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BUREAU OF SANITATION

Arizona State Department of Health, Bureau of Sanitation.

ANNUAL REPORT

1948 - 1949

Definite accomplishments have been made in the overall environmental sanitation program in the state during the past fiscal year, although activities have been curtailed due to a reduction in staff. One engineer was recalled by the Public Health Service, another left the state for employment in private industry and the director completed a year of academic work for a degree of Master of Public Health from the School of Public Health, University of Michigan. For a major portion of the year, therefore, the staff consisted of one engineer, one principal sanitarian and clerical personnel.

The following is a compilation of the principal activities of the Bureau of Sanitation for the fiscal year 1948-1949 and includes the activities of the four sanitarians in Gila, Graham, Mohave and Navajo counties who work under the supervision of the Bureau. Indications are made in this report where limited or no activities at all exist in relation to certain important environmental factors which should be contained in any basic sanitation program.

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WATER SUPPLIES:

A number of major improvements and extensions have been made to community water supplies in the past year which have received the approval of the Bureau of Sanitation. These include:

Phoenix: A water treatment plant for the Verde River supply was put into operation in May 1949. Treatment includes grit removal, chlorination, (lime, alum activated carbon) flash mixing, flocculation, sedimentation, recarbonation and sand filtration. A new 60" line from the Verde is now being installed in parallel to the existing 45" and 48" lines and will supply an additional 58 million gallons daily. A number of privately owned utilities have been purchased and connected to the city system.

Bullhead City: A new well supply was developed and put into operation in November. Continuous chlorination is being practiced.

Sedona: A well supply has been developed to replace the surface supply formerly serving this community. Automatic chlorination is provided.

Showlow: A great deal of time and effort has been expended by the Bureau and the Corporation Commission in effecting a partial solution to a serious water supply problem in Showlow. A 6" well 218' deep with suitable pump and pressure tank has been installed. However, the old plant which processes irrigation water will have

to be continued in operation. Further work is necessary in order to develop additional sources of water and to correct extreme deficiencies in the distribution system.

Tucson: An additional source of supply has been added by the purchase of two large privately owned systems which have been connected to the city system.

Yuma: Work was completed at the treatment plant where expansion was made by the addition of four rapid sand filters. The plant now has a rated output of 8,000,000 gallons daily.

Several special investigations of community water supplies were conducted by the Bureau during the year. In addition to the investigation and corrections made at Showlow these included Globe, Willcox, Chloride, Miller Valley, Peach Springs, Mayer, Oatman and San Mateo Castro Springs, a bottled water supply. Recommendations for corrections were made in each instance and a follow-up investigation made. Three of these cases involved Corporation Commission hearings, in which the Bureau participated.

Gradual improvement has been noted in obtaining regular submission of water samples for bacteriological analysis. A survey revealed, however, that in 1948 only 11.6% of the supplies in Arizona met Public Health Service Drinking Water Standards, either as a result of not submitting the required number of water samples or as a result of unfavorable bacteriological reports. Letters and reminders have been sent to delinquent supplies and to those supplies whose samples consistently showed the presence of the coliform group of bacteria. A great deal of educational work in this field needs to be done in order to bring the rest of Arizona's supplies up to standards.

Good control has been maintained over new water supplies and new extensions to existing supplies. Through a working agreement with the Corporation Commission it is required that all new water supplies be approved by the Bureau prior to issuance of a franchise. Through agreement with the Real Estate Department, State Land Commission, it is necessary that all new realty subdivisions be approved by the Bureau. Requirements as to size of pipe, looped system, adequacy and quality of water, etc. have been rigidly enforced.

A census of all public water supplies was conducted in January and February by means of a detailed questionnaire which was distributed by the Bureau. Much of the statistical data available in this relation had not been revised for several years and the census enabled the Bureau to bring its file information up to date. Use was made of this material by the Bureau in cooperating with the Public Health Service in the annual nationwide Census of Water & Sewage Facilities in the United States.

A program has been developed in the Globe-Miami area by the Gila County sanitarian which includes routine check of residual chlorine at various points in the distribution system, periodic flushing of fire hydrants and disinfection of all new mains and appurtenances. This is a program which should be in force in all communities in Arizona.

Intensive efforts have been made to bring the 17 interstate carrier watering points up to an Approved status. Three watering points with a Provisional status in 1948 have been recommended for Approved certification in 1949 and it is anticipated that five more can meet approval within the next six months. At the request of the Bureau arrangements were made for joint inspection tours of all watering points in the state. Present at each inspection point was the chief engineer of the carrier company, a sanitary engineer

representative of the Bureau, a public health engineer representative of the Public Health Service and the local representative of the carrier company.

Preliminary work, consisting of a comprehensive report of sources and extent of pollution, has been started on the water pollution control program in Arizona. With funds made available to the State under Section 8(a) of the Federal Water Pollution Control Act for the coming fiscal year, it is planned to extend this program in the immediate future to field studies and recommendations for remedial control.

Table I is a compilation of the Bureau's principal activities in relation to water supplies for the year:

Table I

Public water supplies inspected	170
Private water supplies inspected	97
Water samples collected (bacteriological)	402
Water samples collected (chemical)	30
Inspection of interstate carrier watering points	35
Review of plans and specifications	117
Corporation Commission hearings	3
Chlorine treatment inspections	20

SEWAGE AND INDUSTRIAL WASTES:

A number of Arizona communities have installed new sewage treatment plants or additions to existing plants within the past year. The Bureau has made recommendations and has reviewed and approved plans and specifications for these installations.

New installations or additions for 1948-49 include:

Mesa: A new complete treatment plant has been constructed and put into operation. This has solved a nuisance and pollution problem which existed for years when untreated sewage was dumped into Salt River.

Phoenix: Work was completed in February on the activated sludge digestion plant for this community. Design capacity of the new plant is 33 million gallons daily.

Chandler: New treatment plant and additions to collection system. Work has been completed.

Somerton: Plans have been reviewed and approved for a new treatment plant.

Flagstaff: Plans are in the design stage for a new complete treatment plant and extensions to the present system. The Bureau is working with the consulting engineer retained by the city for the design work on this project.

Benson: Additions have been made to the collection system. Work is now completed.

Tucson: Plans have been approved for additions to the existing treatment plant

Litchfield Park: Plans have been approved for a new sewage treatment plant to serve Goodyear Farms.

Holbrook: Plans have been approved for additions to the sewerage system, sewage disposal plant and outfall line.

Promotional work has been done by the Bureau to obtain additional sewer extensions and a treatment plant at Yuma. However, a bond issue was defeated in the spring which would have provided these facilities.

At the request of the City of Nogales, Arizona, a survey was conducted by the Bureau in Nogales, Sonora of insanitary sewage disposal conditions in that city. Conditions constitute a public health threat to the City of Nogales, Arizona and on the basis of the Bureau's findings recommendations have been made to the International Boundary & Water Commission that a joint United States-Mexico sewage disposal plant be constructed to serve the twin cities, similar to the one now serving Douglas, Arizona and Agua Prieta, Sonora. Indications are that the construction of the disposal plant at Nogales may be scheduled in the near future.

Table II is a compilation of the Bureau's principal activities as they relate to sewage and industrial wastes disposal:

Table II

Field inspections and investigations	41
Review of plans and specifications	108
FHA individual sewage disposal installations reviewed	1371
Approved	1308
Disapproved	63
Laundry waste inspections	5
Supervision of septic tank installations	11

FOOD, DRINK AND MILK SANITATION:

There are four counties in Arizona without local sanitarians. These counties have been provided for five years with routine inspection service by

the limited personnel of the Bureau. Midway in the fiscal year this inspection service was withdrawn as the result of a decision to change the program emphasis from a routine inspection service by the Bureau to a consultant and advisory service available to local public health and sanitation personnel in organized counties. As a result of this change in policy the Bureau has been able to engage more actively during the year in such activities as food handler employe schools, rating surveys and assistance to local personnel in special problems.

A seminar was held in January, attended by 28 of the sanitarians, with the program aimed primarily at obtaining a uniform enforcement interpretation of the food and drink establishment section of the Sanitary Code. As a result of the seminar, a handbook was compiled for the use of sanitarians setting forth standards and procedures of enforcement.

The Bureau has worked closely with the School Lunch Program of the Department of Education in their training program for school lunch supervisors.

Milk sanitation programs received major emphasis on a county level during the year. Although the Bureau does not actively participate in a milk sanitation program it offers consultant service to local sanitarians engaged in milk inspection work. In cooperation with the Public Health Service the Bureau conducted rating surveys of the milk sheds at Tucson and Nogales. Results of the survey were:

	<u>Tucson</u>	<u>Nogales</u>
USPHS rating of retail raw milk	none	38.5
USPHS rating of raw milk sold to plants	83.2	68.9
USPHS rating of pasteurization plants	73.4	62.4
USPHS rating of pasteurized milk	78.3	64.6
USPHS rating of enforcement methods	85.5	--

Table III is a compilation of the Bureau's principal activities in relation to the food and milk sanitation program during the year:

Table III

Food and drink establishment inspected	2295
Dairy farms inspected	587
Milk plants inspected	130
Milk samples collected	605
Cows tuberculin tested (no positive results)	1014
Food and drink establishment rating surveys	2
Milk shed rating surveys	2
Food handler schools held	4
Sanitation seminar	1

INDUSTRIAL HYGIENE

A mass survey of industrial plants was completed in the early months of the fiscal year and plans were made, on the basis of findings, to develop a comprehensive program of industrial environmental control. The program has not developed as planned due to a critical personnel shortage. Most of the equipment for the industrial hygiene laboratory ordered earlier in the year has been received and it is anticipated that the laboratory will be set up and put into operation early in the 1949-1950 fiscal year.

Table IV is a compilation of the Bureau's chief activities in relation to the industrial hygiene program in Arizona:

Table IV

Consultations and conferences	147
Field inspections and investigations	21
Industrial Commission conferences	10
Reports and recommendations	10
Sampling	4
Lectures	2

GENERAL SANITATION:

Malaria and Mosquito Control: Mosquito control is not a significant public health problem in Arizona. There have been several limited mosquito control programs on a county level in the past year; however, these programs have been to control mosquito breeding principally from the nuisance standpoint.

Rodent Control: Rodent control is not a major activity of the Bureau, due primarily to the fact that other phases of the environmental sanitation program have considerably more public health significance in this state. On a local level some control work has been done through improved garbage collection and disposal programs. Supervision is maintained by the State and local level over rodent control in food and drink establishments and markets.

Sylvatic plague has been found among rodent fleas in Apache, Navajo and Greenlee counties by the Public Health Service investigation crews. Reports of investigation work done by the Service in Arizona are filed with this office.

Fly Control: Active fly control programs have been carried on in Navajo, Graham, Mohave, Yuma and Santa Cruz counties. For the most part these programs have consisted of promotional and educational work by means of lectures to civic organizations, radio scripts and newspaper publicity, coupled with a program of DDT spraying.

The Bureau is cooperating with the joint Public Health Service-City of Phoenix Fly Control Program now in operation.

It is recognized by the Bureau that a more extensive and scientific fly control program needs to be developed, particularly in counties having a high rate of dysentery and diarrhea. Limited personnel is the chief deterring factor in the development of an overall program.

Garbage Collection and Disposal: Investigation and improvement of community garbage collection practices received major emphasis on a local level during the year. Improved local garbage regulations have received attention in several counties and all sanitarians have carried out local educational programs in this relation.

The Bureau has reviewed and approved 117 applications for garbage and trash disposal in new realty subdivisions.

A total of 560 garbage inspections were conducted at the local level during the year.

Housing: Adoption and application of housing standards in Arizona is needed. However, it has been felt by the Bureau that the promotion of such a program is not wise at the present time when other, more pressing problems, of environmental sanitation require the full time of the staff. As stated earlier in the report, new real estate developments must meet the approval of the Bureau insofar as water, sewage and garbage facilities are concerned. No control is exercised, however, over the type of dwelling erected in these developments.

Swimming Pools: The Bureau has worked closely with engineering firms engaged in the design and installation of private and public swimming pools. While design standards for swimming pools are not set up in the Sanitary Code, it is required that plans and specifications for all public pools must be approved by the Bureau before construction. Eight plans have been reviewed

and approved. Two were disapproved. A preliminary draft of Section IX of the State Sanitary Code revising the present section has been prepared. This section will set up construction features and correct operational methods.

Plumbing: The Bureau has cooperated closely with the Arizona Chapter, American Society of Sanitary Engineering, in developing and promoting a state-wide plumbing code. Legislation is needed to initiate an effective plumbing control program in Arizona. Until such time as this legislation is forthcoming activities of the Bureau in this relation will necessarily be limited primarily to educational and promotional work in interesting lay groups in promoting local and State plumbing codes. In this respect, three lectures were given during the year by the Bureau to civic organizations.

Camps, Courts and Hotels: There is no sanitary regulation of hotels on a State or local level. No State regulations exist in this relation and the lack of personnel to carry out routine inspections would be a serious deterrent in such a program.

Labor camps, recreational camps and tourist courts present a serious problem which, with limited personnel, can be handled only on an emergency basis. Control of these facilities will become a major activity of the Bureau as the staff is increased.

Summer camps serving the YMCA, YWCA, Girls Scouts and Camp Fire Girls were inspected prior to the opening of the camp season and recommendations were made for improvements and corrections. Assistance was given the Girl Scouts Council in planning sewage and garbage disposal facility improvements at their camp.

Shellfish Sanitation: There is no shellfish production industry in Arizona but control is maintained over sale of shellfish in food and drink establishments. Such establishments are required to handle only Public

Health Service certified shellfish. Arrangements were made by the Bureau to supply all sanitarians with current lists of certified shellfish shippers.

MISCELLANEOUS:

Many miscellaneous activities enter into the overall environmental sanitation program of the Bureau. Table V is a compilation of the principal miscellaneous activities.

The Bureau has been instrumental in drawing up a School Sanitary Code now nearing completion for presentation to the State Board of Health for adoption. In drawing up these regulations the Bureau has cooperated with the State Department of Education, the Arizona Educational Association, the Arizona Chapter of the American Institute of Architects and with other interested agencies.

Educational programs have been participated in to a limited extent by the Bureau in cooperation with the Division of Health Education. These have included lectures to nurses classes, lay organizations and to classes at college summer schools and workshops. The Bureau has assisted in planning workshop programs for operators at the two conferences of the Arizona Sewage & Water Works Association and anticipates working closely with that organization in the coming year in developing a training and certification program for water and sewage works operators.

The Bureau and local sanitarians have cooperated with the Pure Food & Drug Administration in investigations of adulterated drug and food products. A survey was conducted to determine the possible illegal entry of parrots and parakeets into the state. None was found.

The Navajo County sanitarian assisted with Operation Haylift in checking the preparation and packing, as well as delivery, of food packages dropped to snowbound areas in northern Arizona.

Two investigations of possible food poisoning outbreaks were conducted by the Bureau in Greenlee County, where no local sanitation personnel is available.

Rabies control programs are in force in Mohave, Graham, Navajo and Santa Cruz Counties.

A survey was made of lettuce and cantaloupe dumps in the Yuma area and corrective measures recommended.

A sanitary survey was made at the Arizona State Prison and recommendations made for badly needed corrections.

Table V is a compilation of the Bureau's activities in miscellaneous environmental sanitation work:

Table V

Miscellaneous Inspections:		811
Swimming Pools	34	
Garbage	560	
Bakeries	27	
Markets	120	
Ice Plants	6	
Bottling Plants	19	
Slaughter Houses	18	
Packing Houses	8	
Carnivals and Fairs	8	
Jails	2	
Nursery (disapproved)	1	
Laundries	5	
Diaper Service (disapproved)	2	
Swimming Pool Plans Reviewed		10
Approved	8	
Disapproved	2	
Garbage Facilities Reviewed and Approved		117
Investigations of adulterated food and drugs		37
Lectures		17
Radio talks		4

PROGRAM DISCUSSION:

In the local health units the number of sanitation personnel will continue to be far short of actual needs. Four counties - Pinal, Greenlee, Apache and Yavapai - are still without the services of a single sanitarian. In other counties the demand and need for the public health services of the sanitarians far exceed the possibilities of the present inadequate staffs.

It is anticipated that the staff of the Bureau of Sanitation for the coming year will consist of the director, two sanitary engineers, a junior sanitary engineer, a principal sanitarian and a total of three office workers. With such an increased staff a beginning can be made on an overall program for improving the environmental sanitation of the state. The enormity of the environmental sanitation problem in Arizona, however, precludes the possibility of a complete program being carried out until such time as adequate sanitation personnel is available to both the State and local levels. This is readily understandable if the details of what should be considered a basic environmental sanitation program for the state are carefully reviewed:

Water Supplies: A basic environmental sanitation program should encompass strict control of the public water supplies in the state. A complete sanitary survey should be completed of each water supply every two years. On the basis of the survey the water supply should be graded and the grades made known to the public. Several states have very effectively inaugurated the practice of placing highway markers indicating the grade of the community water supply. A great deal of work needs to be done in promoting training of water supply operators. At the present time there are no state-wide requirements for qualifications of public water supply operators. Promotional and educational work also needs to be done

among owners and operators of public and semi-public supplies in order to obtain better cooperation in the regular and proper submission of water samples for bacteriological analysis. An intensive effort should be made to improve the individual water supplies in rural areas. This can best be accomplished by a promotional campaign in the rural areas. A set of modern instructional pamphlets should be available for distribution to the farm group. Such a program would be tied in with the activities of the county agent, the county nurse and other offices with rural contacts. Promoting the organization of well drillers and securing their cooperation in observing a well drillers code would materially reduce the number of inadequate and unsafe wells being installed in the state every year.

At the present time facilities are not available for the chemical analysis of water. Such an omission would be fantastic in any State health department but is particularly so in Arizona in view of the public health significance of extremely small amounts of copper, manganese, zinc, arsenic, lead and nitrates in drinking water, all of which are relatively common in large areas in the state. It has been established that infant deaths due to methemoglobinemia (or "blue babies") have been caused by nitrates in drinking water.

Sewage and Industrial Wastes: The Bureau should by all means have sufficient trained personnel to work more closely with communities in solving their sewage disposal problems. It is anticipated that there will be an increase in the number of sewage and sewerage projects in the state within the next few years, due to the urgent need in many communities and to the fact that Federal aid will be available for such projects. In order to protect the community's interest by intelligently reviewing the plans for sewage plants and sewerage systems it is necessary to have available

pertinent information in regard to the community's problems and conditions. This information can only be accumulated over a period of years as a result of careful surveys performed by trained sanitary engineers.

By working with the community and with the consulting engineer retained by the community this Bureau, with adequate personnel, can insure that any proposed waste treatment facility is adequate in capacity, capable of affording a practical degree of treatment, economical to build and suited to convenient, economical operation. Proper administration of such a program by this Bureau is the only means for protecting the communities of the state from unnecessary risks and expense. On the other hand, many communities have still not accepted their responsibility for proper disposal of their sewage and the Bureau should take the lead in promoting community interest in such projects.

Plumbing: The need for a statewide plumbing code should be indicated beyond all doubt by the necessity for properly protecting public water supplies and properly disposing of waste matter, as well as by the all too evident improper plumbing existing in the majority of our communities. As other states and communities enact or improve existing plumbing codes, Arizona will continue to gain in prominence as the "happy dumping ground" for substandard plumbing fixtures not acceptable elsewhere in the nation. At the present time such fixtures are disposed of by carload lots in the state.

Industrial Hygiene: The industrial hygiene activities of the Bureau should be greatly expanded in order to provide a corrective and preventive program of industrial health for the workers of the state. Increased attention should be given to the investigation of occupational disease claims submitted to the Industrial Commission. A vital problem affecting the welfare of the state is the silicosis rate among workers. This problem is in need of careful study and evaluation. Such a study could best be accomplished by combining the efforts and resources of the Bureau of Sanitation, the Public Health Service, the Industrial Commission and

the Mine Inspector. It is also necessary in order for the industrial hygiene program to function efficiently that proper laboratory facilities be provided, as well as a trained chemist capable of performing the exacting analyses necessary in an industrial hygiene laboratory.

Schools: A cursory examination of any of the schools in the state will reveal an urgent need for long-range corrective environmental sanitation programs in the schools. Such a program should, of course, be well planned and administered by trained personnel. The Bureau is now working with all interested official and non-official agencies in formulating a new section of the State Sanitary Code pertaining to school sanitation. The code will cover, with obligatory and/or advisory clauses, all phases of environmental sanitation in the schools. Educators, public health officials and Parent-Teacher groups have long recognized the need for such rules and regulations.

With the present inadequate staff in the Bureau it is realized that only a minimum can be accomplished towards making the school sanitation program effective in all the existing schools. However, the Code will exist as a guide and legal instrument for school administrators in their efforts to correct many glaring deficiencies in our schools. In order to prevent many of these same deficiencies from being incorporated in future schools, the code will require that all plans of new school buildings be approved by the Bureau.

Labor Camps: A program is urgently needed for improving the environmental sanitation of the labor camps throughout the state. Official agencies in the state responsible for placement of farm laborers have described appalling and inhuman conditions existing in these camps. It is known that the diseases that are prevalent under such conditions are not retained within the camp enclosure; therefore, aside from all humanistic consideration of the laborers themselves, the existing conditions present a considerable public health hazard to

the entire state. At the present time sufficient personnel is not available to attack this problem in any way, neither on a State or local level.

Milk Sanitation: The State Department of Health has taken the stand that all public health aspects of milk production should be under the supervision of the Bureau of Sanitation. With adequate personnel such supervision would ensure a safe milk supply for the entire state. An active program would provide uniform regulations governing the production of milk and would promote the interest of the dairy industry in a training program for dairy personnel.

Swimming Pools An active program of regulating and improving the operation of public swimming pools is definitely needed. Pools should be inspected and graded in a manner similar to the method used in eating and drinking establishments. Plans for new pools are required to be approved by the State Department of Health, but in many cases this is not accomplished due to lack of enforcement on the local level.

Miscellaneous: Inadequate personnel, both on the State and local level, also prevent the initiation of an effective program for regulating the sanitation of tourist camps, recreational camps, housing, jails and frozen food lockers. Throughout the state, however, it is evident that control of these facilities is definitely required. Little attention has been given to rodent or insect control programs although the need for such a program again is all too evident. Not a community in the state is properly storing, collecting or disposing of its garbage and refuse. The Bureau of Sanitation should be in a position to lead in initiation of community action in this respect. In connection with the last two items it is pertinent to point out that diarrhea and dysentery continue to be among the leading causes of morbidity and mortality in Arizona. Flies which breed prolifically in the state are usually associated with diarrhea and dysentery, and any attack on the two diseases must include a fly control program. Such a program must be scientifically directed so as to evaluate properly all factors in fly breeding and to secure maximum effectiveness.

The matter of accident prevention is receiving nationwide attention, for accidents are the fourth leading cause of deaths in the nation. The program for attacking this problem will in all probability become the responsibility of the public health agency. In industry it has been demonstrated that the engineering approach to this problem has been the most productive and effective approach to the problem of safety; therefore, it is only logical to suppose that an engineering approach will be used to reduce non-industrial accidents.

RECOMMENDATIONS:

- 1) The most important necessity is to increase the number of trained sanitation personnel on both the State and local level. On the State level it is recommended that the Bureau be increased to director, 12 sanitary engineers, 1 sanitary and industrial hygiene chemist, three sanitarians and 5 clerical workers. Sanitation personnel of local units should be increased in accordance with the needs and personnel provided for those counties with local health units.
- 2) The Bureau should be provided with additional necessary field and laboratory equipment.
- 3) Legislation should be promoted to control effectively the sanitation of all aspects of milk production and plumbing.
- 4) The facilities of the Division of Laboratories should be increased so as to provide more adequately for the needs of this Bureau.
- 5) Salaries for personnel should be substantially and realistically adjusted upward in keeping with increased cost of living.