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GENERAL HEADQUARTERS
SUPREME COMMANDER FOR THE ALLIED POWERS
Public Health and Welfare Section

14 March 1946

MEMORANDUM FOR RECORD:

SUBJECT: Japanese Studies of the Sanitary Treatment of Human Excreta.

1. Laboratory and full scale experiments have been made by Dr. Rokuro Takeno over a considerable period of time on the destruction of pathogenic bacteria and parasites by the simple method of storage of excreta.

a. In the laboratory experiments typhoid bacilli and eggs of roundworm and hookworm were added with the daily application of human excreta. The reduction in numbers of bacilli and eggs in typical samples was noted over a period of several months storage at varying temperatures.

b. In the full scale experiments in the Tokyo area a sanitary privy was constructed with over and under baffles in the tank to prevent short circuiting, using excreta containing large numbers of eggs of roundworm and hookworm and with the addition of typhod bacilli. The following results were reported:

(1) Typhoid bacilli were completely destroyed in about ten days in summer in about one month in June and October and in about two months in early spring and late fall. In winter a small number survived until spring.

(2) Eggs of roundworm did not develop in the excreta. In summer they were destroyed in about three months. In spring and autumn the time required was somewhat longer, and some survived throughout the winter months.

(3) Eggs of hookworm did not develop in the excreta. In summer they were destroyed in about one month, and in spring and autumn in about three months, and in winter some survived until spring.

c. The following basis of design for sanitary privy storage tanks was recommended:

(1) Capacity to be provided - 1 liter per person per day.

(2) Storage period - 100 days

(3) Tank to be divided into 5 compartments with over and under baffles.

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d. Many privies of this type have been constructed. Several cities and Agricultural Associations have constructed nightsoil storage tanks of similar design for three months storage of nightsoil from the community before it is distributed to farmers.

2. Z. Nishihara, Sanitary Engineer, had made laboratory and field experiments for the digestion of human excreta at a central plant from cities and communities without sanitary sewers. Later experiments included the disposal of garbage with the excreta, and it was proposed to also include an incinerator for the disposal of refuse in a design of a complete waste disposal plant.

a. Plant design included the following facilities:

(1) Dumping platform where excreta would be emptied from the collectors carts and trucks.

(2) Bar screens for the removal of large foreign material.

(3) Grinding station for the dumping and grinding of garbage and its addition to the excreta flow.

(4) Low lift pumping station if required.

(5) Heated digestion tanks similar to those commonly used for sewage sludge digestion, with facilities for the addition of air for PH correction. and facilities for the collection of gas.

(6) Sand sludge drying beds.

(7) Stone filters for secondary treatment of supernatant liquor and sludge bed drainage where required.

(8) Refuse incinerator with facilities for hot water heating of the digestion tank. Ash was to be mixed with digested sludges ahead of the drying beds.

(9) Gas from the digestion tank was to be collected, scrubbed, and pressure bottled for use as fuel for motor cars. Dried sludge was to be used by farmers for fertilizer.

b. Two excreta treatment plants of this type were under construction, one in Tokyo and one in Osaka, but were not completed because of the war.

3. Both of these methods of treatment are basically sound and their general use would represent a great advance in sanitation in Japan.

e. Ministry of Health officials have been advised to reinstitute the educational and publicity program in use before the war for the construction of sanitary privies and storage vaults.

b. Japanese sanitarians agree that there is a definite place for excreta treatment plants as proposed by Mr. NISHIHARA.

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