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EXECUTIVE SUMMARY

This report was prepared by the Office of the Program Manager for Chemical Demilitarization for the Department of Defense (DoD) as a separate appendix to the Survey and Analysis Report, Second Edition (1996) for the Non-Stockpile Chemical Materiel Program (NSCMP). The report describes locations outside of the United States which may contain chemical weapons either from disposal operations or tests where these munitions were fired and may still be located.

The information included in this report constitutes findings regarding potential locations and activities involving the United States Department of Defense (DoD) and supporting service organizations stationed overseas during World War I and immediately prior to, during and subsequent to World War II.

The review identified a total of 243 locations in 19 foreign countries where chemical weapons were stored or destroyed during this period. In accordance with the procedures of the time period, the method of destruction consisted of either burning and burial or burial with a decontaminant, such as chloride and lime. In many cases, the burial sites were marked by placards.

Under the Chemical Weapons Convention (CWC), chemical weapons abandoned by a nation after January 1, 1925 on the territory of another nation without the consent of the latter are defined as abandoned chemical weapons. The nation upon whose territory abandoned chemical weapons are located (territorial party) and the nation which abandoned chemical weapons on the territory of another (abandoning party) are required to submit to the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (OPCW) all available relevant information concerning the abandoned chemical weapons not later than 30 days after entry-into-force of the treaty. Abandoned chemical weapons which were buried on a state party's territory before January 1, 1977 and which remain buried are not required to be recovered and destroyed unless the territorial state wants them to be. Chemical weapons which were dumped at sea prior to January 1, 1985 are not required to be declared under the CWC.

In the Survey and Analysis Report, Appendix D, (November 1993), the United States was still investigating its responsibilities in the declaration of abandoned sites. One site, Bari, Italy, was believed to be subject to the provisions of the CWC. Since that time, further information has been provided by the Government of Italy, indicating that the site was investigated and cleared in 1954. The Government of Italy also provided information that a similar site at Manfredonia had also been cleared of chemical warfare materiel. Based on this information, it is believed no discernable hazard remains and that, accordingly, no declaration for these sites is required.

In addition, two shallow water sea disposal sites, one near Pakistan and the other near the Philippines, were under CWC review in the Survey and Analysis Report (1993). Further review has disclosed that these were approved disposal actions, albeit that the action in the Philippines was an emergency wartime disposal, and that

D-ii

~~CONFIDENTIAL~~

DECLASSIFIED *pages D-ii, D-iii, D-1, D-5*
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~~CONFIDENTIAL~~

the United States used the approved procedures of the times. As approved disposal actions, the United States sees no requirement to formally declare these sites.

In all cases, if materiel were recovered from any of these sites, or other former United States operated sites described in the appendix, the United States would be prepared to offer relevant assistance. The United States would provide this assistance on a case by case basis, after a review of the facts, and after a formal request for assistance had been made.

No cost estimate has been provided with this appendix as there is no known or scheduled work. However, it must be pointed out that any recovery of United States chemical warfare materiel for which the United States agrees to provide assistance will require supplemental funding.

In order to provide a complete record of potential burial sites, those locations which stored United States chemical weapons or captured enemy stocks are also listed in the report. Most of these locations were used during World War II as temporary munitions storage facilities which supported advancing Allied Forces. In some cases, leaking munitions were mentioned with no direct evidence of burial indicated; therefore the final disposition of these items is unknown.

In summary, this effort should not be considered a comprehensive study of all non-United States sites where chemical weapons may be buried. Other research centers are continuing to be queried by the U.S. Army Corps of Engineers. Due to the age of the records, imperfection of indexing of the records, and other factors, much information on this topic has been discarded or is difficult to access.

~~CONFIDENTIAL~~

Appendix D

Potential Overseas Burial Sites

BACKGROUND

This report has been developed in response to Section 176 of Public Law 102-484, the 1993 Defense Authorization Act. In this Act, the Congress directed the U.S. Army to submit a report which identifies the locations, types and quantities of non-stockpile chemical warfare materiel that would be required to be destroyed under the Chemical Weapons Convention (CWC); how they are to be destroyed; and cost and schedule estimates for that destruction. The U.S. Army, as the Department of Defense (DoD) Executive Agent for the destruction of chemical warfare related materiel, conducted surveys and research to define the locations, types and quantities of all non-stockpile chemical materiel (NSCM). While conducting research for the potential chemical warfare materiel (CWM) burial sites within the United States, the Army found references to the possibility of potential CWM burial sites overseas. These references are the source of the information in this appendix.

This report presents the results of an effort to collect data on potential overseas burial/disposal of United States CWM. This report is not intended as an acknowledgement that the United States buried CWM overseas in certain countries. In addition, the inclusion or omission of a nation should not be viewed as confirmation of the presence or absence of buried CWM within the boundaries of those nations. This appendix is only a compilation of the information found to date from historic documents. The United States Government has been in contact with the governments of the nations listed in this appendix to gather more information to verify the data. This effort will continue.

Chemical Weapons Convention. *The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction*, better known as the CWC, places special requirements on abandoned chemical weapons. The United States and over one hundred other nations signed the CWC in January 1993. For the purpose of the CWC, abandoned chemical weapons are weapons abandoned by a nation after January 1, 1925 on the territory of another nation without the consent of the latter. The nation upon whose territory abandoned chemical weapons are located (territorial party) and the nation which abandoned chemical weapons on the territory of another (abandoning party) are required to submit to the Technical Secretariat of the Organization for the Prohibition of Chemical Weapons (OPCW) all available relevant information concerning the abandoned chemical weapons not later than 30 days after entry-into-force of the treaty. It is estimated that entry-into-force of the CWC will occur no earlier than January 1997.

The Technical Secretariat is to conduct an initial inspection to verify the information submitted, verify the origin of the abandoned chemical weapons, and establish evidence concerning the abandonment along with the identity of the abandoning nation. If the abandoned chemical weapons are buried on a state party's territory

~~CONFIDENTIAL~~

before January 1, 1977 and remain buried they are not required to be recovered and destroyed unless the territorial state wants them to be. In addition, if the chemical weapons were dumped at sea before January 1, 1985, there is no requirement to recover or declare them. If the abandoned chemical weapons are required to be destroyed, both nations, the territorial party and the abandoning party, should coordinate and develop a mutually agreeable plan for the destruction of the chemical weapons. This plan must be sent to the Technical Secretariat within 180 days after the Technical Secretariat had been informed of the request for assistance by the territorial party.

The CWC requires the abandoning party to provide all necessary financial, technical, and other resources necessary for the destruction of the abandoned chemical weapons. The territorial party is to provide cooperation. The CWC requires the two affected nations to conclude an agreement between themselves concerning the destruction of the chemical weapons.

Chemical Weapons Convention-Related Overseas Sites. Any chemical weapon that the United States disposed of by land burial is generally not considered "abandoned" for the purposes of the CWC. This is because the United States standard practice was to destroy the chemical weapons by draining the agent into a pit filled with decontaminant, placing the drained weapons into the pit and then covering the pit with earth. This was the accepted destruction method of the period. Therefore, for the purposes of the CWC, the buried chemical weapons are presumed to be destroyed unless evidence arises that indicates that they are not. If chemical weapons are recovered in the future from some locations, the United States will comply with its CWC obligations including providing destruction assistance, if required. This assistance would be provided on a case by case basis, after receiving a formal request for assistance and information pertaining to the chemical warfare materiel.

In the Survey and Analysis Report, Appendix D, (November 1993), one site was identified as falling within the purview of abandoned chemical weapons under the CWC. In Bari, Italy, during World War II (WW II), the Germans attacked and sank a United States ship carrying M47A2 mustard bombs. Since the last Survey and Analysis Report, the Government of Italy has provided information indicating that the Bari site was investigated in 1954, and no chemical warfare materiel was found. The Government of Italy also has indicated that a similar site in Manfredonia harbor, where mustard bombs were accidentally lost from a barge during a sea disposal operation, has also been investigated. In Manfredonia, the cargo was removed. Based on this new information, the United States believes that no discernable hazard exists at these locations, and therefore does not plan to declare them. If in the future, a hazard is determined, the United States would stand ready to render relevant assistance as previously stated.

Also covered in the Survey and Analysis Report (1993) were two additional cases regarding shallow water sea disposals. These occurred within the present day territorial waters of Pakistan and the Philippines. During WW II, to prevent capture by the Japanese, the United States disposed of chemical weapons by dumping them into

~~CONFIDENTIAL~~

Manila Bay, the Philippines. Also during WW II the United States disposed of mustard bombs off the coast of Karachi, Pakistan. Further review by the Interagency Working Group of the circumstances surrounding these actions has been disclosed that both ~~were approved disposal actions, albeit that the action in the Philippines was an emergency wartime disposal.~~ Both actions used the approved disposal procedures of the times. As approved disposal actions, the United States sees no requirement to formally declare these sites. As previously stated, these sites have been disclosed to the appropriate Governments. Any future hazard determined would again, as previously stated, be subject to United States assistance on a case by case basis, with the appropriate request for assistance.

As a result of extensive investigations and reviews, the United States has determined that it has no abandoned chemical warfare materiel to declare according to the provisions of the Chemical Warfare Convention. Should United States CWM be recovered, the United States is committed to respond to a request for assistance, and to render relevant assistance as required. Since no work is identified or scheduled and the United States has not received any requests for assistance, at this time no costs are associated with the possible overseas burial sites. It is not possible to develop a cost estimate, because the differences in local areas and the range of possibilities is so extensive, that no set of assumptions can be applied to the burial sites to generate a reliably accurate assessment. To fulfill its commitment, though, a mechanism must be identified which will allow the United States to render the relevant assistance.

Classification of Potential Buried Chemical Warfare Materiel Sites. In conducting the research and developing the database for potential CWM burial sites, the Department of Defense (DoD) determined that it needed a classification system for categorizing the likelihood that chemical weapons may be buried. Based on the research, each site in the database has been assigned a classification which indicates the likelihood that chemical munitions or agents may have been buried. The classifications are defined as follows:

Classification 1: Known Burial. A classification 1 site is a site at which there is confirmation that CWM has been buried, either by actual recovery or by site assessment. Documents indicating that weapons were disposed of in a pit does not qualify as verification.

Classification 2: Likely Burial. A classification 2 site is a site at which documents state that chemical weapons or agents have been buried, disposal operations have occurred and there is strong suspicion that agents may remain buried, or weapons have been dumped in shallow water.

Classification 3: Suspected Burial. A classification 3 site is a site at which one of the following conditions apply:

- (1) chemical weapons were known to be disposed of on this site, but documentation indicates that the site was cleared. Because of the location

~~CONFIDENTIAL~~

- (2) the site was a former chemical testing site or range; or
- (3) activities performed at the site indicate a suspicion that buried CWM may still exist at the site.

Classification 4: Possible Burial. A classification 4 site is a site at which one of the following conditions apply:

- (1) although no literature exists which indicates burial was actually conducted at the site, the activities and time frame of the operations indicate a possibility of buried chemical weapons; or
- (2) there is documentation of some level of past chemical activity at the site, leading to the possible presence of chemical material.

Classification 5: No Further Action. A classification 5 site is a site which should require no further action because the probability of buried CWM is very remote or because the site is no longer identifiable. For example, during World War II (WWII), there were numerous locations where the United States established ammunition depots, some of which included chemical weapons. The locations of these chemical ammunition storage sites have been categorized as classification 5 sites.

APPROACH

If data was found indicating a possibility of chemical warfare material being buried at an overseas location, that location was included in this appendix. As with the information for the potential burial sites within the United States, the data range in detail from specific descriptions of chemical projects at one location to indications that chemical weapons were part of an ammunition storage site located there during WWII. The overseas database has been divided into two sections -- one for WWII ammunition storage sites where burial is less likely (Classification 5), and one for the sites where the likelihood of buried munitions is higher (Classification 1-4).

To the extent possible, attempts were made to discover the exact nature of each site, its size and contents. However, records were often imprecise. In many cases, the source only states that material was buried without any definitive information on the type of material or the exact location of the site. In addition, geographic affiliations have changed, thereby making the exact location of the site difficult to determine. To correctly identify all sites, geographic coordinates are provided and the site's most current name is used. For example, Espiritu Santo Island was located in New Hebrides, which is currently called Vanuatu.

A number of research centers were used during the course of this effort. They are:

- *Historical Office, U.S. Army Chemical and Biological Defense Agency:* contains a comprehensive holding of historical documents on the U.S. Army Chemical Corps and activities during World War I, II and subsequent eras.

~~CONFIDENTIAL~~

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- *U.S. Army Center for Military History*: contains all documentation related to the U.S. Armed Forces history, unit histories and official historical records.
- *U.S. Army Military History Institute, Carlisle, PA*: contains historical records of U.S. Army operations.
- *Technical Library, U.S. Army Chemical and Biological Defense Agency*: contains information on research and testing of chemical weapons.
- *Fisher Library and Chemical Corps Archives, U.S. Army Chemical School, Ft. McClellan, AL*: contains historical documents on the U.S. Army Chemical Corps from its inception in 1918.
- *National Archives*: contains all official archival records of the United States Government.
- *Foreign Science and Technology Center (FSTC), Charlottesville, VA*: contains historical foreign records.

SITE CHARACTERISTICS

The sites searched for evidence of chemical warfare burials in this study include:

- former World War I and World War II depots and maintenance facilities;
- former enemy installations that were captured by U.S. forces during World War II;
- ports of embarkation and debarkation where ships were used to transport chemical weapons or dispose of them by burial at sea; and
- test centers and ranges where chemical agents were fired and where impacted rounds may remain buried.

SUMMARY OF RESULTS

The survey identified 243 locations in 19 countries that may potentially contain buried chemical munitions. Of these locations, 45 are Classification 1, 2, 3 or 4 chemical disposal or range sites that may contain buried munitions as a result of past operations. A total of 198 locations have Classification 5 sites on which chemical weapons may have been stored during the World War I or II time period.

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