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BIOLOGICAL WARFARE
FEB. MAR. 1944

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WAR DEPARTMENT

The Adjutant General's Office
Washington 25, D. C.

/geb

AG 361 (21 Feb 44) OP-S-S-M

FM/md 29 939 Pentagon

28 March 1944

SUBJECT: Defense Against Sabotage Methods of Biological
Warfare in a Theater of Operations.TO: Commanding Generals, ~~OP~~
Theaters of Operations
~~OP~~

1. Purpose. a. This letter supplements the information on defense against sabotage given in letter, AG 361 (9 Feb 44) OP-S-P-M, 14 February 1944, subject: Biological Warfare.

b. The suggested protective measures described herein are based on what has been done in certain theaters considered particularly vulnerable to sabotage methods of b.w. attack. They are published here for the information of the theater commander in the event that, in his judgment, the security of the theater or any of its installations warrants the application of any or all of the defensive measures described.

2. Objectives of B.W. Attack (Sabotage). a. The use of sabotage methods of b.w. against a particular military or naval installation may be expected to have one or more of the following objectives: (1) To deny or lessen the use of the installation to our forces. (2) To facilitate the capture of the installation by attacking enemy forces.

b. Unless the successful use of b.w. in a given case would accomplish one of the objectives listed in paragraph 2a, above, elaborate counter-measures are not warranted.

3. Avenues of Attack by Sabotage Methods of B.W. a. The principal avenues of attack are the water and other beverages that men drink, the food they eat, and the air in which they move. Any anti-biological warfare ("A.B.W.") program is therefore concerned primarily with the preparation, processing, and distribution of foods and beverages consumed in substantial part by military or key civilian personnel. The possibility of the successful introduction of insect-borne diseases should also be considered. The local potential sources of bacterial and chemical contaminants constitute another item for investigation.

b. The principal factors to be considered therefore in connection with any investigation of the possible use by the enemy of sabotage methods of b.w. and with any contemplated A.B.W. program, are as follows: (1) water supplies; (2) fresh milk; (3) ice cream; (4) bottled soft drinks; (5) beer; (6) ice and cold storage plants; (7) bread; (8) meat and butter; (9) civilian laboratories; (10) poisons (available local sources of); (11) insect-borne diseases, and (12) prisoners of war and refugees. The significance of each of these factors will be discussed in greater detail in subsequent paragraphs in this letter.

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23 March 1944

4. General Principles of A.B.W. (Anti-Biological Warfare) Protection.

a. The basic principles of a.b.w. protection are for the most part very simple. The protective measures may be broadly divided into two categories, those having to do with (1) physical security and (2) personnel security.

(1) Physical security. - Protective measures include adequate fences, locked gates or doors, guards, patrols, telephone communications and other devices designed to prevent unauthorized access to the premises.

(2) Personnel security. - Protective measures here include principally a check on the subject's background, nationality, citizenship, political tendencies, loyalty, etc., such as is provided by the loyalty investigations of the Provost Marshal General's Office (reported on Form 58, PMGO) and by investigations of other agencies.

b. In practically every food and beverage plant there is usually some one spot (and occasionally more than one) where a subversive could accomplish wholesale contamination of the product. In a bottled soft drink plant, for example, this spot is the syrup room; and in a milk plant it is the room or rooms housing the pasteurizers, coolers and holding tanks; in a water system it may be a pumping plant or a chlorination or filtration plant.

c. The basic principle of a.b.w. protection in any plant in which food or beverage is prepared or processed is to (1) isolate the key portion of the plant where a subversive could accomplish wholesale contamination; (2) make this key area accessible only to the authorized personnel required for operating this portion of the plant; and (3) employ for these key positions at least, and preferably for the entire plant, only personnel that have been thoroughly checked and approved by the PMGO, G-2, F.B.I., CIG, or other available competent agency. Where local conditions make it impossible to secure trustworthy civilian personnel for key positions, consideration may be given to the utilization of military personnel for these positions.

5. Danger from B.W. and Protective Counter-Measures. a. The principal possible dangers from sabotage methods of b.w. along the avenues of attack listed in paragraph 3b above together with the most important specific protective measures designed to prevent or neutralize these dangers are set forth below. In describing these protective measures the phrase "appropriate physical and personnel security measures" will be used for sake of brevity to indicate the type of precautionary measures described in detail in paragraph 4 above.

(1) Water supply. (a) The drinking water supply of a military or civilian community constitutes the most important single avenue of potential sabotage attack by b.w. The attack may come as a mass bacterial contamination or chemical poisoning of reservoirs or storage tanks, particularly those containing water after it has been treated in a purification plant; another possible danger is that the water may be contaminated or poisoned in a water main or other part of the distribution system carrying treated water direct to the consumer.

(b) The most effective a.b.w. protection of water supplies is disinfection and the maintenance of an adequate chlorine residual in all active

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AG 302 (24 Feb 44) 67-3-3-1

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28 March 1944

parts of the distribution system. Current War Department directives specify that in general this residual shall be at least 0.4 parts per million in fixed plants (1.0 p.p.m. in the field). The presence of an adequate chlorine residual is the best protection known against bacterial contamination, either deliberate or accidental. Certain types of chemical poisons also will eliminate or reduce the chlorine. Frequent and regular checks should therefore be made of the chlorine residual. If practicable, laboratory facilities should also be provided for making the side for tests for chemical poisons which have been devised for this special purpose in the event of the sudden disappearance or sharp reduction of the chlorine residual or because of other suspicious circumstances. Appropriate physical and security measures should be instituted.

(2) Fresh milk. (a) Fresh milk offers an excellent vehicle for the spread of disease by b.w. methods. In certain theaters, where it has been found impossible to control satisfactorily production and distribution, the use of fresh milk by military personnel has been prohibited.

(b) Deliberate wholesale contamination of fresh milk is most feasible after pasteurization and cooling. Accordingly, appropriate physical and personnel security measures should be applied to the rooms or areas housing the pasteurizers, coolers and holding tanks for the cooled milk. Sanitary measures should be rigidly enforced, and the performance of the pasteurizer should be carefully checked.

(3) Ice cream. (a) If the ice cream is made entirely from prepared mixes imported from the United States, and is not pasteurized before freezing, the vulnerable area of the ice cream plant is the mixing room. If, however, the ice cream is compounded locally from a number of ingredients from various sources, it is usually pasteurized before freezing; in this case the vulnerable portions of the plant are the rooms containing the pasteurizer and cooling and holding tanks, and the mixing and blending tanks.

(b) Assuming that the ice cream has been approved by proper authority from other standpoints, the principal specific a.b.w. protective measures indicated is the application of appropriate physical and personnel security measures to the vulnerable portions of the plant indicated above.

(4) Bottled soft drinks. (a) The most vulnerable spot in a bottled soft drink plant is the syrup room where the extracts are mixed with sugar, syrup and other ingredients. Secondary vulnerable areas are the storage rooms for sugar, extracts and other ingredients.

(b) The principal protective measure indicated is the application of appropriate physical and personnel security measures to the areas listed in (a) immediately above.

(5) Beer. (a) Bottled beer is not a good vehicle for the spread of bacterial contamination since the second last step in processing is pasteurization (the last step is cooling). This is not true of draft beer which is not pasteurized. The danger of chemical poisoning is confined largely to the storage, brewing, cooling and fermentation rooms.

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AC 141 (29 Feb 44) 08-3-B-M

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28 March 1944

(b) Principal countermeasure is the application of appropriate physical and personnel security measures to the vulnerable areas listed in (a) immediately above.

(6) Ice and cold storage plants. (a) Ice is not a very effective instrument for h.v. attack for reasons which need not be discussed in detail here. There are sufficient possibilities, however, to warrant giving at least some attention to this product.

(b) From the a.b.w. standpoint, the two principal protective measures are (1) freezing the ice from potable water containing an appreciable amount of residual chlorine and checking to assure that there is free chlorine in the unfrozen cold water just before the core is sucked, and (2) appropriate physical and personnel security measures applied to the freezing tanks, open, forecoolers, etc. The latter type of security measures applies also to the storage rooms in cold storage plants.

(7) Bread. (a) Bread is not a good vehicle for dissemination of bacterially produced disease. The danger from chemical poisoning is confined principally to the mixing room and to the ingredients used in the preparation of the dough.

(b) Principal protective steps are appropriate physical and personnel security measures applied to the rooms in which mixing is carried out and ingredients are stored. Many Army bakeries are operated exclusively by military personnel; the protective measures called for in such cases will usually be merely those relating to the physical security of the bakery.

(8) Meat and butter. (a) Effective large-scale deliberate bacterial contamination of meat in storage, with the object of causing widespread epidemics of human disease, is difficult. More to be feared is the introduction of animal diseases in localities where this might be a serious consideration. Butter, on the other hand, is more readily susceptible to wholesale and deliberate contamination, particularly if the source of supply does not permit careful inspection of production.

(b) The obvious protective measures from the a.b.w. standpoint are (1) careful inspection of these food products at the source of supply, and (2) the exclusive use of products originating in sources of supply which are subject to the rigorous inspection and control required in the case of meat and butter designed for use by troops on duty in the continental United States.

(9) Civilian laboratories. (a) The possibility of deliberate contamination of foods or beverages by bacterial or chemical agents may make it desirable to check on civilian laboratories, both bacteriological and chemical, as possible sources of the contaminating agents. In hot climates only comparatively simple apparatus would be required for the production of large quantities of certain types of bacterial agents.

(b) Where danger from this source is feared, all civilian laboratories may be required to register with the appropriate military or civilian authorities, stating the names and addresses of the laboratory personnel employed at present and for the past several years, the type of work done by the laboratory,

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AC 381 (24 Feb 44) OG-S-11 (Cont'd)

28 March 1944

and the cultures, if any, on hand. The registration is followed by a check of the personnel, an inspection of the laboratory, and the destruction of any cultures of pathogenic organisms for which no necessity is apparent.

(10) Poisons. (a) Chemical poisons have a prompt effect and therefore may lend themselves particularly well to sabotage methods, especially in connection with a concentrated, localized attack.

(b) Protection against the subversive use of potent chemical poisons may be secured by freezing the stocks of these materials, with subsequent sale thereafter made only with the specific permission and approval of the military or competent civilian authorities.

(11) Insect-borne diseases. (a) Enemy attempts to introduce insect-borne diseases in a given area may originate locally, or may be combined with attempts at introduction from the outside.

(b) Strict enforcement of quarantining regulations is one of the most effective methods of protecting against the deliberate as well as accidental introduction of insect-borne diseases. Immunization of the military and civilian populations against infectious diseases most likely to be introduced also merits consideration. In addition, the examination of insects and rats in connection with routine or intensified insect and rodent control programs may provide information on possible enemy attempts to introduce diseases through these vectors. Finally, since it will be difficult in many cases to recognize an attempt to introduce an insect-borne disease until cases of the disease actually occur, it is evident that medical officers and civilian medical authorities should be on the alert to detect the presence of any new or unusual disease, especially when accompanied by a fever of undetermined origin.

(12) Prisoners of war and refugees. An infected prisoner of war or refugee may serve, either accidentally or deliberately, the purpose of b.w. Medical officers should be alert to this possibility and should take appropriate preventive measures.

6. Distinction Between A.B.W. and Medical Viewpoints. From the foregoing paragraphs, it will be evident that the a.b.w. viewpoint is quite distinct from the medical and sanitary viewpoint although in many cases the measures taken to implement both types of programs will coincide. It will be clear, however, that it is entirely possible to have a well-sanitized food or beverage plant or a water system which is still wide open to attack by sabotage methods of b.w.

7. Designation of A.B.W. Officer. For the reasons set forth in paragraph 6 immediately above, it is believed that it would be generally desirable to have on the staff of the theater commander an officer designated as the theater A.B.W. Officer, possibly in addition to his other duties. This officer might be the Theater Surgeon, or one of his assistants. It would be the general responsibility of this officer to see that the a.b.w. viewpoint is kept in mind in the fields and activities where this viewpoint is necessary to the security of theater, and to make appropriate recommendations to the theater commander. A specific and continuing responsibility of this officer would be to put into effect any a.b.w. measures decided on by the theater commander and checking by means of field inspections to see that they are kept in effect.

By order of the Secretary of War:

Reproduced Headquarters MATWISA, 9 June 1944.

A. B. N.
A. B. N.

/s/ J. A. Ulio
t/ J. A. Ulio 1963
Major General
The Adjutant General

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AG 381/433 B-D

27 March 1944

SUBJECT: Biological Warfare.

TO : All Concerned.

1. It is desired that the attention of intelligence, medical and all interested agencies within your command be called to the information contained in War Department letter, AG 381 (9 Feb) OP-S-B-M, dated 14 February 1944, subject as above, copy of which has been furnished.

2. Directives will be issued by you to insure that necessary action is taken to alert all concerned in your command to the possibilities of biological attack, and to disseminate information on the methods of detecting and counteracting such an attack.

3. All information or exhibits collected should be reported and forwarded without delay to this headquarters.

By command of Lieutenant General DEVERS:



J. L. TARR,
Colonel, AGD,
Asst Adjutant General.

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AG 381 (9 Feb 44)CB-S-B-M

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14 February 1944.

VIA AIR MAIL

SUBJECT: Biological Warfare.

TO : * * * * *
The Commanding Generals,
Theaters of Operations.
* * * * *



(Note: "Biological Warfare" may be broadly defined as the employment of bacterial and toxic chemical agents (other than war gases to produce death or disease in man, animal, or plant (i.e. food crop) population.)

1. Due to his steady deterioration, the enemy may in desperation resort to biological warfare. It is therefore imperative that all intelligence officers, medical officers, and others concerned be keenly alert to possible methods of attack, and be able to recognize presumptive evidence of its contemplated, employed, or attempted use, and be in a position to transmit to the proper agency all pertinent information thereon immediately.

2. As a precedent for the employment of biological warfare, the following incidents are noted:

In 1916 a German attempt to propagate glanders and anthrax among livestock in Rumania was foiled by the timely discovery of the bacterial cultures on the premises of the German Legation in Bucharest. In 1917 German agents were apprehended while attempting to disseminate glanders and anthrax among military animals on the western front. During the present war (1941) on the Chinese front, the Japanese attempted to spread bubonic plague by dropping packets of rice and flour mixed with wisps of cotton rag contaminated with the plague microbe from low-flying aircraft. This attempt was reported partially successful as several cases of this disease followed this effort.

3. Since World War I, a large number of scientific, military, and other writers have pointed out the possibilities and dangers of biological warfare. Conflicting opinions have been expressed as to the feasibility and ultimate value of such methods of attack; however, a survey of pertinent data indicates that the effective dissemination of disease agents in warfare

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AG 301 (9 Feb 44)UL-S-M-M

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14 February 1944

is a distinct possibility. The German and Japanese High Commands have shown a definite interest in biological warfare, and it is believed that they have conducted experiments from an offensive point of view. Neither Germany or Japan will be influenced by humanitarian motives in making their decisions to employ biological warfare.

4. From the information now available, it appears that two principal types of biological warfare are to be guarded against. One of these is what might be called a mass tactical or external attack, such as the Japanese used in China. The other is sabotage, or attack from within, such as the attempts of the Germans in World War I to spread glanders and anthrax among the horses in France and Rumania. Intelligence officers and others concerned must be alerted for indications of either type of attack.

5. The following could be taken to indicate enemy intentions in this respect and should be watched for carefully:

a. The appearance of specialized troops in strategic areas, such as certain types of chemical and engineer troops trained in biological methods, for otherwise unexplained purposes.

b. Unusual type or amount of special equipment such as dehousing units, field laboratories, field autoclaves, decontaminating equipment, new or special type artillery and mortar shells, and bombs.

c. Unusual types of inoculation of enemy personnel (from paybooks, medical records, or blood serum tests, etc.).

d. Transportation or storage of highly classified matter and unusual security precautions in relation to such.

e. New issues or reissues of protective equipment or alteration of such (gas masks, special decontamination clothing).

f. Instruction of line troops in protective attacks against biological warfare.

g. New techniques or equipment for projecting smoke or mists by aircraft or artillery.

6. Since there is a time interval of hours to days between the dissemination of and the manifestations of bacteriological agents, the following acts by the enemy will call for immediate investigation on the part of intelligence officers:

a. Unusual and otherwise unexplained flights of enemy aircraft.

b. Material dropped or sprayed from aircraft such as smoke or mists, flasks or ampules, gaseous vapors, refuse or food particles,

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14 February 1944

parachutes or other containers for animals or insects.

c. Unusual types of bombs or shells, particularly those containing compressed air cylinders or pistons.

7. Saboteurs are most likely to use biological warfare in foods, water supplies, or other beverages. Unusual taste and appearance of these commodities, suspicious actions of individuals handling them, or the sudden reduction or disappearance of the residual chlorine in water supply system may indicate sabotage by biological means.

8. A successful biological attack, whether made from within or without, can be expected to manifest itself in one of the several ways listed below; security officers and especially medical officers should view these manifestations from the biological warfare aspect.

a. Appearance of a disease in a previously non-infected area which cannot be accounted for by normal means of transmission.

b. Numerous widespread unexplained outbreaks of unusual diseases or unexplained deaths occurring in a given area.

c. Abnormal deaths among the rat population in a given area or a sudden decrease in the number of rats.

In connection with the observations of the manifestations of biological attack listed above, it should be borne in mind that the infectious and toxic agents that appear most likely to be employed have a lag or incubation period between the time of contact and the first appearance of symptoms; this period is never less than a few hours and may extend to many days. This fact may further be utilized by the enemy in endeavor to spread contagion by release of prisoners deliberately infected with communicable disease.

9. It is desired that responsible intelligence officers within the area concerned be thoroughly alerted to the possibilities of biological attack and be instructed to coordinate their activities and cooperate with the appropriate services in the investigation, appraisal, and report of any definite or presumptive evidence of employment by the enemy of biological warfare methods. Whenever physical evidence is found and preliminary investigation warrants laboratory examination to complete the appraisal, the services of the nearest laboratory adequately equipped to conduct the examination should be promptly utilized. On discovery such material should be treated as contaminated.

- 3 -

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10. All information or exhibits collected should be promptly reported and sent to the A. C. of S., G-2, War Department General Staff, Washington, D. C.

By order of the Secretary of War:

s/ J. A. ULIO
t/ J. A. ULIO,
Major General,
The Adjutant General.

Reproduced Ho. NATOUA,
2 March 1944.


R. H. F.

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