteria present may not grow, and a colony does not necessarily develop from single bacterium. The test, however, gives a fair indication of total bacterial contents of water and is an excellent control test to measure effectiveness of water treatment processes. The bacterial content of water is progressively reduced by the consecutive treatment processes; sedimentation, filtration, and chlorination. An adequately treated water supply will consistently show an agar plate colony count of lower than 5 per milliliter.

The test for total number of bacteria is of little or no value unless initiated within two or three hours after the samples are collected, or unless the samples are held at low refrigeration temperature. The bacterial content of samples is not altered seriously in twelve to twenty-hours if the temperature is maintained below 40°F. Results reported from delayed tests often lead to erroneous ideas of water quality. Water treatment may render a supply almost completely free of bacteria of the coli-aerogenes group, but does not effect complete sterilization. Soon after a sample is collected any residual chlorine

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present is soon exhausted and bacterial multiplication starts. The bacterial content may rise to several thousands per milliliter within 24 hours and to millions per milliliter within 48 to 72 hours.

Frequently water supplies have been cordemned solely on the basis of a high total bacterial count and no allowance given to the time between collection and testing.

Although the "total colony count" or "plate count" technique is discussed here, experiences by bacteriologists have found that total counts have so little significance in a water examination that they are being abandoned in favor of the more specific coliform tests. Another method is the value determined by the most probable number interpretation, as found explained in "Standard Methods".

When water samples for bacteriological examination are enroute to laboratories in excess of 24 hours time interval, the possibility as reported by the laboratory should be determined only on the basis of the coliform bacterial content.

The presence therefore of a high count may or may not be of sanitary significance, but the presence of Coli-aerogenes is always important.

Frequently, the bacteriological examination of a sample of water collected prior to the disinfection of a well which has been recently constructed or repaired will show contamination. This is usually because surface contamination is carried into the ground water or well during construction or repair and does not mean that the ground water was contaminated before the well was constructed or repaired. If a well is properly located and constructed the water usually will be bacteriologically satisfactory after the well has been completed and disinfected. Samples of newly developed wells or wells which have been repaired should not be taken for bacteriological analysis until after completion and disinfection of the well.

IV. PHYSICAL CHARACTERISTICS

A. Turbidity

The turbidity or cloudiness of water is due to the presence of suspended matter which obstructs the passage of light through the water. Generally speaking, the degree of turbidity is proportional to the quantity of suspended material, but the size of the particles has an important bearing on the water's behavior during treatment. Coarse turbidity producing particles may settle rapidly, while the fine material may remain suspended for extremely long periods.

Turbidity producing materials usually are not toxic. But the more turbid the water, the higher the chlorine demand and the higher the total bacterial count are likely to be.

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Turbidity in water is measured by direct or indirect photometric comparison of a sample with standardized suspensions of Fuller's Earth or finely divided silica. Water having a turbidity of 5 is perceptibly cloudy in a drinking glass, and a turbidity of 20 is definitely objectionable. Turbidity measurements serve as an index of sedimentation and filtration efficiency. Properly executed coagulation, sedimentation and filtration processes will deliver a finished water having a turbidity of less than 5.

In various areas it may be necessary to use water having a turbidity as high as 100 with no other treatment than chlorination. This should be avoided if possible because it is difficult to render such water absolutely safe by chlorination alone and the water is almost certain to have an objectionable taste.

With adequate coagulation, sedimentation, filtration, and chlorination facilities it is possible to convert a highly turbid water (turbidity of 1000 to 10,000) to a crystal clear safe water having only slightly objectionable taste.

B. Color

True color in water originates in the organic matter leaching from swamps and forest-covered areas on watersheds. Sometimes it may be due to pollution from industrial sources. The color of water in itself is harmless, but its presence detracts from the physical appearance of the water and so may affect community complaints. It is not a serious problem from the health viewpoint.

Color in water is measured by direct or indirect colorimetric comparison with standardized platinum-cobalt solutions. A color of 10 is equivalent to the color produced by 10 milligrams of platinum per liter. "Apparent color" in water is that produced by both suspended and dissolved materials, and "true color" is produced only by dissolved materials. "True color", usually produced by dissolved organic matter and colloidial iron, is not particularly objectionable as color unless the color value exceeds approximately 20, but the color producing materials either produce objectionable tastes or are associated with taste producing materials. Natural water having "true color" in the range of 100 or greater should be avoided if possible.

C. Total Solids

The total amount of solids in water is measured by evaporating a measured portion of a sample, and weighing the residue after drying at 103°C. for one hour. A determination on a carefully filtered or centrifuged portion of a sample gives the total dissolved solids. The difference between the total solids and the dissolved solids is reported as total suspended solids. Unless the turbidity of a sample exceeds 10 it is not practicable to make both determinations.

Water containing total solids in excess of approximately 1000 ppm has a perceptible mineralized or salty taste which may be objectionable to individuals accustomed to water of very low mineral content. It may be necessary in various

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areas to use water containing more than 1000 ppm mineral matter but no adverse physiological difficulties will result unless a major portion of the solids are sulfate salts.

In routine analysis of water from the same source, such determinations are of value in the control of the operation of a water purification plant.

V. CHEMICAL TESTS

A. Alkalinity, Acidity and pH. Hydroxides, carbonates, and bicarbonates, which tend to hold the pH value of water above 7.0 are the common alkaline materials found in water. Mineral acids and carbon dioxide, which tend to keep the pH value below 7.0, are the common acid materials in water. Alkalinity and acidity are measured by titrating samples with standard acids or bases, using methyl orange and phenolphthalein as end-point indicators. Results are commonly reported as parts per million of equivalent calcium carbonate. That is, an analysis report of 150 ppm of bicarbonate alkalinity means that there is a quantity of bicarbonate iron present in the sample that is chemically equivalent of 150 ppm of calcium carbonate. A report of 100 ppm of carbon dioxide acidity means a quantity of carbon dioxide equivalent of 100 ppm of calcium carbonate. A total alkalinity of 300 ppm usually mostly bicarbonate, means a total quantity of the alkaline materials equivalent to 300 ppm of calcium carbonate. Carbon dioxide, however, is sometimes reported as ppm of carbon dioxide.

Hydroxide and carbonate alkalinity seldom occur except in water which has been subjected to lime or lime-soda-ash softening treatment. The presence of a measurable quantity of hydroxide alkalinity indicates that an excessive quantity of lime has been added. The amount of carbonate alkalinity in a lime or lime-soda-ash softened water depends upon the nature and quantity of hardness and alkaline materials originally in the water, and upon the degree of softening effected. In any case carbonate alkalinity seldom exceeds 100 ppm.

Bicarbonate alkalinity occurs in practically all natural waters, ranging from as small quantities as 5 or 10 ppm alkalinity to as much as 1000 to 1200 ppm in waters that are often used for human consumption.

The significant limits of alkalinity in water are less than approximately 50 ppm and more than approximately 500 ppm. A highly turbid natural water containing less than 50 ppm of alkalinity usually responds slowly and incompletely to coagulation treatment. If a heavy dose of coagulant is required for clarification it is necessary to add lime or soda ash to assure that there is sufficient alkalinity for the reaction with the acidic coagulant.

Water containing 500 ppm of alkalinity has a distinct "soda" taste. At a content of 1000 ppm the taste is particularly objectionable to many individuals, but even at this concentration of alkalinity it would produce only a very slight physiological reaction. An alkalinity of 1000 ppm is equivalent to approximately 1 teaspoon of soda per gallon.

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Mineral acidity seldom occurs in natural water. Its presence indicates pollution of water with acid industrial wastes. Carbon dioxide is present in varying quantities in most natural waters. It has no significance other than its corrosive action. As small a quantity as 2 to 3 ppm of carbon dioxide in a very soft water may render it quite corrosive, while 10 to 15 ppm of carbon dioxide may not be objectionable in a hard water.

The pH value of a water indicates the degree of acidity or alkalinity but tells little of quantities present. Certain pH values and ranges tell much of the types of alkalinity and acidity materials present in water:

1. Above the pH value of approximately 4.2 (methyl orange end-point) water contains no measurable quantity of mineral acidity; below this point the mineral acid and carbon dioxide content may be very high.

2. In the pH range of 4.2 to 8.3, of the common acid and alkaline materials, only carbon dioxide and bicarbonate are present in measurable quantities.

3. Above the pH value of 8.4 (phenolphthalein end-point) no measurable quantity of carbon dioxide is present in water.

4. Below the pH value of 10.0 a measurable quantity of hydroxide seldom occurs.

5. In the pH range of 8.4 to 10.0 carbonates and bicarbonates may be present but measurable quantities of both bicarbonates and hydroxides cannot be present together.

Knowledge and control of pH are useful to minimize the amount of chemicals needed in water purification, to increase the efficiency of bacterial removal, and to prevent corrosion.

B. Chloride. Chloride comes mainly from dissolved mineral chloride or harmless inorganic substances. A chloride content of 250 ppm gives to a water a perceptibly salty taste, but the taste does not become particularly objectionable unless the chloride content exceeds 600 to 700 ppm. Water having a salt content of 500 to 800 ppm (equivalent to 700 to 800 ppm of sodium chloride) might be advantageous to use for people in tropical areas or during extremely warm weather. A chloride content of 600 to 700 ppm is equivalent to the amount of sodium chloride (0.1%) recommended to be added to ordinary water as an aid in maintaining the proper salt content of body fluids of laborers engaged in activities producing heavy perspiration and resultant serious loss of salt.

The chloride test is precise and may be performed rapidly and reliably. It is therefore often used as an indicator test for changes in mineral content. Surface water, particularly streams, may have frequent and considerable changes in salt content, and such changes may or may not be of significance. Wells and springs, however, should have a uniform chloride content. If an appreciable change in chloride content of a well or spring occurs it is probably due to

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entrance surface water, or due to "over-pumping", or to defective well casing resulting in encroachment of water from undesirable water strata.

High chlorides indicate a possible pollution with sewage, particulary if the normal chloride is known. Urine contains about 6000 ppm of chlorides. Normal sea water has approximately 34,000 ppm of salt.

C. Sulphate. Water containing approximately 250 ppm of sulfate has a perceptible "Epsom Salts" taste, and may produce considerable temporary physical discomfiture for individuals not accustomed to drinking water of high sulfate content. A sulfate iron content of 250 ppm is equivalent to one teaspoon of Epsom Salts, or Glabers Salt per gallon of water. Water containing in excess of 500 ppm sulfate should be avoided if possible.

Calcium sulphate or gypsum causes hardness in water as it is more soluble in cold water than in hot. It separates from the water on boilers and forms scale on the boiler tubes.

D. Hardness. Most of the hardness in water is produced by calcium and magnesium salts. The total hardness of water can be determined approximately by titrating samples with standard soap solution. Total hardness is reported as ppm of equivalent calcium carbonate.

Hardness in water has no physiological significance but is objectionable because of its soap consuming and boiler incrusting properties. Hardness does not become objectionable unless the total hardness exceeds approximately 100 ppm. In various areas it may be necessary to use water having a hardness of several hundreds ppm but the softest available supply should be selected. Hardness above 300 ppm may be of considerable sanitary significance, because of the serious interference with effective use of soap in laundry, bathing, cooking, and washing facilities.

E. Iron and Manganese. A common and troublesome impurity found in deep-well water is dissolved iron in the form of ferrous bicarbonate. As soon as water containing this impurity is exposed to air, oxygen changes the iron into insoluable oxides which give the water a rust color and cause stains. The fine red particles settle out as a rusty sediment.

Iron in water in excess of approximately 0.3 to 0.5 ppm and manganese in excess of 0.1 to 0.2 ppm are objectionable for the following reasons:

1. Water will have an "inkish" sweet taste becoming quite objectionable when the iron content is as high as 0.3 - 0.5 ppm.

2. The taste of coffee and tea made with the water is seriously impaired.

3. Plumbing fixtures and laundry are objectionably stained.

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4. Serious interference with the orthotolidine test for residual chlorine may occur. As small a quantity as 0.01 ppm of manganese will produce a measurable color with orthotolidine.

5. Iron in the process water is most objectionable in certain industries, notably in the textile trades and in paper making.

F. Nitrite. Nitrites in water usually occur through bacterial oxidation of nitrogenous organic matter or bacterial reduction of nitrates. Their presence, therefore, indicates bacterial growth in water. As small a quantity as 0.001 ppm nitrite nitrogen may be of sanitary significance. An adequately treated and chlorinated water will seldom has this quantity. Nitrites in excess of approximately 0.3 ppm nitrite nitrogen may give a false positive test for residual chlorine when the orthotolidine test is used, particularly when the test is being made by an inexperienced individual. This interference with the residual chlorine test is often encountered when inadequate treatment is being applied to heavily polluted water or swimming pool water, or when the test is being used in connection with chlorination of sewage treatment plant effluents.

G. Nitrate. Since nitrates are produced by oxidation of nitrogenous organic matter, their presence in water may be of sanitary significance. The variation in the quantity of nitrate in a water (particularly a ground-water) and not the actual quantity is a significant factor. If the quantity is constant the nitrate is probably coming from the water bearing stratum which may have been formed millions of years before. A variable nitrate content in a ground water is an indication of fairly recent surface pollution.

H. Fluoride. Fluorine is sometimes found in water as fluorides. If present in sufficient amounts, over 1.5 parts per million of fluorine, it causes an incurable injury to teeth known as "mottled enamel" which is very disfiguring to the teeth in these cases where fluoride water has been consumed. The injury is done during the age period from birth to nine years, while calcification of the permanent teeth is in process. No harm is apparently done after that age.

Although a fluoride content of over 1.5 ppm has been found to be detrimental, less than that amount appears to provide protection against dental caries or tooth decay. Inspections of teeth in areas where the fluoride content is naturally 1.0 to 1.5 parts per million show 60% or less dental caries than where the water is fluorine-free. Several ten year studies and other experiments are in progress to increase knowledge of fluoride application.

I. Other Chemical Impurities. Water should not contain an excessive amount of soluable mineral substances, nor excessive amounts of any chemicals employed in treatment. Various amounts of the following chemical substances will constitute grounds for rejection of the supply: lead, arsenic, selenium, vanadium, boron, hexavalent chromium, copper, magnesium, zinc, and phenolic compounds. Ordinarily analysis for these substances need be made only semiannually. If, however, there is some presumption of unfitness because of these elements, periodic determination for the element in question should be made more frequently. Where experience, examination, and available evidence indicate that such

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substances are not present or likely to be present in the water supplies involved, semiannual examinations are not necessary, unless requested by health authorities.

J. Interpretation of Results of Chemical Analysis. It is impossible to determine the quality of a water from a chemical analysis alone. If chlorides, ammonia, and nitrates were due only to the decomposition of organic matter, water analysis would become an exact means of determining the degree of contamination. But since these various substances usually are not dangerous in themselves, and may be found to be present in a potable water in varying quantities, knowledge of the origin of the water is important in interpreting analyses.

From the public health standpoint the presence of materials which cause a high chlorine demand, which give rise to chlorinous tastes, which make the water difficult to treat, is important. Again it is emphasized that periodic chlorine residual tests throughout the distribution system of a water supply be coordinated by the health center inspectors and the water plant operators to maintain daily surveillance of actual operations and conditions.

Nitrites normally are present in very small amounts or are absent, because nitrites are transitory compounds that are soon converted into Nitrates. The results of the Nitrogen tests, when used collectively, help to show the possible presence of contaminating substances and the probable length of time they have been present in the water. The relative amounts, rather than the actual amounts of the nitrogen compounds indicate the state of pollution. If the organic matter is fresh, nitrites will not have formed; if it is old the nitrites will have turned into nitrates.

In general when a chemical analysis of water shows the presence of large amounts of chlorides, ammonia, nitrites or nitrates, pollution with sewage should be suspected. An examination of the water source should then be carefully made to determine the cause of the trouble, the suitability for treatment, and the type of treatment necessary.

VI. SIGNIFICANT QUANTITIES.

Comparison of American and Japanese maximum allowances for presumably potable water are listed below. These significant quantities are not standards. They are merely guides or rather indicators which are desirable, within limits or less, for a recommended quality of water.

TEST	AMERICAN	JAPANESE
Residual chlorine	0.05 - 0.1 1.0 - 2.0 (chloramines)	0.1 - 0.2 **
Bactericlogical:		
Coli-aerogenes group	Gas formation in 10% of tubes planted	Gas formation in 10% of tubes planted
Total bacteria	5 per ml	100 per cc

(See footnote 1)

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TEST	AMERICAN	JAPANESE
Odor	none	none
Taste	not objectionable	not objectionable
Temperature	50 - 55° F.	**
Color	20	1
Turbidity	10	2
Total solids	500 ppm	500 ppm
Alkalinity	120 ppm	**
pH	Less than 7.0 and over 10.6	Less than 5.8 and over 8.0
Hardness	100 ppm	300 ppm
Chloride	250 ppm	30 ppm
Sulphate	250 ppm	**
Nitrite	0.001 ppm	trace
Nitrate	Any measurable variable quantity	10 ppm
(See footnote 2)		
Iron and Manganese (total)	0.3 ppm	0.3 ppm
Fluoride	1.5 ppm	1.5 ppm
Lead	0.1 ppm	0.1 ppm
Arsenic	0.05 ppm	0.05 ppm
Selenium	0.05 ppm	**
Hexavalent chromium	0.05 ppm	0.05 ppm
Copper	3.0 ppm	0.7 ppm
Magnesium	125.0 ppm	**
Zinc	15.0 ppm	1.0 ppm
Vanadium	1.0 ppm	**
Boron	1.0 ppm	**
Phenolic compounds	0.001 ppm	0.01 ppm
(See footnote 3)		

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NOTE: Tests as Dissolved Oxygen, Biochemical Oxygen Demand and Oxygen Consumed are not recommended for routine tests in the maintenance of potable water supplies. However, they are recommended for stream pollution studies, control of purification processes, sewage treatment observations, and specific water problems.

1/ Recommended routine tests are the chlorine residual and the bacteriological tests. Sole reliance in determining the safety of water supplies cannot be placed on the results of infrequent bacteriological analysis; supplies which are potentially hazardous may be erroneously judged to be safe if contamination is not present at the time the samples are collected although there may be faulty location, construction, or operation of the supply. Periodic examinations will provide better control in such cases.

2/ Ordinarily a chemical analysis of a domestic supply will include: the physical tests, total hardness, alkalinity, pH, sulphates, and chlorides. Determination of nitrate nitrogen content should also be made. Iron, manganese, and fluoride may also be determined in some cases.

3/ Mineral analyses have no sanitary significance and are seldom made in routine work. Generally, they are of importance for determining the value of the water as a source for an industrial supply. However, due to their toxicity the above substances should be guarded against in the concentrations exceeding those limits cited.

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DUTIES OF MILITARY GOVERNMENT PUBLIC HEALTH NURSES

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN

PH&W GHQ SCAP APO 500 December 1948

Note: This Bulletin is for the guidance of Military Government Public Health Nurses only, and will not be translated into Japanese nor will the English translation be given to the Japanese.

1. General

The Public Health Nurse of a Military Government Region or Prefecture Team in Japan will work with the Public Health Officer. She will be responsible for the guidance of all the nursing and midwifery education and services. This is a tremendous task and will require the full time of the Public Health Nurse. Her work will depend largely on reports received from Japanese officials and from inspections made in the field to observe operations.

She will exercise surveillance over the Japanese Government's public health activities, as they pertain to nurses, to ascertain if the directives of the Supreme Commander are being complied with.

SCAP, by memoranda, gives the Japanese Government directives, and by command letter directs the Eighth Army to perform certain functions. Memoranda to the Japanese Government from SCAP are numbered consecutively and have the short title of SCAPIN. Only a part of the SCAPINs pertain to public health matters. These directives are on file in all Military Government offices. SCAP may instruct the Japanese Government by memoranda from staff sections to a particular ministry or ministries, or may issue verbal instructions to the ministries concerned. In the event that surveillance is required, for instructions which are given by either of these two methods, appropriate directions for exercising the surveillance will be issued.

Eighth Army may issue Operational Directives to subordinate units amplifying SCAPINs or the letters of instruction that it receives from SCAP. These are numbered consecutively and have the short title OD. Corps headquarters may issue additional instructions amplifying ODs received from the Eighth Army. On purely technical subjects, SCAP sometimes issues Technical Bulletins. These have the short title TB-PH-. Translations, when given to Jpanese technical agencies, are for the specific purpose of establishing a common basis of understanding between Occupation Force and Japanese technical personnel.

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A Weekly Bulletin is published by the Public Health and Welfare Section, GHQ, SCAP which is mailed directly to Military Government units. The purpose of this publication is to keep Military Government units informed of public health and welfare activities at the national level.

The Military Government Public Health Nurse will be responsible for the guidance and supervision of the nurses and midwives in their various programs. Many times this will mean demonstration and teaching, as the Japanese nurses and midwives do not have the same understanding of nursing as we do in America. Nursing and midwifery in Japan is not developed in accordance with western standards. Curriculum planning and ward organization is entirely new therefore, there is a marked need for guidance in these fields. The National Association will need guidance in its many detailed programs.

2. Objectives

The objectives of the public health program will be attained through the medium of Japanese agencies, using Japanese personnel and supplies. Surveillance of the nursing and midwifery program will be exercised by the Military Government Public Health Nurse to insure compliance with directives issued by the Supreme Commander to the Japanese Government. The Military Government Public Health Nurse supervises the execution of the Supreme Commander's instructions. She gives the local Japanese Government advice on technical procedures, and additional instructions when necessary to meet special or emergency situations.

The objectives to be attained are:

a. To provide for the nursing and midwifery programs to the extent of preventing disease and unrest in the civil population.

b. To establish or re-establish nursing standards to help prevent the occurrence of disease and to assure that the civilian population is not a health hazard to the Occupation Forces.

c. To establish and maintain the essential nursing and health activities at a level necessary to meet the requirements of the indigenous population and to prevent disease and suffering which would interfere with the accomplishment of the occupation mission.

d. To report to higher echelon as directed by instructions concerning recurring reports and such special information as is necessary to keep higher echelons factually informed.

e. To utilize Japanese material and personnel in all instance where possible. United States supplies will be used only when Japanese supplies are not available to provide a minimum standard of medical care and treatment on a disease and unrest basis.

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3. Specific Duties

a. Surveillance. Frequent detailed inspections of Japanese health agencies and schools of nursing and midwifery. These inspections will be for the purpose of:

(1) Determination of compliance with SCAP directives and policy.

(2) Determination that health agencies and nursing services are functioning so that minimal requirements of the occupation are met.

(3) Giving technical advice when needed or requested.

(4) Maintaining liaison between various interested sections of the Military Government Team.

(5) Effecting coordination between various departments of the prefectural and local governments when necessary.

b. Receiving and Rendering Reports.

(1) Keeping the Senior Military Government Officer informed as to the health situation and nursing service requirements.

(2) Preparation of recurring and special reports as required by higher authority.

(a) Special reports, as necessary.

(b) Monthly reports.

(3) Receiving, analyzing and acting where necessary on reports received from Japanese agencies.

(a) Analysis of reports.

(b) Passing reports on to higher authority.

(c) Acting on reports received from Japanese agencies or recommending action to h her authority as indicated by the particular situation.

c. Planning. Plans for public health measures will consist in review of Japanese measures for:

(1) The immediate future. With the means available to local governmental officials plan for the suppression of diseases known to occur seasonally in the locality by:

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(a) Coordinating with overall national health programs as announced by higher headquarters. This will include dissemination of educational media: training of nurses, midwives and public health nursing leaders; and procurement of budget necessary to carry out specific programs.

(b) Adapting overall national nursing programs to suit and meet the needs of local conditions.

(2) Long range planning which is designed to ultimately produce an adequate and self-sufficient nursing, midwifery and public health service. This will be accomplished by planning to establish or reestablish schools of nursing and midwifery, public health courses and educational programs to meet the needs of the Health Centers, hospitals and other agencies requiring services of professional personnel.

4. Supply Procedures

Authorized supplies will be requisitioned by the Public Health Officer through channels.

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ADMINISTRATION OF HEALTH, WELFARE AND SOCIAL INSURANCE IN JAPAN

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN

PH&W GHQ SCAP APO 500 February 1948

NOTE: Section I of this Technical Bulletin sets forth the organization of the Ministry of Welfare of the national Japanese Government. Section II sets forth the administrative plan for carrying out the welfare and insurance programs in the prefectures and in the cities, towns and villages. The general plans will need to be adopted to meet local requirements.

SECTION II. PUBLIC WELFARE AND SOCIAL INSURANCE

1. Prefectural Department of Welfare.

a. The Department of Welfare (Minsei-bu) is one of seven departments of the prefecture required under the Local Autonomy Law (Law No. 67, dated 17 April 1947) as amended by the Japanese Diet on 7 December 1947. (The mandatory departments of the prefecture government are set forth in the chart attached as inclosure 3 to this bulletin.) This Law as amended makes it mandatory that a separate Department of Welfare be established and does not authorize the combination of the department with other governmental activities. The Local Autonomy Law provides that matters related to social welfare and certain matters related to social insurance shall be assigned to the Department of Welfare.

b. The Ministry of Welfare has established a "model plan" for the organization of the Prefectural Department of Welfare. Reference: Ministry of Welfare Directive (Hei 1198) dated 27 December 1947, from Vice Minister to Prefectural Governors, subject: Establishment of Departments of Welfare and Departments of Health in the Prefecture office. Also see, Memorandum to Ministry of Welfare, Japanese Government (PHMJG 55) dated 9 January 1948, subject: Amendment of Local Autonomy Law, Law No. 67, 16 April 1947. It is to be noted that the organization plan recommended by the national Ministry of Welfare is a "model plan" which may be adapted to fit the needs of a particular prefecture. For example, it is a matter for the prefecture government to decide whether it is advisable for the local prefecture departments of welfare to be made up of four or five sections. The suggested organization of the prefectural Department of Welfare is set forth in chart attached as inclosure 3 to this Technical Bulletin. According to this suggested plan of organization the prefectural Department of Welfare will consist of five sections: Social Affairs (Shakai-ka), Protection (Hogo-ka), Children (Jido-ka), Insurance (Hoken-ka) and Demobilization (Sewa-ka). The "model plan" issued by the Ministry of Welfare recommends that responsibilities be assigned to each of the five sections as follows:

(1) Social Affairs Section (Shakai-ka)

(a) Survey, statistics and planning of social work.
(b) Training and education of those concerned with social work.

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(c) Guidance and supervision of social work organizations and institutions.
(d) Welfare Committeemen (Minsei-iin).
(e) Public pawn shops, bath house, barbershops, markets, dining halls and welfare institutions.
(f) Protection of the physically handicapped and other special groups such as "street girls".
(g) Problems of socially ostracized groups.
(h) Supply of social relief and aid materials.
(i) Work shops and home jobs facilities.
(j) Matters related to social work not handled by other divisions.

(2) Protection Section (Hogo-ka)

(a) Daily Life Security Law administration.
(b) Repatriates' relief.
(c) Disaster relief.

(3) Children's Section (Jido-ka)

(a) Overall planning on child welfare.
(b) Child Welfare Law administration.
(c) Information and education concerning child welfare.
(d) Cultural programs for children.
(e) Prevention of delinquency among children.
(f) Supply of materials required for protection of children.
(g) Research and statistics concerning children.
(h) Protection of mothers and children.
(i) Matters related to children not handled by other sections.

(4) Insurance Section (Hoken-ka)

(a) Health Insurance.
(b) Seamen's Insurance.
(c) Welfare Pension Insurance.
(d) National Health Insurance.
(e) Matters related to social insurance not handled by other divisions.

(5) Demobilization Section (Sewa-ka)

(a) Counselling of ex-servicemen and former civilian employees of army or navy.
(b) Salaries and other allowances for the bereaved families of fallen ex-servicemen and former civilian employees of army or navy.

c. Relationship to Ministry of Welfare. The suggested organization of prefectural Departments of Welfare makes possible a clear cut division of responsibility between the sections. There is a definite relationship between the functions of various bureaus within the national Ministry of Welfare and the sections of the prefectural Department of Welfare:

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Bureau of Ministry of Welfare	Section of Prefecture Welfare Dept.
Social Affairs (Shakai-kyoku)	Welfare (Kosei-ka) or two sections: Social Affairs (Shakai-ka) and Protection (Hogo-ka)
Children (Jido-kyoku)	Children (Jido-ka)
Insurance (Hoken-kyoku)	Insurance (Hoken-ka)
Demobilization(Fukuin-kyoku)	Demobilization (Sewa-ka)

This ralationship between the administrative organization of the Bureaus of the national Ministry of Welfare and the sections of the prefectural Department of Welfare is shown in the charts attached as inclosures 1, 2 and 3. The chart in inclosure 1 shows in some detail the organization of the Bureaus of the Ministry which are responsible for the welfare and insurance programs. Inclosure 3 sets forth similar information on the prefecture level. (See Section I of this Technical Bulletin for more detailed information concerning administration on the national level.)

d. Organization of Sections. Each section (ka) of a prefectural department (bu) is divided into divisions (kakari) and the duties of the section are assigned to the divisions. The number of employees of a section averages between twenty and fifty, depending upon the size of the prefecture and the development of the welfare program. The model plan of organization of prefectural departments of welfare recommended by the Ministry of Welfare does not include the assignment of duties to divisions within sections since this phase of organization must be determined by the volume of work and the number and abilities of personnel available. In determining the organization of sections within a department it is necessary to give consideration to the assignment of duties to the divisions so that all personnel will understand the extent of their own responsibilities and the duties of other persons within the section. With an expanding welfare program and changes in administrative set-up, it may be found that more consideration must be given to organization of divisions and the specific assignment of duties.

e. Tokyo. Instructions issued by the Ministry of Welfare recommends the establishment of six sections within the Bureau of Welfare (Minsei-kyoku) in Tokyo-to: (1) General Affairs (Shomu-ka), Protection (Hogo-ka), Children (jido-ka), Daily Life (Seikatsu-ka), Insurance (Hoken-ka), and Demobilization (Sewa-ka). Two demobilization sections have been operating in the past but it is expected that eventually they will be amalgamated.

2. Social Affairs and Protection.

a. The responsibilities of the Social Affairs Bureau of the Ministry of Welfare are carried out in the prefectures by the Social Affairs Section and the Protection Section of the Department of Welfare. It is the plan that the Social Affairs Section will have general responsibility for the welfare programs of the entire department. The Protection Section is given responsibility for economic assistance programs. The suggested plan places responsibility for administration of Minsei-iin in the Social Affairs Section rather than in

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the Protection or Children's Section because the Minsei-iin are considered to have general overall responsibilities. The Minsei-iin have duties under the Child Welfare Law (as Jido-iin) as well as in the administration of the Daily Life Security Law.

b. It is to be noted that repatriate relief which is to be administered by the Protection Section is handled on the national level by the Repatriation Rehabilitation Board rather than the Social Affairs Bureau of the Ministry of Welfare. The special programs established for repatriates are therefore administered as a part of the prefectural Department of Welfare although on the national level the Social Affairs Bureau is not responsible for these programs.

c. Recommendations issued by the Ministry of Welfare specifically provide that "depending on circumstances, the Protection Section and the Social Affairs Section may be combined to form a Welfare Section (Kosei-ka)". (Reference: Ministry of Welfare Directive, Hei #1198, dated 27 December 1947). The suggestion that these two sections may be combined recognizes that in many of the smaller prefectures it is not necessary to have five section and that the work can be adequately carried out with four sections. It is the responsibility of the prefecture to decide whether a separate Protection Section is needed.

3. Child Welfare.

a. General. The Children's Section of the Prefectural Department of Welfare is responsible for carrying out the child welfare programs which are administered on the national level by the Children's Bureau of the Ministry of Welfare. An important difference in responsibilities, however, is that the prefectural Department of Welfare does not administer the Maternal and Child Health program which is the responsibility of the prefectural Department of Health. It is essential that a very close liaison be maintained between this health program and the child welfare program since in many instances activities of the two will overlap.

b. Child Welfare Boards. An important unit of the administrative organization of the Child Welfare program within the prefecture is the Child Welfare Board. The Child Welfare Law which became effective 1 January 1948 provides (Article 8) that such boards are to be established in each prefecture for the "purpose of investigating and discussing the problems of children and expectant and nursing mothers", and to make recommendations to the administrative offices concerned. The board is under the jurisdiction of the prefecture governor who is also authorized to appoint the members of the board. A maximum of twenty member of the board is provided by the law but temporary board members may be appointed when necessary for the study of special problems. Persons eligible for appointment are: (1) public officials; (2) persons engaged in child care, health and welfare work and (3) those who have knowledge of and experience with work with children. It is to be noted that twenty is the maximum number of members of the prefectural board and it is the responsibility of the prefecture to determine the exact number. Except in the largest prefectures it is expected that a smaller number of board members will be found most effective. The exact number will depend upon the prefecture population and area and the number of groups which it is considered advisable to be represented on the board. In order to be most effective the board should not be dominated by public officials.

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c. Child Welfare Centers. The Child Welfare Law authorizes the establishment of Child Welfare Centers (Jido Sodansho) in each prefecture of Japan. The center is responsible for the promotion of the welfare of children. The center is to be used for child testing, as an aid for determining the proper placement of children, for child consultation and handling of general problems concerning children.

It is to be noted that the Child Welfare Centers operate on the prefectural level, that is, they are not a part of the city or town government. There may be more than one center within a prefecture but additional centers are responsible to the main center which is located in the prefecture capital city. It is important that the employees of welfare sections of cities, towns and villages understand the services available from the Center and that they properly utilize the programs which are available. The administrative relationships between the child welfare section of the prefectural Department of Welfare, child welfare officials, child welfare workers (Jido-iin) must be carefully worked out and understood by all employees in order to avoid overlapping of functions and duplication of effort.

d. Child Welfare Officials. Child welfare officials are authorized to be employed by the Child Welfare Law. A total of 373 such officials have been approved for employment with from 3 to 50 being provided for each prefecture. These officials, who are full time paid employees, are to work for the promotion of the welfare of children and expectant and nursing mothers and act as counsellors for the care, health and general welfare of children. They are prefecture officials and administratively a part of the children's section of the child welfare section of the prefectural department of welfare. In performing their duties it is of course necessary that they work closely with the welfare sections of cities, towns and villages and with the Child Welfare Centers.

4. Insurance.

a. The first administrative offices for social insurance set up outside the central government headquarters were the 55 offices created in 1926 for administering the Health Insurance program. They were independent of the prefectural governments and directly responsible to the Insurance Department in Tokyo. These were abolished in 1929 and a Health Insurance Section was added to the Police Department of each prefectural government. In 1932 a Labor Administration Section was added to the Police Department to manage the business of Employers' Liability Insurance for Accidents.

b. With the enactment of the National Health Insurance Law in 1938, responsibility for supervision of the activities of the National Health Insurance Associations was assigned to the Social Affairs Section of the prefectural Education Department. In 1940 responsibility for administration of Seamen's Insurance was given to the Health Insurance Section in the prefectural Police Department, and in 1941 jurisdiction over Employers' Liability Insurance for Accidents was transferred to the Health Insurance Section from the Labor Administration Section.

c. The name of the Health Insurance Section was changed to Insurance Section in 1942 and it was also assigned responsibility for Welfare Pension Insurance. Supervision of the National Health Insurance Associations was transferred from the Social Affairs Section to the Insurance Section in 1945, and in

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1946 the Insurance Section was moved from the Police Department to the Welfare Department (or "Education and Welfare Department" as it was known in those prefectures in which both activities were combined).

d. In 1947 Workmen's Accident Compensation Insurance supplanted Employers' Liability Insurance for accidents and was assigned to the Labor Standards offices which are not a part of the prefectural government but are direct extensions of the Ministry of Labor. Unemployment Insurance was also enacted in 1947 and its administration was assigned to the Employment Security Section in the Welfare Department (Education and Welfare Department) of the prefectural governments.

e. With the effectuation of the amendments to the Local Autonomy Law in January 1948 and the resulting separation of Education and Welfare activities into two distinct Departments in all prefectures, it is anticipated that the administration of Unemployment Insurance (Shitsugyo Hoken) will be transferred, along with the Employment Security Section (Shokugyo Antei-ka), to the Economic Affairs Department (Keizai-bu). Workmen's Accident Compensation Insurance (Rodo-sha Saigai Hosho Hoken) will continue to be administered by the Labor Standards Offices (Rodo Kijyun-sho) directly under the supervision of the Ministry of Labor.

f. The insurance Section (Hoken-ka) of the Department of Welfare will continue to administer Health Insurance (Kenko Hoken), Welfare Pension Insurance (Kosei Nenkin Hoken), and Seamen's Insurance (Senin Hoken), and to supervise the Associations (Kumiai) formed in the prefecture to administer the National Health Insurance (Kokumin Kenko Hoken) program.

g. Within the prefectural Insurance Section the administrative organization is usually made up of five divisions. In each prefecture there is a special division for National Health Insurance (Kokumin Kenko Hoken-kakari). The other social insurance programs are handled jointly by the other divisions, which are ordinarily set up as the General Affairs Division (Shomu-kakari), Eligibility Division (Shikaku-kakari), Collections Division (Choshu-kakari) and Benefits Division (Kyufu-kakari).

h. Most prefectures centralize the actual administration of Health, Welfare Pension and Seamen's Insurances completely within the Insurance Section itself, but Hokkaido, Tokyo-to, Osaka-fu and Hyogo, Kanagawa, Niigata, Nagano, Shizuoka, Aichi, Yamaguchi, Fukuoka and Nagasaki Prefectures maintain Social Insurance Branch Offices (Shakai Hoken Shutcho-jo) to administer Health Insurance and Welfare Pension Insurance. Those employers who maintain their own Health Insurance societies (kenko Hoken Kumiai) make only summary reports to the Branch Office (or Insurance Section, depending upon the prefecture), but the latter have the responsibility for all the details of government-managed Health Insurance. Branch offices are directly responsible to the prefectural Insurance Section and have no relation to city, town or village government. All Welfare Pension Insurance records were decentralized to the Branch Offices from the Ministry of Welfare during the war and continue to be maintained in this way except in Tokyo-to and in the prefectures which have only the one prefectural insurance office, where they have been consolidated in single prefectural files.

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i. The Branch Offices are not involved in the administration of Seamen's Insurance, as such activities are divided between the main prefectural office and the Insurance Bureau of the Ministry of Welfare. The prefectural office handles the medical treatment benefits, cash disability benefits, unemployment benefits, and funeral benefits. Survivors' benefits, invalidity pensions, and old age pensions are paid through the central office in Tokyo. The Employment Security offices of both the Labor and Transportation Ministries are to be utilized in the administration of unemployment insurance for seamen.

j. In the supervision of National Health Insurance Associations, the prefectural Insurance Sections utilize the services of the prefectural district offices. The supervision of the autonomous individual associations is a cooperative matter between the prefectural Insurance Sections and the national and prefectural Federations of National Health Insurance Associations. Beneficiaries under the Daily Life Security Act, in the exercise of their freedom of choice of doctors and medical institutions, may avial themselves of the facilities of National Health Insurance Associations.

5. Demobilization.

Each prefectural Department of Welfare contains a Demobilization Section (Sewa-ka) which is responsible for carrying out tasks involved in demobilization. These offices are responsible for settling the accounts of former members of the Japanese army or navy. (Note: this section is sometimes designated as the Local Assistance Bureau). In some prefectures there have been two Demobilization Sections one handling former Japanese army personnel matters and the other for former navy personnel. It is expected that these sections will eventually be combined into a single section.

6. Local Administration.

a. General. Undoubtedly the most important part of public welfare administration in Japan is the work of the local offices of government which are responsible for determining eligibility of persons for assistance and services and are primarily responsible for seeing that the programs are carried out impartially. The importance of the organization and administration of established programs in the cities, towns and villages is frequently not sufficiently recognized in Japan and many programs do not operate as planned because of the lack of adequate supervision of the local offices by the prefectural officials. One difficulty is the fact that there is a great deal of variation between the cities, towns and villages in the organization of their units of government. Much of the variation is due to the difference in size of the governmental bodies. For this reason generalization concerning the organization and methods of administering welfare programs locally is difficult. With the increase in powers of the local government, it becomes more important that they be organized effectively and operate efficiently.

There are four basic units of local government which must be understood in order to comprehend the general plan of administration. These are cities (shi), districts (gun), towns (machi) and villages (mura). The relationship of each of these local units of government to the prefectural Department of Welfare and the bureaus of the national Ministry of Welfare is set forth in the chart in inclosure 2 to this Bulletin.

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b. City Administration. There are over two hundred cities in Japan in addition to the six big cities (Tokyo, Osaka, Yokohama, Kobe, Kyoto and Nagoya). Usually a city (shi) has a population of 30,000 or more and because of its urban nature has more extensive welfare programs than are found in towns and villages. There are usually four to ten cities within a prefecture which are directly responsible to the prefectural government. Larger cities are divided into wards (ku) and the welfare programs are administered by the ward offices under the supervision of the city office.

Since welfare problems in urban areas are usually more acute than in rural areas it is particularly important that attention be given to the establishment of departments of welfare as a part of the city government. (According to the census of 1 October 1947 approximately one-third of the total population of Japan was living in cities. Effective welfare programs in the cities will, therefore, reach a large percentage of the population and at the same time serve as examples for the development of such programs in towns. There are some towns (machi), however, and a few villages (mura) which have larger populations than some cities. It is therefore, necessary to consider the population of the area concerned as well as to whether the locality is classified as a city, town or village. Inclosure 4 to this bulletin contains a list of the fifty-two cities of Japan which had a population of over one hundred thousand according to the census of 1 October 1947. It will be noted that these fifty-two largest cities contain about one-fifth of the total population of Japan. The organization and operation of welfare programs in these largest cities and in the smaller cities must not be overlooked.

It is important to determine whether the welfare programs within a city are administered from a central office located in the city hall or whether they are actually carried out thru other offices such as ward offices. In some places welfare offices (Minsei-iin Jimusho) will be the local offices which actually provided aid and assistance to applicants and recipients. There is a total of about 700 such offices in all the cities in Japan. The effectiveness of a welfare program depends to a large extent upon the efficient operation of local offices where decisions are originally made and where applicants come to secure information.

c. Town and Village Administration. The prefectural area outside the cities is divided into districts (gun) and there is usually an administrative office (Chiho Jimusho) in each district although in some instances two districts may have only one office. The districts are made up of towns (machi) and villages (mura). Welfare programs are actually administered by the towns and villages with limited supervision being provided by the district offices. Much of the inefficiency of administration of welfare programs in Japan is due to the lack of proper personnel to do the work in the towns and villages. Attempts have been made to improve the situation by increasing the supervision provided by the district offices. It has been suggested that welfare programs in Japan should be administered in area outside cities by offices which operate independently of the town and village government. This type of organization has been established for programs other than welfare and is similar in many ways to the county department of welfare type of organization which is found in many states of the United States. The lack of transportation facilities and the increased cost of administration, as well as the fact that welfare programs in the past have been a part of the town and village government, makes it unwise to establish this type of

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organization for Japanese Welfare programs. It is particularly important, therefore, that the town and village officials responsible for welfare programs, particularly those persons who administer the Daily Life Security Law, be given supervision and all possible aid from the prefecture office and the district offices. It seems advisable that sound welfare departments be established within the city governments and for the present to grant priority to the city and prefectural departments of welfare. After city departments of welfare are organized and operating more consideration must be given to improving the plan of administering welfare programs in the towns and villages.

d. Welfare. The responsibilities of the Social Affairs Bureau of the Ministry of Welfare, and the Social Affairs and Protection Sections of the prefectural Department of Welfare are carried out through the regularly established levels of government. In the larger cities there is usually a separate division of the government which handles only welfare matters. In the smaller towns the responsibility for the welfare program may be one of several duties assigned to the same division.

e. Children. The programs carried on at the national level by the Children's Bureau of the Ministry of Welfare and by the Children's Section of the prefectural Department of Welfare are usually administered by the same division of the city, town or village government which is responsible for other welfare programs. A few of the larger cities have a separate division which is responsible for the children's programs. It is the policy of the national Ministry of Welfare to combine all welfare programs in the same local office so that it will not be necessary for persons to go from one office to another in order to learn of the welfare programs which would be of assistance to them.

7. Translation of Terms.

a. The translation of certain terms used to designate various units of Japanese government frequently causes confusion since many can be "properly" translated in several different ways. In order to avoid confusion the following translation have been used in this bulletin:

Koseisho	Ministry of Welfare
Kyoku	Bureau (used only to designate a unit of a national Ministry or the Tokyo-to government)
Bu	Department (in the prefecture)
Ka	Section (of a department or bureau)
Kakari	Division (of a section)
Ken	Prefecture. In the case of Tokyo, it is called "to", in Hokkaido "do" and in Osaka and Kyoto "fu".
Shi	City
Machi	Town ("cho" is also used)

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Mura	Village ("son" is also used)
Gun	District
Ku	Ward (in large cities)

b. The term "Minsei- bu" is sometimes translated as Department of Civil Life, but the more usual translation is Department of Welfare. The term "sodansho" is also translated as "Child Welfare Station" but the translation used herein is Child Welfare Center.

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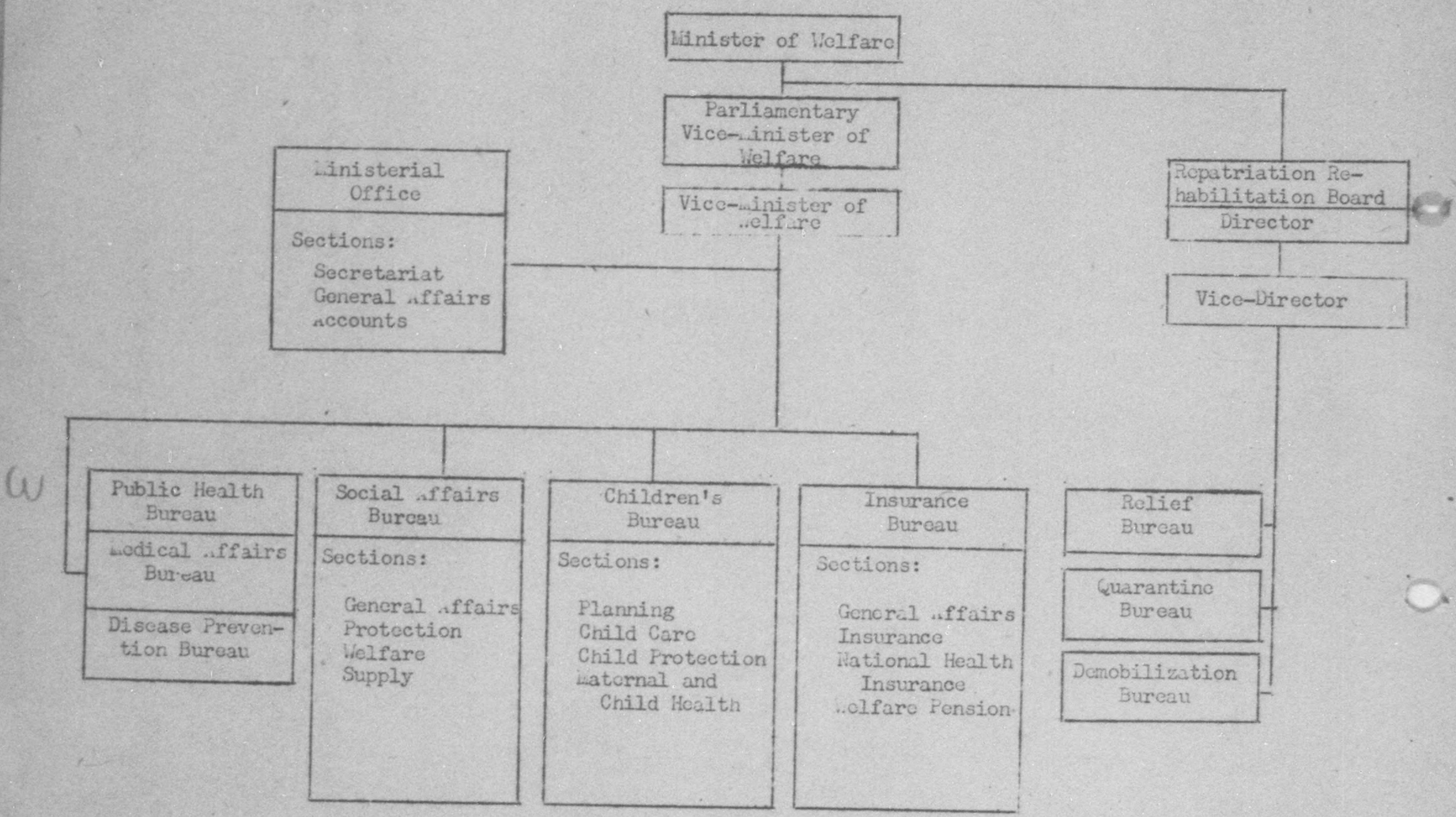
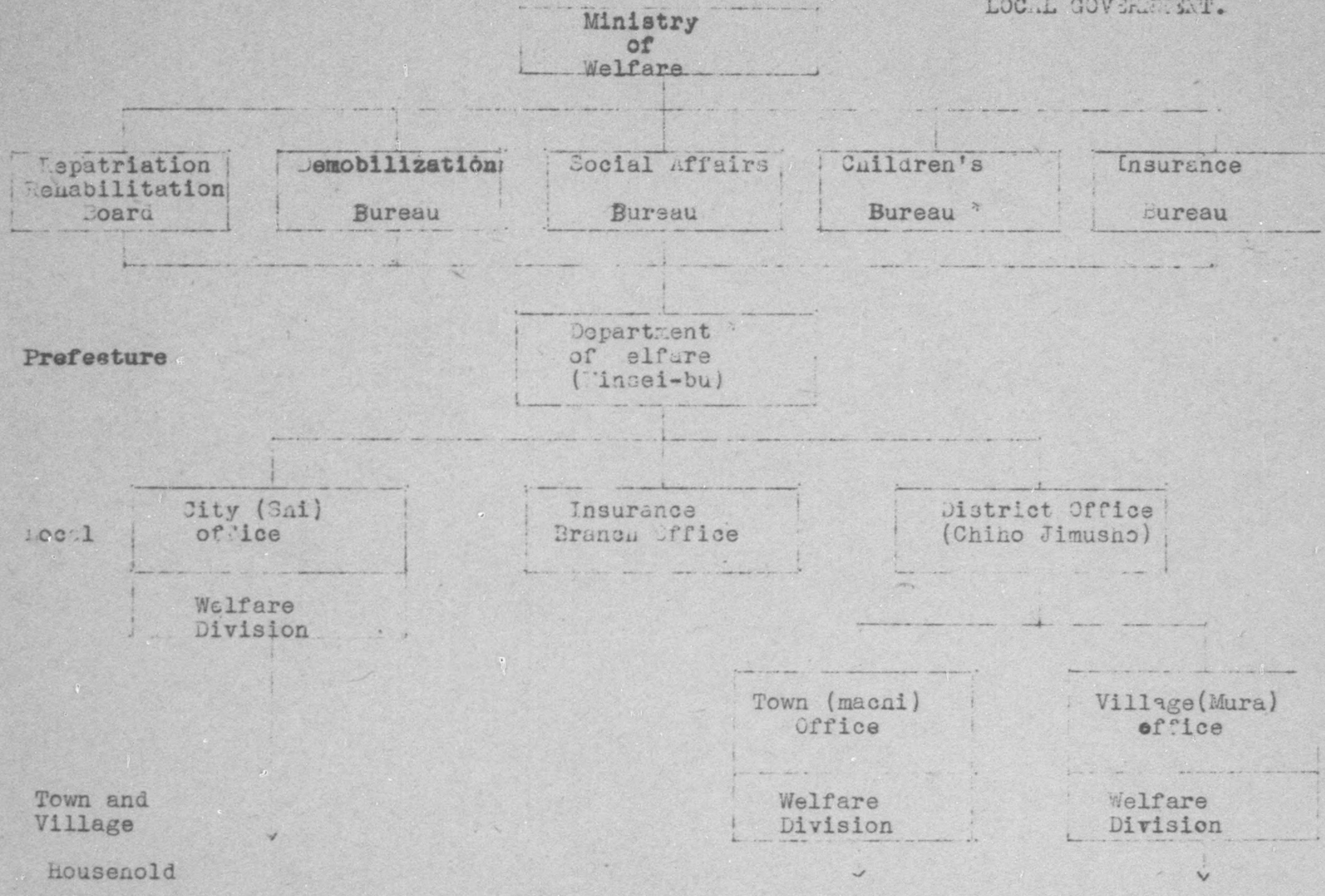
MINISTRY OF WELFARE



Incl. 1

ADMINISTRATIVE RELATIONSHIP MINISTRY OF WELFARE, PREFECTURE DEPARTMENTS OF WELFARE AND LOCAL GOVERNMENT.



* The Maternal and Child Health Program is administered in the prefectures by the Prefecture Department of Health and not the Department of Welfare.

INCL. 2

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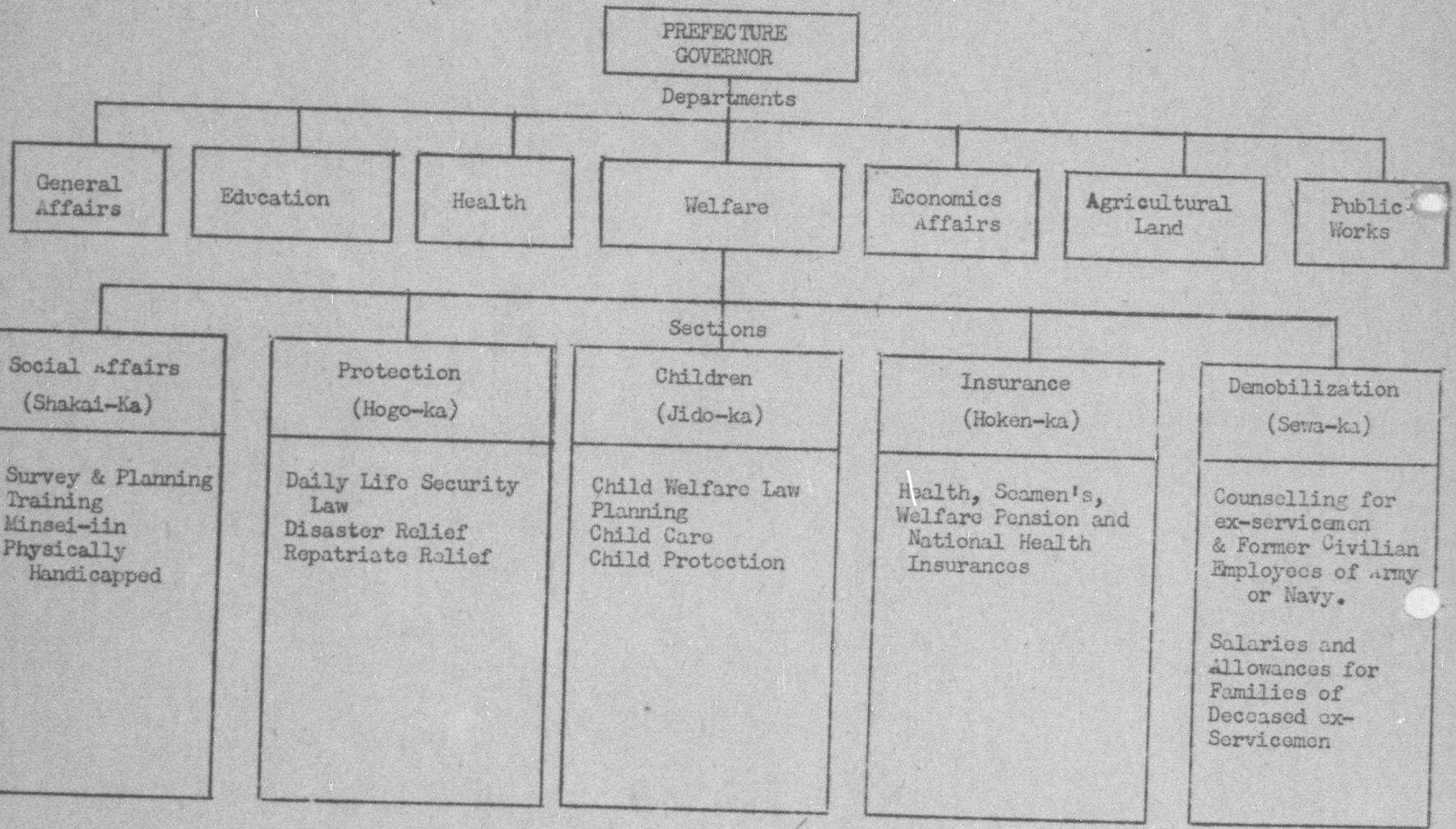
ORGANIZATION CHART PREFECTURE DEPARTMENT OF WELFARE



Incl. 3

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POPUALTION OF CITIES OF 100,000 AND OVER IN JAPAN PROPER.
IN ORDER OF SIZE, CENSUS OF 1 OCTOBER 1947.

City	Population	City	Population
TOTAL	16,785,811		
Tokyo	4,174,505	Yawata	167,829
Osaka	1,559,310	Gifu	166,859
Kyoto	999,396	Omuta	166,480
Nagoya	853.085	Otaru	164,934
Yokohama	814,268	Matsuyama	147,967
Kobe	607,202	Kochi	147,120
Fukuoka	328,586	Okayama	140,630
Sendai	293,208	Toyama	137,818
Yokosuka	261,759	Fuse	133,934
Sapporo	259,602	Takaoka	133,858
Kawasaki	252,923	Toyohasni	129,355
Kumamoto	247,607	Hamamatsu	125,767
Amagasaki	232,755	Chiba	122,006
Kanazawa	231,450	Akita	116,300
Hiroshima	224,205	Kawaguchi	116,007
Hakodate	211,111	Yokkaichi	112,433
Shizuoka	205,380	Moji	109,321
Niigata	204,495	Ube	109,107
Nagasaki	198,405	Nishinomiya	108,707
Himeji	197,452	Asahikawa	107,508
Sakai	194,049	Morioka	107,096
Kure	185,740	Urawa	106,176
Shimonoseki	176,666	Kofu	104,988
Sasebo	175,233	Tokushima	103,252
Wakayama	171,800	Takamatsu	101,424
Kagoshima	170,417		
Kokura	167,996		

Source: Bureau of Statistics
Office of the Prime Minister

RESEARCH AND STATISTICS
DIVISION
ECONOMIC AND SCIENTIFIC SEC.
25 November 1947

Incl. 4

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PUBLIC WELFARE
PUBLIC HEALTH

ADMINISTRATION OF HEALTH, WELFARE AND SOCIAL INSURANCE IN JAPAN

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN

PH&W GHQ SCAP APO 500

February 1948

This bulletin is issued in three sections. Section I sets forth the organization of the Ministry of Welfare; Section II explains the organization of the prefectural Department of Welfare and local administration of the welfare and insurance programs for which the Ministry of Welfare is responsible; Section III deals with the prefectural and local public health programs.

SECTION I

MINISTRY OF WELFARE

1. General

a. National. Establishment of the national Ministry of Welfare (Kosei-sho) was authorized by cabinet action in June 1937 and was created by an Imperial Ordinance issued in January 1938. Originally the Ministry was responsible for health, welfare, social insurance and labor activities of the national government. The national Diet created a separate Ministry of Labor in October 1947, at which time responsibility for labor activities was transferred to the new Ministry. At the present time, therefore, the Ministry of Welfare is responsible for health and welfare services, including certain social insurances.

The present organization of the Ministry of Welfare is set forth in the attached chart (Inclosure 1, to this bulletin). There are at this time a total of seven bureaus and one board within the Ministry of Welfare. These may be divided functionally into two general groups:

(1) Public Health and Medical Care

(a) Public Health Bureau
(b) Medical Affairs Bureau
(c) Prevention Bureau

(2) Social Security and Welfare

(a) Social Affairs Bureau
(b) Children's Bureau
(c) Insurance Bureau
(d) Demobilization Bureau
(e) Repatriation Relief Board

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Almost all Health, welfare and social security programs in Japan are at present national programs in that they have been established by national legislation and supported in a large part by national appropriations. It is to be noted that health, welfare and social security programs in Japan are administratively a responsibility of the prefectural and local governments, i.e., they are

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not administered by the national government independently of the prefectural and local governments. There are three levels of operation: national, prefectural, and local. A fundamental aspect of any administrative organization is the degree of control excerised by a higher level over lower administrative levels. In Japan there is increasing emphasis being placed upon local powers which gives the prefectural government increased authority which it did not formerly possess. This increased power makes it more important that the prefectural health and welfare program be efficiently organized and that the proper relationship of one level of government to other levels be thoroughly understood.

b. Prefectural. The responsibilities of the Ministry of Welfare are carried out in the prefectures through two separate departments: the Department of Health (Eisei-bu) and Department of Welfare (Minsei-bu).

The Local Autonomy Law (Law No. 67, dated 16 April 1947) is the basic law which determines the organization of the prefectural goverments. Amendments to the law effective 1 January 1948, were adopted by the Japanese Diet on 7 December 1947. Article 158 of the Local Autonomy Law controls the establishment of departments and bureaus in the prefectural government. This article, as amended, provides for the establishment of seven separate departments in the prefectures (other than Tokyo): They are: (1) General Affairs; (2) Welfare; (3) Education; (4) Economic Affairs; (5) Public Works: (6) Health and (7) Agricultural Land. Matters relating to social welfare and social insurance are assigned to the prefectural Department of Welfare (Minsei-bu). Matters relating to labor which were formerly in the Department of Welfare are specifically assigned by the amended law to the Department of Economic Affairs. Separate departments are required and there is no authorization for combining departments.

The establishment of separate departments (bureaus) of welfare and separate departments of health in the prefectures was directed by a Memorandum to the Japanese Government (SCAPIN 945) dated 11 May 1946, subject: Reorganization of Government Health and Welfare Activities. In accordance with the provisions of this directive separate departments of health and welfare were established in many prefectures but the reorganization proceeded slowly due to the lack of adequate personnel and finances. (SCAPIN 945, paragraph 5, also provided that the reorganization would be subject to modification by the Japanese Diet. This paragraph was inserted in order to provide a basis for removal of the bureaus devoted to labor activities to a new Labor Ministry. This was finally carried out by Diet action in creating the Labor Ministry in October 1947). Subsequently, the Local Autonomy Law became the basis of the organization of the prefectural governments. This law as originally passed authorized the combination of departments under certain circumstances, and under this authority welfare, health education and labor activities were combined in the same department in many prefectures. Such combinations of functions was not in accordance with the intention of SCAPIN 945. An Amendment (Article 158 Local Autonomy Law) which became effective 1 January 1948, corrected this situation by providing for separate departments of health and separate departments of welfare in all prefectures. Paragraph 1, Article 156 of the Local Autonomy Law was also amended by substituting the words "Health Centers" in place of the words "Police Stations". This change enables the governors to establish, direct and supervise all Health Centers in their prefectures.

c. Public Health and Medical Care. As mentioned in paragraph 1 a above the Ministry of Welfare may be divided functionally into (1) Public Health and

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Medical Care and (2) Social Security and Welfare. The three bureaus in this group, Paragraph 1 c(1) above: Public Health Bureau, Medical Affairs Bureau, and Disease Prevention Bureau, as such, are new bureaus since they were created in November 1946. For this reason the historical background of all three bureaus will be discussed together in paragraph 2 below. The historical background of the four bureaus and one board under the functional division of "Social Security and Welfare," will be discussed separately under the respective bureaus, in paragraph 5 through 9 inclusive.

2. Public Health Bureau (Koshu-Hoken Kyoku)

a. Historical Background. With reference to Public Health administration, the Health Bureau (National) was established in the Ministry of Home Affairs in July 1875 and was responsible for the functions of (1) health (2) medicine (3) chronic disease prevention and (4) epidemic prevention. In January, 1938 the Health Bureau of the Home Ministry was transferred to the newly created Ministry of Welfare and the functions of the said Bureau were divided among (1) the Physical Strength Bureau, (Tairyoku-kyoku) (2) the Health Bureau, (Eisei-kyoku) and (3) the Prevention Bureau, (Yobo-kyoku). In November, 1942 the Health Bureau took over the functions of the Prevention Bureau because of the abolishment of the Prevention Bureau. In February, 1946, the National Health Bureau (name of Physical Strength Bureau was changed to Population Bureau on August 1941, and again to National Health Bureau on November 1943) was abolished and health administrative matters which belonged to that bureau was transferred to the Health Preservation Section in the Health Bureau. In November 1946 the Health Bureau was dissolved and (1) the Public Health Bureau, (2) the Medical Affairs Bureau, and (3) the Disease Prevention Bureau were established in its place. This reorganization was necessary in order to cope with the ever increasing responsibilities in connection with public health administration.

b. Organization and Functions. The total number of persons employed by the Public Health Bureau (Koshu-Hoken Kyoku) in the national office is 942. The Affairs of the bureau are carried out by four sections; (1) Investigation, (2) Health preservation, (3) Nutrition, (4) Health statistics. Responsibilities of the four sections are as follows:

(1) Investigation Section (Chosa-ka)

(a) Planning concerning promotion of national health.

(b) Investigation and statistics concerning health.

(c) National parks and other parks and recreation spots.

(d) Hot springs.

(e) Institute of Public Health.

(f) Affairs not assigned to other sections.

(2) Health Preservation Section. (Hoken-ka).

(a) Health Center and public health nurses.

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(b) Dissemination of health knowledge.

(c) Enforcement of National Physical Strength Law.

(d) Matters concerning eugenics.

(e) Sanitation of public baths, barber shops, theaters, cinemas and other places of public gathering.

(f) Matters of national health and sanitation not assigned to other section.

(3) Nutrition Section. (Eiyo-ka)

(a) Nutrition.

(b) Sanitation of food and drink.

(c) Stock-yard and butchery.

(d) National Institute of Nutrition.

(e) Food Sanitation Law.

(4) Health Statistics Section (Tokei-ka).

(a) Statistics on public health and population.

c. Prefectural and Local Administration. Within the prefectures the functions of the Public Health Bureau are usually assigned to the Public Health Administration section of the prefectural department of health.

3. Medical Affairs Bureau (Imu-kyoku)

a. Historical Background - The reader is referred to paragraph 2 a above for the historical information concerning this bureau.

b. Organization and functions - This Bureau has in its national office a personnel strength of 945. The bureau has a director or chief, a deputy director and eight sections. The responsibilities of the bureau are divided among the eight sections as follows:

(1) Medical Section (Imu-ka).

(a) Matters concerning physicians, dentists, and other doctors engaged in medical treatment.

(b) Enforcement of National Medical Treatment Law.

(c) Medical affairs not assigned to any other office.

(2) Pharmaceutical Section. (Yakumu-ka).

(a) Enforcement of Pharmaceutical Law.

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(b) Matters concerning control companies and associations.

(c) Supply, distribution, import, export, and price control of medicine and sanitary materials.

(d) Control of poisons and drastic medicine.

(e) Production of sanitary materials (except medicine).

(f) Pharmaceutical business not assigned to any other office.

(3) Drug Manufacturing Section (Seiyaku-ka).

(a) Manufacturing of medicine.

(b) Licensing of manufacturers of medicine, (excepting manufacture of opium and narcotics.

(c) Pharmacopeia Japonica and standardization of important medicine and offically-fixed drugs.

(d) Cultivation of pharmaceutical plants, and collection and distribution of crude drugs.

(e) Patent medicines.

(4) Narcotic Section. (Mayaku-ka).

(a) Opium and Narcotics.

(5) Hospital Section. (Byoin-ka).

(a) National Hospitals.

(b) Supervision of the branch offices of Medical Affairs Bureau.

(6) Sanatorium Section (Ryoyo-ka).

National sanatoria (including Leprosoria and mental Hospitals)

(7) Supply Section (Shisetsu-ka).

(a) The necessaries for National Hospitals and National Sanatori

(b) Building and repair for National Hospitals and National Sanatoria.

(8) Branch offices of Medical Affairs Bureau.

(a) Business guidance of National Hospitals and National Sanatoria.

(b) Branch offices shall be located in cites of Sapporo. Sendai, Tokyo, Nagoya, Osaka, Hiroshima, Takamatsu, and Fukuoka.

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c. Prefectural and Local Administration: Within the prefecture the functions of the medical affairs bureau are usually assigned to (1) Medical Affairs Section, (2) Pharmaceutical Affairs Section of the prefectural department of health.

4. Disease Prevention Bureau (Yobo-Kyoku).

a. Historical Background. The reader is referred to paragraph 2 a, above for historical information concernin this bureau.

b. Organization and Functions. The Disease Prevention Bureau in its national office has a regular personnel strength of 110. In addition to the 110 personnel stationed in the national office in Tokyo there are an additional 52 disease prevention officials under the direct control of the Welfare Ministry who perform liaison work with the local offices. These personnel are stationed at Sendai, Tokyo, Fukuoka, Hiroshima, Ehime, Osaka, and Nagoya. In addition to the above personnel there are 1,465 technical and business officials supervising disease prevention work in the field. These persons are serving with each of the local and urban prefectures. The functions of this bureau are assigned to five sections as follows:

(1) Prevention Section (Yobo-ka).

(a) Tuberculosis.

(b) Leprosy.

(c) Trachoma.

(d) Parasidosis, prodosoiasis and endemic.

(e) Myopia and decayed teeth.

(f) Cancer and other chronic diseases.

(g) Mental hygiene.

(2) Acute Infectious Diseases Section. (Boeki-ka).

(a) Acute infectious diseases.

(b) Chronic infectious diseases.

(c) Venereal diseases.

(3) Quarantine Section (Keneki-ka).

(a) Sea-port quarantine.

(b) Aerial quarantine.

(4) Biologic Control Section (Kentei-ka).

Prosecuting affairs concerning:

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(a) Supervision of production and assay of products of bacteriological preparation, (biological products to be used for prevention, thera y and diagnosis), antibacterial substance and quarantine disinfectants.

(b) National Institute of Health.

(c) Guidance and supervision of bacterial assay facilities.

(5) Sanitary Engineering Section. (Eisei Shisetsu-ka).

(a) Water supplies and sewage.

(b) Sanitation and hygiene.

(c) Architectural sanitation and sanitary engineering.

(d) Insect and rodent control.

c. Prefectural and Local Administration: In the prefectures the functions of this bureau are usually assigned to the Preventive Medicine Section.

5. Social Affairs Bureau (Shakai-kyoku)

a. Historical Background. The Social Affairs Bureau was established in August 1920 in the Ministry of Home Affairs and became responsible for all social work activities on the national level. The creation of this bureau was the out-growth of the activities of a relief section which was established in 1917 as a part of the local Government Bureau of the Home Ministry and re-named the Social Affairs Section in 1919.

The Social Affairs Bureau was transferred to the newly created Ministry of Welfare in 1938. In 1941 its name was changed to Livelihood Bureau (Seikatsu-kyoku), apparently as a part of the general plan of reorganizing welfare programs to meet the needs of the military. Early in 1943 the Livelihood Bureau and the Population Bureau of the Ministry of Welfare were combined to form the Peoples Health Bureau (Kenmin-kyoku). In the fall of 1945, after the end of the war, the Social Affairs Bureau was re-established. The responsibilities of the Bureau in the field of child welfare were transferred to the newly created bureau from the Social Affairs Bureau in March 1947 when the Children's Bureau (Jido-kyoku) was established within the Ministry of Welfare.

b. Organization and Functions. The total number of persons employed by the Social Affairs Bureau in the national office is 114 including clerical employees. The work of the Bureau is carried out through four sections: General Affairs, Protection, Welfare and Supply. The responsibilities of the Bureau are divided among the four sections as follows:

(1) General Affairs Section (Shomu-ka).

(a) Overall planning for social welfare.

(b) Investigations and statistics concerning welfare.

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(c) Minsei-iin organization.

(d) Social welfare training and education.

(e) Matters not assigned to other sections.

(2) Protection Section (Hogo-ka).

(a) Administration of Daily Life Security Law.

(b) Disaster assistance.

(3) Welfare Section (Fukuri-ka).

(a) Special program for ostracized groups (such as Eta).

(b) Aid for physically handicapped and other special groups such as "street girls".

(c) Operation of public pawnshops, bathhouses, barbershops, markets and dining halls.

(d) Other programs such as recreation.

(4) Supply Section (Busshi-ka).

(Note: Busshi-ka is also translated as "commodities" or "materials" section).

(a) Work shops (Jusan-jo) and home jobs.

(b) Goods and materials required for relief and assistance.

c. Prefectural and Local Administration: Within the prefectures the functions of the Social Affairs Bureau are usually assigned to the Social Affairs Section (Shakai-ka) and the Protection Section (Hogo-ka) of the prefectural Department of Welfare.

6. Children's Bureau (Jido-kyoku).

a. The Children's Bureau was established within the Ministry of Welfare in March 1947 and is primarily responsible for administering the Child Welfare Law passed by the Diet in October 1947 and which became effective on 1 January 1948. The regulations governing the organization of the Ministry of Welfare provide for four sections within the Children's Bureau: Planning, Child Protection, Child Care and Maternal and Child Health.

b. The responsibilities of the Bureau are assigned to the four sections as follows:

(1) Planning (Kikaku-ka).

(a) Dissemination of child welfare information and other matters for the promotion of child welfare.

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(b) General supervision of the administration of the Child Welfare Law.

(c) Child Welfare Boards.

(d) Child welfare officials and child welfare workers.

(e) Child welfare stations.

(f) Surveys and statistics concerning children.

(g) Other matters not assigned to other sections.

(2) Child Protection (Yogo-Ka) Also translated: Foster Care Section.

(a) Orphans and orphanages.

(b) Protection of homeless, mentally handicapped and vagrant children.

(c) Prevention of delinquency; juvenile training and education institutions (Kyogo-in).

(d) Foster home program.

(e) Prevention of cruelty to children.

(f) Supplies necessary for child protection.

(3) Child Care (Hoiku-ka).

(a) Day nurseries and nursery teachers.

(b) Foundlings.

(c) Mothers' Homes (Boshi-ryo) and programs for mothers with dependent children.

(d) Children's recreational agencies.

(e) Cultural development of children.

(4) Maternal and Child Health (Boshi Eisei-ka).

(a) Health of infants, pre-school children, expectant and nursing mothers.

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(b) Special nutrition for infants, pre-school children, expectant and nursing mothers.

(c) Prevention of special diseases of infants and pre-school children and expectant and nursing mothers.

(d) Guidance of midwives and maternity agencies.

(e) Health of delicate and crippled children.

(f) Miscarriage and stillbirth.

(g) Health of children not included above.

c. Prefectural and Local Administration. In the prefectures the responsibilities of the Planning, Child Care and Child Protection sections are assigned to the Children's Section of the prefectural Department of Welfare while responsibility for the Maternal and Child health program is assigned to the prefectural Department of Health.

7. Insurance Bureau (Hoken-kyoku)

a. Historical Background. Although the bulk of the social insurances are under the jurisdiction of the Ministry of Welfare and the prefectural Departments of Welfare, some of the social insurance laws are administered by other ministries and agencies. In order to show the total administrative structure of social insurances in Japan, these other laws will be mentioned in addition to this description of the Ministry of Welfare activities, and the appropriate agencies will be indicated.

The first social insurance was the Government Pension System which originated in 1871. It is administered by the Pension Bureau of the Prime Minister's office and benefits public officials who have career status. The next protection for government employees was that against the costs of occupational disabilitities and began with an Imperial Ordinance issued in 1892. This workmen's compensation program is now based on three Ordinances and is administered by the Allowance Bureau of the Ministry of Finance. It covers government employees not protected by the system of eleven Government Enterprise Mutual Aid Societies. The latter grew out of an Ordinance of 1907 and are under the direction of the various ministries operating state monopolies.

Government Personnel Mutual Aid Societies are also administered by each of the ten ministries to provide non-occupational health insurance for government employees not covered by the Government Enterprise Mutual Aid Societies.The fourth

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provision for govern ent employees is the Separation Allowance program instituted by a Cabinet Decision in 1947 and administered by each of the ministries.

In 1920 a Labor Section was established in the Engineering Bureau of the Ministry of Agriculture and Commerce to study and develop legislation for health insurance. The Health Insurance (Kenko Hoken) Law, covering certain land workers in private industry, was passed in 1922, although it did not actually become effective until 1927. The Social Affairs Bureau of the Ministry of Home Affairs was given authority to administer the program, as well as to plan similar legislation for seamen (for which a movement had been started in the Ministry of Communications) and workmen's compensation legislation for construction workers.

A temporary Health Insurance Board was created in 1923 in the Social Affai Bureau of the Ministry of Home Affairs to prepare for the enforcement of Healt Insurance, but this Board was abolished the next year and was succeeded by a Health Insurance Section in one department of that Bureau. In 1926 the Insurance Department was created in the Social Affairs Bureau to supplant the Health Insurance Section. The Employers' Liability Insurance for Accidents (Rodo Saigai Sekinin Fujo Hoken) Law was passed in 1931 and assigned to the Insurance Department for administration.

In 1938 the Ministry of Welfare was created, and an Insurance Board (Hoken-in) was set up in that Ministry to administer the Health Insurance and Employers' Liability Insurance for Accidents Laws and to supervise the local associations formed under the National Health Insurance (Kokumin Kenko Hoken) Law passed in 1938. Three bureaus were established in the Insurance Board. The General Affairs Bureau (Shomu-kyoku) included among its duties the supervision of commercial life insurance companies. The Social Insurance Bureau (Shakai Hoken-Kyoku) was charged with the administration or supervision of the three social insurance programs assigned to the Insurance Board, and with the planning of a social insurance program for seamen and the extension of Health Insurance to office workers. The Postal Insurance Bureau (Kani Hoken-kyoku) took over the Postal Life Insurance (Kani Seimei Hoken) and Postal Annuities (Yubin Nenkin) programs from the Ministry of Communications, but these systems were returned to the Ministry of Communications in 1942.

Seamen's Insurance (Senin Hoken) was enacted in 1939 and became effective in 1940 along with special legislation for Office Workers' Health Insurance. The latter program was absorbed into the general Health Insurance System in 1943.

The Insurance Board was abolished in 1942, and the Insurance Bureau (Hoken-kyoku) was established in the Ministry of Welfare. The Welfare Pension Insurance (Kosei Nenkin Hoken) Law was passed in 1941 and became effective in 1942. The newly created Insurance Bureau comprised three sections and one office: The Health Insurance Section (Kenko Hoken-ka), National Health Insurance Section (Kokumin Kenko Hoken-ka), Pension Insurance Section (Nenkin-ka) - charged with responsibility for Welfare Pension Insurance and Seamen's Insurance - and the Office of Health Insurance Research (Kenko Hoken Shido-sho). The Health Insurance Research Office is still provided for in the law today, but it has not been operative since its two installations, in Tokyo and Osaka, were burned during the war.

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A General Affairs Section (Shomu-ka) was added to the Insurance Bureau in 1945, and the Health Insurance Section, responsible for Health Insurance and Employers' Liability Insurance for Accidents, was renamed the Insurance Section (Hoken-ka).

In 1947 the Ministry of Labor was established and was assigned the two newest social insurance programs - Unemployment Insurance (Shitsugyo Hoken) and Workmen's Accident Compensation Insurance (Rodo-sha Saigai Hosho Hoken). Both were enacted in 1947 and apply to employees other than seamen. Unemployment Insurance is new in Japan (except for limited local programs for day workers in a few municipalities, particularily Kobe from 1922 to 1941, and the system of separation allowances included in Welfare Pension Insurance). The Workmen's Accident Compensation Insurance Law supplants the Employers' Liability Insurance for Accidents Law of 1931 and incorporates certain provisions of the Health Insurance and Welfare Pension Insurance Laws relative to occupational disabilities. The present organization and functions of the Insurance Bureau are described below:

b. Organization and functions. The Insurance Bureau is composed of the following four sections (with number of personnel indicated): General Affairs (59), Insurance (41), National Insurance (25), and Pension (134). Including the staff of the immediate office of the Chief, the Insurance Bureau employs 273 people in Tokyo.

The responsibilities of the Bureau are assigned to the four sections as follows:

(1) General Affairs Section (Shomu-ka).

(a) Research, statistics, and general planning relative to social insurance.

(b) Fiscal affairs - social insurance special accounts.

(c) Personnel and office management for Bureau.

(d) Liaison with Social Insurance Investigation (Advisory) Committee (Chuo Shakai Hoken Shinsa Iin-kai).

(e) Liaison with Japan Medical Association (Nippon Ishi-kai).

(f) Liaison with national Social Insurance Medical Fee Calculation Council (Chuo Shakai Hoken Shinryo Hoshu Santei Kyogi-kai).

(g) Matters not assigned to other sections.

(2) Insurance Section (Hoken-ka).

(a) Administration of Health Insurance.

(b) Liaison with national Social Insurance Foundation (Shakai Hoken Kyo-kai).

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(c) Liaison with national Federation of Health Insurance Societies (Kenko Hoken Kumiai Rengo-kai).

(d) Liaison with Health Insurance national appeal board (Shinsa-kai) and local referees (Shinsa-kan).

(e) Liaison with Health Insurance national advisory committee (Iin-kai).

(3) National Insurance Section (Kokumin Hoken-ka).

(a) General supervision of National Health Insurance Associations.

(b) Liaison with national Federation of National Health Insurance Associations (Kokumin Kenko Hoken Kumiai Rengo-kai).

(c) Liaison with National Health Insurance local appeal boards (Chiho Shakai Hoken Shinsa-kai).

(4) Pension Section (Nenkin-ka).

(a) Administration of Welfare Pension Insurance.

(b) Administration of Seamen's Insurance.

(c) Liaison with Labor and Transportation Ministries relative to participation of Employment Security offices in unemployment insurance for seamen.

(d) Liaison with national social insurance foundations.

(e) Liaison with Welfare Pension Insurance and Seamen's Insurance national appeal boards (Shinsa-kai) and local referees (Shinsa-kan).

(f) Liaison with Welfare Pension Insurance and Seamen's Insurance national advisory committees (Iin-kai).

c. Prefectural and Local Administration. The Insurance Section (Hoken-ka) of the Department of Welfare (Minsei-bu) is charged with the administration of Health, Welfare Pension, and Seamen's Insurances and with the supervision of the National Health Insurance Associations (Kokumin Kenko Hoken-kumiai). The prefectural district offices (Chiho Jimu-sho) assist in National Health Insurance activities and, in several prefectures, Social Insurance Branch Offices (Shakai Hoken Shicho-jo) augment the Insurance Section in connection with Health and Welfare Pension Insurances. In a few seaports, the Maritime Offices (Kai-un Shicho-jo) of the Ministry of Transportation aid in the administration of Seamen's Insurance.

8. Repatriation Relief Board.

a. The Repatriation Relief Board was created within the Ministry

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of Welfare following the termination of the war to operate reception centers and carry out necessary welfare programs for repatriates. The Board has a special status within the Ministry since it is temporary in nature and consists of two bureaus in addition to the reception centers. There is a Relief Bureau and a Quarantine Bureau. The Relief Bureau consists of four sections: General Affairs, Operations, Guidance and Supply. The Operations Section provides temporary aid for incoming and outgoing repatriates while the Guidance Section is responsible for programs for the rehabilitation of repatriates. The Quarantine Bureau is composed of a Medical Treatment Section and a Quarantine Section. There is a very close relationship between the programs of the Relief Bureau and the other welfare programs of the Ministry of Welfare, since in many cases, aid is being provided by each program to the same persons.

b. Reception Centers. The centers at Aomori, Maizuru and Sasebo and a repatriation station at Yokohama are maintained by the Board. For repatriates care includes transportation home. Aid provided at the Reception Centers includes the following.

(1) Issue of certificate of repatriation.

(2) Exchange of currency.

(3) Custody of various securities and documents.

(4) Issue of temporary allowance, clothing, comfort goods and toilet articles, and food for the trip home.

(5) Train tickets and telegrams are provided without charge.

(6) Information and counselling service.

(7) Accommodations, meals, baths and barber service are provided without charge.

(8) Demobilization for returned military personnel.

c. Rehabilitation Program. The Repatriation Relief Board maintains welfare programs designed to assist in the rehabilitation of repatriates and demobilized personnel who have returned home from abroad. These programs are carried out in the prefectures as a part of the regular welfare programs. The Social Affairs Section or the Protection Section of the prefectural Department of Welfare is responsible for maintaining information service at main railway stations. These services include temporary accomodations as well as various information and counselling services.

9. Demobilization Bureau

a. The First Demobilization Bureau was transferred to the Ministry of Welfare on 15 October 1947. This transfer was directed by Memorandum for the Japanese Government (SCAPIN 1791) issued by GHQ, SCAP, on 4 October 1947, subject: Demobilization Machinery, Reorganization of. This bureau was created after the termination of the war to carry on the work of demobilizing the Japanese Army. A second Demobilization Bureau was similarly created for the demobilization of the Japanese Navy. This bureau was ordered dissolved effective 1 January 1948, with

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remaining functions and personnel being transferred to the Ministry of Welfare. Under the provisions of SCAPIN 1791 further plans are being developed by the Japanese Government for the further reorganization of demobilization activities.

b. In the prefectures the responsibilities of the national bureaus are assigned to the demobilization section (Sewa-ka) within the Department of Welfare. In some prefectures there are two demobilization sections designated as the First Demobilization Section (Dai-ichi Sewa-ka) and Second Demobilization Section (Dai-ni Sewa-ka). The first section handles the work of the First Demobilization Bureau (Army), while the second section handles in the prefecture the work of the Second Demobilization Bureau (Navy).

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GLOSSARY OF JAPANESE WELFARE TERMS

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN
PH&W GHQ SCAP APO 500 September 47

1. Note: A Literal translation is not always used. An effort has been made to select the most common translation. In some cases the English term most commonly used is given rather than a literal translation.

2. Welfare Administration:

Japanese	English
Gunjin Engo Kai (obsolete) 軍人援護會	Soldiers Assistance Association
Hoken-ka 保險會課	Insurance Section
Hoken Kyoku 保險局	Insurance Bureau (Ministry of Welfare)
Homen-Iin (Obsolete) 方面委員	District Welfare Worker (obsolete)
Jido-Kyoku 児童局	Children Bureau (Ministry of Welfare)
Kukumin Konko Hoken-ka 國民健康保險課	National Health Insurance Section
Kosei-ka 厚生課	Welfare Section (Prefecture)
Kyoiku Minsei-bu 教育民生部	Education and Welfare Dept. (Prefecture)
Minsei-bu 民生部	Welfare Dept. (Prefecture)
Minsei-iin 民生委員	Welfare Worker (Welfare Committeeman)

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Nenkin-ka 年金課	Pension Section
Seikatsu Hogohō 生活保護法	Daily Life Security Law
Shakai Jigyo Hō 社會事業法	Social Work Law (1936)
Shakai-ka 社會課	Social Affairs Section (Prefecture)
Shakai Kyoku 社會局	Social Affairs Bureau (Ministry of Welfare)
Shomu-ka or Sōmu-ka 庶務課又ハ總務課	General Affairs Section

3. National Organizations:

Boshi Aiiku Kai 母子愛育會	Mother and Childrens Welfare Society
Dohō (Dobō) Engo Kai 同胞援護會	National Relief Association
Dojunkai 同潤會	Housing Association
Keifukukai 慶福會	Welfare Foundation
Kyusei Gun 救世軍	SSalvation Army
Mojin Fukushi Kyokai 盲人福祉協會	Blind Persons Welfare Association
Nihon Sekijuji Sha 日本赤十字社	Japan Red Cross Society
Nippon Shakai Jigyō Kyōkai 日本社會事業協會	Japan Social Work Association
Saiseikai 濟生會	Relief Association (Medical)
Zen-Nihon Minsei-iin Renmei 全日本民生委員聯盟	All Japan Welfare Workers Federation

4. Delinquency:

Hoshaku 保釋	Bail

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Keimusho 刑務所	Prison
Kyogo-iin 教護委員	Juvenile Delinquent Worker
Kyogoin 教護院	Juvenile Training School
Kyōsein 矯正院	Government Reformatory
Saibansho 裁判所	Court
Sensei, Moshitato 宣誓 申立	Parole
Shōnen Hogo-Dantai 少年 保護團体	Juvenile Protection Association
Shōnen hogoshi 少年 保護司	Probation Officer
Shōnen Keimusho 少年 刑務所	Juvenile Prison
Shōnen Shimbansho 少年 審判所	Juvenile Court
5. General:	
Boshi-ryo 母子寮	Mothers and Children Home
Doho (or Dobo) 同胞	Compatriots, Brethern, Fellow-Countrymen
Engo 援護	Aid, Assistance, Relief
Fujo 扶助	Aid, Assistance, (Monetary)
Hojo 補助	Assistance
Hogo 保護	Protection
Hoikujo 保育所	~~Infant Home~~ day nursery
Hoken 保険	Insurance

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Jido fukushi shisotsu 児童福祉施設	Child Welfare Facility
Josan shisetsu 助産施設	Lying-in Agency
Jusanjo 授産所	Work Shop
Kobetsu Shoguho (Shido) 戸別處遇法（指導）	Case Work
Koji 孤児	Orphan
Kojiin or Ikuji Shisetsu 孤児院又ハ育児施設	Orphanage
Koseki 戸籍	Family Register
Nyuji-in 乳児院	Infant Home
Seishin Hakujakuji 精神薄弱児	Feeble-minded child
Shisetsu 施設	Agency, institution or facility
Takujisho 託児所	Day Nursery
Yochien 幼稚園	Kindergarten
Yogo shisetsu 養護施設	Protective Agency

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GLOSSARY OF JAPANESE SOCIAL INSURANCE TERMS

PUBLIC HEALTH AND WELFARE TECHNICAL BULLETIN

PHW GHQ SCAP APO 500

June 1949

Introduction:

This bulletin supplements TB-PH-SS-2 and TB-PH-WEL-5, both dated November 1948. The words and phrases translated herein pertain to Social Insurance and closely related subjects. The number and year of each basic law is given as an aid in clearly identifying the laws for reference purposes. Although certain laws and agencies are now obsolete, there continues to be occasion to refer to them. These are marked "(obs.)". The assistance of Welfare Officers is solicited in suggesting revisions and additions in anticipation of publishing an amended glossary at a later date for the benefit of Military Government personnel who may find it helpful.

The glossary is divided into the following four groups:

1. Government Offices, Agencies and Institutions, page 1;
2. Laws and Regulations, page 6;
3. Associations, Boards, Committees, Councils, Federations, Referees and Societies, page 12; and
4. General Terms, page 15.

Government Offices, Agencies and Institutions

English	Romaji	Japanese
Attorney General's Office	Homu fu	法務府
Branch Office, Social Insurance	Shahai hoken Shutchojo	社會保險出張所

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English	Romaji	Japanese
Bureau	Kyoku	局
Bureau, Maritime (Min. of Trans.)	Kaiun Kyoku	海運局
" , Pension (Prime Min. Office)	Onkyu Kyoku	恩給局
" , Post Office Life Insurance (Min. of Telc-com.)	Kani Seimei Hoken Kyoku	簡易生命保険局
Bureaus of Ministry of Labor:	Rodo Sho Kakkyoku	勞働省各局
Employment Security Bureau	Shokugyo Antei Kyoku	職業安定局
Labor Administration Bureau	Rosei Kyoku	勞政局
Labor Standard's Bureau	Rodo Kijun Kyoku	勞働基準局
Women's and Minors' Bureau	Fujin Shonen Kyoku	婦人少年局
Bureaus of Ministry of Welfare:	Kosei Sho Kakkyoku	厚生省各局
Children's Bureau	Jido Kyoku	児童局
Demobilization Bureau (obs.)	Fukuin Kyoku (Haikyoku)	復員局(廢局)
Disease Prevention Bureau (obs.)	Yobo Kyoku (Haikyoku)	予防局(廢局)
Insurance Bureau	Hoken Kyoku	保険局
Medical Affairs Bureau	Imu Kyoku	医務局
Pharmaceutical Affairs Bureau	Yakumu Kyoku	薬務局
Public Health Bureau	Koshueisei Kyoku	公衆衛生局
Social Affairs Bureau	Shakai Kyoku	社会局
Cabinet	Naikaku	内閣
Diet	Kokkai	國會
Economic Affairs Department (Prefecture)	Keizai Bu	經濟部(縣)

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English	Romaji	Japanese
Economic Stabilization Board	Keizai Antei Honbu	経済安定本部
House of Councillors	Sangiin	參議院
House of Representatives	Shugiin	衆議院
Labor Standard's Office	Rodo Kijun Kantoku Kyoku	勞働基準監督局
" " Branch Office	Rodo Kijun Kantoku Sho	勞働基準監督所
Maritime Office	Kaiun Shutchojo	海運出張所
Maritime Safety Board	Kaijo Hoan Cho	海上保安廳
Minister	Daijin	大臣
Ministry	Sho	省
Ministry of Agriculture and Forestry	Norin Sho	農林省
" " Commerce and Industry (obs.)	Shoko Sho (Haisho)	商工省(廢省)
" " Communication (obs.)	Teishin Sho (Haisho)	逓信省(廢省)
" " Construction	Kensetsu Sho	建設省
" " Education	Monbu Sho	文部省
" " Finance	Okura Sho	大藏省
" " Foreign Affairs	Gaimu Sho	外務省
" " International Trade and Industry	Tsusho Sangyo Sho	通商産業省
" " Labor	Rodo Sho	勞働省
" " Postal Service	Yusei Sho	郵政省
" " Tele-communications	Denkitsushin Sho	電氣通信省

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English	Romaji	Japanese
Ministry of Transportation	Unyu Sho	運輸省
" " Welfare	Kosei Sho	厚生省
Prime Minister's Office	Sori Fu	總理府
Prefectural Government	Ken Cho	縣廳
" " District Office	Chiho Jimusho	地方事務所
Public Employment Security Office	Kokyo Shokugyo Antei Sho	公共職業安定所
Public Employment Security Agency, Seamen's (Mariners')	Senin Shokugyo Antei Sho	船員職業安定所
Repatriation Relief Board (Min. of Wel.)	Hikiageengo In	引揚援護院
Sanitation Department (Prefecture)	Eisei Bu	衛生部(縣)
Secretariate	Kambo	官房
Section	Ka	課
Sections of Insurance Bureau, Ministry of Welfare:	Kosei Sho Shakaihoken Kyoku Kakka	厚生省社会保険局各課
Actuarial and Statistical Section	Suri Ka	數理課
General Affairs Section	Shomuka	庶務課
Health Insurance Section	Kenko Hoken-Ka	健康保險課
Medical Section	Imu-Ka	医務課
National Health Insurance Section	Kokumin Kenko Hoken-Ka	國民健康保險課
Seamen's Insurance Section	Senin Hoken-Ka	船員保險課
Welfare Pension Insurance Section	Kosei Nenkin Hoken-Ka	厚生年金保險課
Special Procurement Board	Tokubetsu Chotatsu-Cho	特別調達廳

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English	Romaji	Japanese
Supreme Court	Saiko-Saibansho	最高裁判所
Welfare Department (Prefecture)	Minsei B	民生部

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Laws and Regulations

Account Law (No. 35 of 1947)	Kaikei Ho	会計法
Administrative Appeals Law (No. 105 of 1890)	Sogan Ho	訴願法
Advisory Council on Social Security (System) Law, Establishment of the (No. 266 of 1948)	Shakai Hosho Seido Setchi Ho	社会保障制度審議会設置法
Agricultural Cooperative Association Law (No. 132 of 1947)	Nogyo Kyodo Kumiai Ho	農業協同組合法
Agricultural Land Adjustment Law (No. 67 of 1938)	Nochi Chosei Ho	農地調整法
Agricultural Land Development Law (No. 65 of 1941)	Nochi Hakkai Ho	農地発開法
Allowance to Special Non-Repatriates, Law for (No. 279 of 1948)	Tokubetsu Hikikansha no Kyuyo Ho	特別未帰還者給与法
Bureau Notice, Allowance (Min. of Fin.)	Kyuhatsu (Okura Sho)	給発(大蔵省)
Bureau Notice, Insurance (Min. of Wel.)	Hohatsu (Kosei Sho)	保発(厚生省)
Cabinet Decision	Kakugi Kettei	閣議決定
Cabinet Order	Seirei	政令
Child Welfare Law (No. 64 of 1947)	Jido Fukushi Ho	児童福祉法
Civil Code (No. 89 of 1896)	Minpo	民法
Civil Procedure Law (No. 62 of 1896)	Minji Sosho Ho	民事訴訟法
Constitution	Kompo	憲法
Criminal Law (No. 45 of 1907)	Kei Ho	刑法
Daily Life Security Law (No. 17 of 1946)	Seikatsu Hogo Ho	生活保護法

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English	Romaji	Japanese
Deposits Bureau, Ministry of Finance, Law Concerning the Special Account for the (No. 13 of 1925)	Okura Sho Yokinbu Tokubetsu Kaikei Ho	大蔵省預金部特別会計法
Employment Security Law (No. 41 of 1947)	Shokugyo Antei Ho	職業安定法
Eugenical Protection Law (No. 156 of 1948)	Yusei Hogo Ho	優生保護法
Factory Act (obs.) (No. 46 of 1911)	Kojo Ho	工場法(廃)
Family Registration Law (No. 26 of 1914)	Koseki Ho	戸籍法
Fines etc., Law for Temporary Measures Concerning (No. 251 of 1948)	Bakkin to Rinji Sochi Ho	罰金等臨時措置法
Government employees, Law Administering the New Pay of (No. 46 of 1948)	Seifu Shokuin Shin-Kyuyo Jisshi ni Kansuru Horitsu	政府職員新給与実施ニ関スル法律
Government employees, Law Concerning Salaries and Other Pay of (No. 12 of 1948)	Seifu Shokuin Hokyu to ni Kansuru Horitsu	政府職員俸給等ニ関スル法律
Government workers, Law Concerning Lump Sum Grant for (No. 166 of 1947)	Seifu Shokuin Ichiji-teate Shikyu ni Kansuru Horitsu	政府職員一時手当支給ニ関スル法律
Health Center Law (No. 42 of 1937)	Hokenjo Ho	保健所法
Health Insurance Law (No. 70 of 1922)	Kenko Hoken Ho	健康保険法
Infectious Disease Prevention Law (No. 36 of 1897)	Densembyo Yobo Ho	伝染病予防法
Japan Monopoly Public Corporation Law (No. 225 of 1948)	Nihon Sembai Kosha Ho	日本専売公社法
Japan National Railways Law (No. 256 of 1948)	Nihon Kokuyu Tetsudo Ho	日本國有鉄道法
Labor Standard's Law (No. 49 of 1947)	Rodo Kijun Ho	労働基準法

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English	Romaji	Japanese
(Labor) Trade Union Law (No. 51 of 1945	Rodo Kumiai Ho	労働組合法
Local Autonomy Law (No. 67 of 1947)	Chiho Jichi Ho	地方自治法
Local Distribution Tax Law (No. 111 of 1948)	Chiho Haifu Zei Ho	地方配付税法
Local Finance Committee Law (No. 155 of 1947)	Chiho Zaisei Iinkai Ho	地方財政委員会法
Local Finance Law (No. 109 of 1948)	Chiho Zaisei Ho	地方財政法
Local Tax Law (No. 60 of 1940)	Chiho Zei Ho	地方税法
(Mariners') Seamen's Employment Security Law (No. 130 of 1948)	Senin Shokuin Antei Ho	船員職員安定法
(Mariners') Seamen's Insurance Law (No. 73 of 1939)	Senin Hoken Ho	船員保険法
(Mariners') Seamen's Insurance Special Account Law (No. 236 of 1947)	Senin Hoken Tokubetsu Kaikei Ho	船員保険特別会計法
Mariners' (Seamen's) Law (No. 100 of 1947)	Senin Ho	船員法
Medical Affairs Law (No. 197 of 1948)	Yakuji Ho	薬事法
Medical Association, Dental Association and Japan Medical Treatment Corporation, Law Regarding Dissolution and Liquidation of (No. 128 of 1947)	Ishikai Shika-ishikai oyobi Nihon-iryodan no kaisan ni kansuru horitsu	医師会、歯科医師会及ビ日本医療團ノ解散ニ関スル法律
Medical Service Law (No. 205 of 1948)	Iryo Ho	医療法
Ministerial Ordinance	Sho-rei	省令
Ministerial Notification	Sho-kokuji	省告示
Mothers' and Children's Protection Law (No. 19 of 1947)	Boshi Hogo Ho	母子保護法

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English	Romaji	Japanese
National Health Insurance Law (No. 60 of 1938)	Kokumin Kenko Hoken Ho	國民健康保險法
National Public Service Law (No. 120 of 1947)	Kokka Komuin Ho	國家公務員法
National Public Service Mutual Aid Association Law (No. 69 of 1948)	Kokkai Komuin Kyosai-Kumiai Ho	國家公務員共濟組合法
National Tax Collection Law (No. 107 of 1897)	Kokuzei Choshu Ho	國稅徵收法
Pension Bank Law (obs.) (No. 57 of 1938)	Onkyu Kinko Ho	恩給金庫法
Pension Law (No. 48 of 1923)	Onkyu Ho	恩給法
Pension Law, Law for Emergency Measures of Application of Special Cases of (No. 190 of 1948)	Onkyu Ho Rinji Tokurei	恩給法臨時特例
People's Bank Law (obs.) (No. 58 of 1938)	Shomin Kinko Ho	庶民金庫法
People's Finance Corporation Law (No. 49 of 1949)	Kokumin Kinyu Koko Ho	國民金融公庫法
Petition Law (No. 13 of 1947)	Seigan Ho	請願法
Post Office Annuities Law (No. 60 of 1949)	Yubin Nenkin Ho	郵便年金法
Post Office Life Insurance Law (No. 42 of 1916)	Kani Seimei Hoken Ho	簡易生命保險法
Preventive Vaccination Law (No. 68 of 1948)	Yobo Sesshu Ho	予防接種法
Public Health Nurse, Midwife and Nurse Law (No. 203 of 1948)	Hokanfu, Josanpu, Kangofu Ho	保健婦. 助産婦. 看護婦法
Seamen's (Mariners') Employment Security Law (No. 130 of 1948)	Senin Shokuin Antei Ho	船員職員安定法

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English	Romaji	Japanese
Seamen's (Mariners') Insurance Law (No. 73 of 1939)	Senin Hoken Ho	船員保険法
Seamen's (Mariners') Insurance Special Account Law (No. 236 of 1947)	Senin Hoken Tokubetsu Kaikei Ho	船員保険特別会計法
(Seamen's) Mariners' Law (No. 100 of 1947)	Senin Ho	船員法
Section Notice	Tsucho	通牒
Separation Allowances for Government Employees (Cab. Doc.)	Seifu Shokuin ni Taisuru Taishoku-teate	政府職員ニ対スル退職手当
Social Insurance Medical Fee Payment Fund Law (No. 129 of 1948)	Shakai Hoken Shinryo Hoshu Shiharai Kikin Ho	社会保険診療報酬支払基金法
Social Undertaking Act (No. 59 of 1938)	Shakai Jigyo Ho	社会事業法
Statistics Law (No. 18 of 1947)	Tokei Ho	統計法
Trade (Labor) Union Law (No. 51 of 1945)	Rodo Kumiai Ho	労働組合法
Tuberculosis Prevention Law (No. 26 of 1919)	Kekkaku Yobo Ho	結核予防法
Undemobilized Persons' Compensation Law (No. 182 of 1947)	Mifukuinsha Kyuyo Ho	未復員者給与法
Unemployment Allowance Law (obs.) (No. 145 of 1947)	Shitsugyo Teate Ho	失業手当法(廃
Unemployment Insurance Law (No. 146 of 1947)	Shitsugyo Hoken Ho	失業保険法
Unemployment Insurance Special Account Law (No. 157 of 1947)	Shitsugyo Hoken Tokubetsu Kaikei Ho	失業保険特別会計法
V.D. Prevention Law (No. 167 of 1948)	Seibyo Yobo Ho	性病予防法

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English	Romaji	Japanese
Wage Control Act	Chingin Tosei Rei	賃金統制令
Welfare Commissioner Law (No. 198 (of 1948)	Minsei-iin Ho	民生委員法
Welfare Insurance Special Account Law (No. 10 of 1944)	Kosei Hoken Tokubetsu Kaikei Ho	厚生保険特別会計法
Welfare Pension Insurance Law (No. 60 of 1941)	Kosei Nenkin Hoken Ho	厚生年金保険法
Workmen's Accident Compensation Insurance Law (No. 50 of 1947)	Rodosha Saigai Hosho Hoken Ho	労働者災害補償保険法
Workmen's Accident Compensation Insurance Special Account Law (No. 51 of 1947)	Rodosha Saigai Hosho Tokubetsu Kaikei Ho	労働者災害補償特別会計法

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Associations, Boards, Committees, Councils, Federations, Leagues and Societies

English	Romaji	Japanese
Advisory Council, Employment (Security) Stabilization	Shokugyo Antei Shingi-kai	職業安定審議会
" " , Health Insurance	Kenko Hoken Shingi-kai	健康保険審議會
(" "), Managerial Committee, Mutual Aid Association	Kyosai kumiai unei Kyogi kai	共済組合運営協議會
" " , National Health Insurance (Municipal)	Kokumin Kenko Hoken Unei Kyogi-kai	國民健康保険運営協議会
" " , Seamen's Insurance	Senin Hoken Shingi-kai	船員保険審議会
" " , Social Insurance Medical Care	Shakai Hoken Shinryo Kyogi-kai	社会保険診療協議会
" " , Unemployment Insurance	Shitsugyo Hoken Iinkai	失業保険委員会
" " , Welfare Pension Insurance	Kosei Nenkin Hoken Shingi-kai	厚生年金保険審議会
" " , Workmen's Accident Compensation Insurance	Rodosha Saigai Hosho Hoken Shingi-kai	勞働者災害補償保険審議会
Advisory Council on Social Security (System)	Shakai Hosho Seido Shingi-kai	社会保障制度審議会
Appeals Board, Health Insurance	Kenko Hoken Shinsa-kai	健康保険審査会
" " , Mutual Aid Association	Kyosai Kumiai Shinsa-kai	共済組合審査会
" " , National Health Insurance (Prefectural)	Kokumin Kenko Hoken Shinsa-kai (Chiho)	國民健康保険審査会(地方)
" " , Seamen's Insurance	Senin Hoken Shinsa-kai	船員保険審査会
" " , Unemployment Insurance	Shitsugyo Hoken Shinsa-kai	失業保険審査会

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English	Romaji	Japanese
Appeals Board, Welfare Pension Insurance	Kosei Nenkin Hoken Shinsa-kai	厚生年金保険審査会
" " , Workmen's Accident Compensation Insurance	Rodosha Saigai Hosho Hoken Shinsa-kai	労働者災害補償保険審査会
Central Labor Relations Board	Chuo Rodo Iin-kai	中央労働委員会
Central Society of National Health Insurance Organizations	Kokumin Kenko Hoken Dantai Chuo-kai	国民健康保険団体中央委員会
Federation of Mutual Aid Associations	Higengyo Kyosai Kumiai Rengo-kai	非現業共済組合連合会
Japan Dental Association	Nihon Shika Ishi Kai	日本歯科医師会
Japan Medical Association	Nihon Ishi Kai	日本医師会
Managerial Committee (Advisory Council), Mutual Aid Association	Kyosai Kumiai Unei Kyogi Kai	共済組合運営協議会
Medical Relief Society	Saisei-kai	済生会
National Health Insurance Council (obs.)	Kokumin Kenko Hoken Kyokai (hai)	国民健康保険協会(廃)
National Health Insurance Renovation Federation (obs.)	Kokumin Kenko Hoken Sasshin Renmei (hai)	国民健康保険刷新連盟(廃)
National Relief Association	Doho Engo Kai	同胞援護会
Referee, Insurance (Workmen's Accident Compensation Insurance)	Hoken Shinsa-kan (Rodosha Saigai Hosho Hoken)	保険審査官(労働者災害補償保険)
" , Social Insurance (Health Insurance, Seamen's Insurance and Welfare Pension Insurance)	Shakai Hoken Shinsa-kan (Kenko Hoken, Senin Hoken, Kosei Nenkin Hoken)	社会保険審査官(健康保険,船員保険,厚生年金保険)
" , Unemployment Insurance	Shitsugyo Hoken Shinsa-kan	失業保険審査官

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English	Romaji	Japanese
Reviewing and Auditing Committee (Social Insurance Medical Fee Payment Fund)	Shinryo Hoshu Sinsa-kai (Shakai Hoken Shin-ryo Hoshu Shiharai Kikin)	診療報酬州審査会(社会保険診療支拂基金 (報酬
Social Insurance Investigating Committee (obs.)	Shakai Hoken Seido Chosa-kai (hai)	社会保険制度調査会(廃)
Social Insurance Medical Fee Calculating Council	Shakai Hoken Shinryo Hoshu Santei Kyogi-kai	社会保険診療報酬算定委員会
Social Insurance Medical Fee Payment Fund	Shakai Hoken Shinryo Hoshu Shiharai Kikin	社会保険診療報酬支拂基金
Unions, All Japan Council of Medical Treatment Employees'	Zennihon Iryo-jugyoin Kumiai Kyogi-kai	全日本医療従業員組合協議会
" , All Japan Occupation Forces Workers'	Zennihon Shinchugun-yoin Rodo Kumiai	全日本進駐軍要員等働組合
" , General Federation of Japanese Trade	Nihon Rodo Kumiai Sodomei	日本等働組合總同盟
" , Japan General Federation of Local and Municipal Govern-ment Workers'	Nihon Jichidantai Rodo Kumiai Sorengo	日本自治團体等働組合總連合
" , Japan Teachers	Nihon Kyoshokuin Rodo Kumiai	日本教職員等働組合
" , National Congress of Industrial	Zennihon Sangyobetsu Rodo Kumiai Kaigi	全日本産業別等働組合会議
" , National Council of All-Government Office Workers	Zenkoku Kancho Shokuin Rodo Kumiai Kyogi-kai	全国官廳職員等働組合協議会
" , National Federation of Occupation Forces Workers'	Zenkoku Shinchugun Rodo Kumiai Domei	全国進駐軍等働組合同盟

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General Terms

English	Romaji	Japanese
Accomodation (admission)	Shuyo	收容
Account	Kaikei	會計
Accountant	Kaikei-gakari	会計係
Act (law)	Horei	法令
Activate, to	Katsudo-seshimeru	活動セシメル
Actuary	Hoken Tokei-gakari	保険統計係
Adjustment	Chotei	調定
Administration	Jimu Gyosei	事務行政
Advise, to	Kankoku	勧告
Advisory	Jogen	助言
Advocate, to	Shucho-suru	主張スル
Agenda	Kamoku	課目
Agent	Dairinin	代理人
Aid (assistance-monetary)	Fujo	扶助
Aim (purport, object)	Shushi (Mokuteki)	趣旨(目的)
Allowance	Teate Kin	手當金
Ambulatory	Hoko	歩行
Amendment	Kaisei	改正
Analysis	Bunseki	分析
Annuity (pension)	Nenkin	年金
Annul	Muko	無効
Appeal, to	Sogan-suru	訴願スル

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English	Romaji	Japanese
Appellant	Jososha	上訴者
Appellee	Hijososha	被上訴者
Application (claim)	Shinsei	申請
Application (claim in writing)	Seikyusho	請求書
Apply, to	Shinsei-suru	申請スル
Appoint (designate)	Shitei-suru	指定スル
Appraise	Hyoka-suru	評價スル
Appropriate (to or for a purpose)	Tekito-naru	適当ナル
Appropriated (from another account)	Ryuyo	流用
Appropriation bill	Tokubetsu Kaiken An	特別会計案
Appropriation (monetary subsidy)	Juto	充當
Approval (authorization, license)	Ninka	認可
Arbitrate	Saitei	裁定
Arrearage (delinquency)	Taino	滞納
Assembly (city, town, village)	Kaigi (shi, cho, son)	会議(市.町.村)
Assess, to	Choshu-suru	徴收スル
Assessment	Choshu	徴收
Assistance (in kind)	Hojo	補助
Association	Kumiai	組合
Audit	Keisan	計算
Auditor	Kaikei Kensa Kan	會計檢查官
Average basic wage	Heikin Hyojun Hoshu Gaku	平均標準報酬州額

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English	Romaji	Japanese
Balance (accounts)	Sashihiki zandaka	差引殘高
Balance (a debit)	Karikoshi	借越
Balance (average)	Heikin	平均
Basic wage	Hyojun hoshu	標準報酬
Basis for computation	Santei no kiso	算定，基礎
Beneficiary	Hoken uketori-nin	保険受取人
Benefit	Kyufu	給付
Benevolence (charity)	Jizen	慈善
Board of Directors	Riji Kai	理事會
Branch	Shibu	支部
Budget	Yosan	予算
Bureau	Kyoku	局
Bureaucracy	Kanryo	官僚
Calamity	Saigai	災害
Calculate	Keisan	計算
Cancel (laws, contracts)	Haishi-suru	廢止スル
Cancel (math.)	Taiyaku-suru	對約スル
Capitalism	Shihon Shugi	資本主義
Centralize, to	Shuchu-suru	集中スル
Certificate	Shomeisho	証明書
Chairman (association)	Kaicho	會長

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English	Romaji	Japanese
Chairman (council)	Gicho	議長
Charge (fee)	Ryokin	料金
Charge, person in	Tanto-sha	担當者
Charity hospital	Seryo-Byoin	施療病院
Chart	Zuhyo	圖表
Child welfare facilities	Jido fukushi shisetsu	児童福祉施設
Chiropractic	Amma ijutsu	按摩医術
Classification	Bunrui	分類
Clinic	Shinryo-jo	診療所
Collect, to	Choshu-suru	徴收スル
Collections (of contributions, taxes, etc.)	Choshu	徴收
Committee	Iin-kai	委員會
Compensation	Hosho	補償
Competent authority	Shumu-kancho	主務官廳
Complaint	Fuhei	不平
Comprehensive	Hokatsuteki	包括的
Compulsorily insured	Kyosei Hihokensha	强制被保険者
Compute	Santei-suru	算定スル
Constitution and By-laws (in case of juridical person):		
1. Social Insurance Medical Fee Payment Fund, Community Chest and places of business	Teikan	定款

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English	Romaji	Japanese
2. Associations	Kiyaku	規約
3. City, town, village	Jorei	條例(令)
Contingent fund	Yobi-kin	予備金
Contract	Keiyaku	契約
Contractor	Keiyaku-sha	契約者
Contribution (insurance)	Hoken ryo	保険料
Cooperation	Kyoryoku	協力
Coordination	Chosei	調整
Council	Kaigi	會議
Coverage (under insurance law)	Hokatsu	包括
Customary fee	Kanko ryokin	慣行料金
Debenture	Saiken	債券
Decentralize	Choho bunken	地方分権
Decide, to	Kettei-suru	決定スル
Decision (in appeal)	Kettei	決定
Decree (law)	Horei	法令
Deduction	Kojo	控除
Default (payment)	Fuharai	不拂
Default (non-appearance)	Kesseki	缺席
Default (in)	-- Naki baai	--ナキ場合
Deficit	Fusoku	不足

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English	Romaji	Japanese
Defray	Shiharai	支拂
Delete	Sakujo	削除
Deliberation	Shingi	審議
Demobilization	Fukuin	復員
Dependent	Fuyo kazoku	扶養家族
Designate, to	Shitei-suru	指定スル
Determination (administrative)	Kettei	決定
Diet member	Daigishi	代議士
Diffusion (popularization)	Fukyu	普及
Directive (SCAP)	Shirei (Dengogun Soshirei-bu)	指令(連合軍總司令部
Directive (Ministerial)	Shorei	省令
Director	Riji	理事
Disability	Romu-funo	勞務不能
Discriminate, to	Sabetsu-suru	差別スル
Disease	Shippei	疾病
Dispensary	Yakuzaisho	藥劑所
Dispense, to	Bumpai suru	分配スル
Disseminate, to	Fukyu-suru	普及スル
Disqualify	Shikaku-soshitsu	資格喪失
Drastic	Kyoryoku	强力
Due consideration	Soto no koryo	相当ノ考慮
Due course or process of law	Horitsu jo'tsukusubeki tetsuzuki	法律上盡スベキ手續

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English	Romaji	Japanese
Due date	Kijitsu	期日
Due form	Seishiki	正式
Due time	Shikarubeki toki ni	然ルベキ時ニ
Due, to become or fall	Shiharai kigen ni tassuru	支拂期限ニ達スル
Duplicate	Fukusei	複製
Earnings	Shunyu, Hoshu	收入 報酬
Economy	Keizai	経済
Effective	Yukona	有効ナ
Eligible, to be	Shikaku-aru	資格アル
Emergency	Kinkyu	緊急
Emergency fund	Yobikin	予備金
Emolument	Hokyu	俸給
Employee	Jugyoin	從業員
Employer	Jigyonushi	事業主
Enact, to	Shiko-suru	施行スル
Enforce, to (law)	Shiko-suru	施行スル
Enforcement	Shiko	施行
Enrollment	Toki, Toroku	登記, 登録
Enterprise	Jigyo	事業
Entitled, to be	Yushikaku no	有資格ノ
Entrust	Itaku	委託

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English	Romaji	Japanese
Estimate, an	Mitsumori	見積
Estimate, to	Mitsumoru	見積ル
Evaluate, to	Hyoka-suru	評價スル
Evaluate by numerals	Suji nite shimesu	数字ニテ示ス
Execution (of a law)	Jisshi	実施
Expectancy, life	Yoki	予期
Expedite	Binsoku	敏速
Expenditure	Saishutsu	歲出
Expenses	Hiyo	費用
Extend the application of the law	Horitsu no tekiyo o hirokusuru	法律ノ適用ヲ廣クスル
Facility	Shisetsu	施設
Federation	Rengo-kai	連合會
Finances	Zaisei	財政
Financial resource	Zaigen	財源
Fine (penalty money)	Bakkin	罰金
Fiscal year	Kaikei nendo	会計年度
Free medical treatment	Seryo	施療
Function	Kino	機能
Fund	Kikin, Shikin	基金 資金
Fundamental human right	Kihonteki jinken	基本的人権

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English	Romaji	Japanese
Funeral expenses		
(paid by immediate family)	Sosai-ryo	葬祭料
(paid by non-family member)	Sosai-hi	葬祭費
Funeral rite	Soshiki	葬式
General account	Ippan kaikei	一般會計
Government:		
National	Seifu, Kokka	政府 國家
Prefectural	Ken-cho	縣廳
City	Shi-yakusho	市役所
Town	Machi-yakuba	町役場
Village	Mura-yakuba	村役場
Government management	Seifu kansho	政府管掌
Government subsidy	Kokko Hojokin	國庫補助金
Governor	Chiji	知事
Grant (of money)	Hojokin	補助金
" , government	Kokko hojo	國庫補助
Guarantee	Hosho	保証
Guidance	Shido	指導

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English	Romaji	Japanese
Health center	Hokensho	保健所
Health establishment	Hoken shisetsu	保健施設
Health guidance	Hoken shido	保健指導
Health insurance, society-managed	Kenko Hoken Kumiai Kansho	健康保険組合管掌
Health insurance, government-managed	Kenko Hoken Seifu Kansho	健康保険政府管掌
Health nurse	Hoken fu	保健婦
Hearing	Shingi, Shinsa	審議 審査
Hearing, public	Kocho-kai	公聴會
Home-call	Oshin	往診
Honorarium	Shareikin	謝禮金
Honorary post	Meiyo-shoku	名譽職
Hospitalization	Nyuin	入院
Hydrotherapy	Suiryoho	水療法
Hygiene	Eisei	衛生
Illness	Byoki	病氣
Imprisonment	Chooki	懲役
In accordance with	ni shitagatte	ニ従ッテ
Income	Shotoku	所得
Income, taxable	Kazei shotoku	課税所得

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English	Romaji	Japanese
Income tax	Shotoku zei	所得税
Incompetent (law)	Futekito	不適当
Incorporated (juridical person)	Hojin	法人
Ineligible	Mushikaku	無資格
Inexpedient	Furi	不利
Infection	Tensen	傳染
Information	Shiryo	資料
Information, public	Koho	公報
Injury	Fusho	負傷
In-patient	Nyuin kanja	入院患者
Insolvent	Hasan	破産
Insurance association	Hoken kumiai	保険組合
Insurance dentist	Hoken-shikai-i	保険歯科医
Insurance doctor	Hoken-i	保険医
Insured person	Hi-hoken-sha	被保険者
Insurer	Hokensha	保険者
Invalid	Muko	無効
Inventory	Mokuroku	目録
Issue	Hakko	發行
Item	Komoku, Moisai	項目 明細