



PROGRAM MANAGER
RMA CONTAMINATION CLEANUP

U.S. ARMY
MATERIEL COMMAND

— COMMITTED TO PROTECTION OF THE ENVIRONMENT —

ROCKY MOUNTAIN ARSENAL

AN ORGANIZATIONAL

HISTORICAL PERSPECTIVE

Rocky Mountain Arsenal:
An Organizational Historical Perspective
December 1988

I. Purpose

The unique development of events at RMA over the past years is instrumental in the development of this historical perspective. Events at RMA have been complex and mostly likely not possible to duplication at other Army installations.

RMA is involved in a multi-million dollar litigation suit and has had a civilian contractor lease land from the government for the sole purpose of civilian profit. These are not normal occurrences at an Army installation.

II. Introduction

This historical monograph has been prepared to highlight the important events that have lead up to current situation at Rocky Mountain Arsenal.

The document is arranged in a chronological format dating back to the Arsenal's inception in 1942. It focuses on the history and the operation of RMA and provides background information on the command and control of the Arsenal's operation to present.

A. RMA_History/Operation.

RMA occupies more than 17,000 acres in Adams County, Colorado, approximately 10 miles northeast of the center of downtown Denver.

The RMA property was purchased by the U.S. Government in 1942 for the purpose of providing chemical weapons and conventional munitions. Throughout World War II, the Army conducted the following major operations at RMA:

Levinstein mustard production, Lewisite production, M-47 napalm bomb manufacturing, M-74 incendiary bomb manufacturing, white phosphorus cup and munition manufacturing, phosgene filling of munitions and mustard distillation. In addition, RMA was engaged in the production of the process intermediates used in the chemical production programs.

From 1945 to 1950, The Army's principle operations at RMA involved the reconditioning of empty ton containers and the demilitarization of approximately one and a half million mustard-filled shells. The mustard agent extracted from these shells was piped into ton containers which were stored at RMA until being destroyed in the early 1970's.

During the Korean Conflict, RMA manufactured white phosphorus-filled munitions and incendiary cluster bombs which were primarily comprised of M-74 bomblets, also produced at RMA. Also, artillery shells were filled with distilled mustard during this period of time.

Between 1953 and 1957, RMA was the major site for the free world's production of GB nerve agent. Munitions were also filled with GB at RMA until approximately 1969.

From the late 1950's to the mid-1960s, RMA was primarily engaged in various demilitarization programs. The munitions destroyed included the following: mustard-filled shells, M-47 napalm-filled bombs and incendiary

cluster bombs.

Since 1970, RMA has been involved primarily with the disposal of chemical warfare material. This disposal included the incineration of anti-crop agent (TX), mustard agent, explosive components and the destruction of GB agent by caustic neutralization and incineration.

The current mission of RMA is contamination cleanup; It has no operational mission. This cleanup process is expected to last into the next decade.

B. Contamination History

For the past four and a half decades RMA has been involved, in one fashion or another, in the production of war material. In 1946, some of RMA land was leased to manufacturing companies who were involved in the production of pesticides and herbicides.

The wastes created by those activities were disposed of using practices that were commonplace and accepted at the time in the chemical industry. Both the military and industry have since found those practices to be environmentally unsound. At RMA, those practices resulted in extensive soil and surface water contamination. Although the problem was initially limited to surface and near-surface soil and water, over the years rain and snow-melt have percolated down through the soils, carrying the pollution into the shallow groundwater table.

Contamination of offsite groundwater was first discovered in the mid-1950s, when minor crop damage was noted on agricultural land north of the Arsenal. In an attempt to contain the waste and prevent further offsite

migration, the Army built a 93-acre, asphalt-lined storage pond (Basin F) capable of holding 240 million gallons of liquid waste. Later, a 12,500-foot deep well facility was also constructed to add capacity for storing the waste.

Despite these containment measures, evidence off offsite groundwater contamination persisted. Although the Army ceased chemical munitions production in 1969, and Shell Oil Company (who acquired Julius Hyman & Co. in the early 1950s) stopped producing pesticides in 1982, a significant cleanup remained to be accomplished. In 1974, the Army began a systematic investigation into the contamination problem. The Army's first and foremost goal was then to contain the pollution and prevent additional migration.

With this, RMA was the impetus that created the Installation Restoration Program. Because of increasing national environmental concerns and with the implementation of new laws establishing procedures and standards for cleanup actions the Army has revised its initial goals for the contamination present at RMA from containment to cleanup of the site.

To date, the Army has accomplished the following in its efforts to protect the public health and environment:

- * Three groundwater treatment systems have been constructed to prevent contaminated groundwater from flowing past Arsenal boundaries.

- * In a cooperative agreement between the Army, EPA and the State of Colorado, they assisted South Adams County Water and Sanitation District by providing \$7 million for a temporary and permanent water treatment facility. Total cost of the system was approximately \$12 million.

- * The 12,500-foot deep injection well has been closed, plugged and capped.

Adjacent buildings and facilities have been demolished and disposed of at a licensed hazardous waste facility offsite.

* A special evaporation system was installed at Basin F to expeditiously reduce the volume of liquid waste stored there. Operations are now underway to remove and temporarily store the remaining liquids in temporary storage tanks onsite. The soils and solids are being excavated and confined in a lined 16-acre area capped with clay to prevent groundwater contamination.

* Synthetic dust palliatives have been applied to prevent contamination dust from becoming airborne during dry, windy weather.

* Seventy-six thousand barrels of waste salts, the residue from burning and neutralizing chemical agents, have been safely transported and disposed of in an offsite, licensed hazardous waste facility.

* A sewer system, which formally linked the manufacturing complex with the waste disposal basins, has been removed.

Much has been done to protect the workers, the citizens nearby and the environment. Now the focus is continued cleanup. To effectively accomplish this task and conform to the environmental laws of the 1980s and the National Contingency Plan, RMA must complete two major studies--the Remedial Investigation and Feasibility Study--before cleanup can begin. The RI examines the types and quantities of contamination present and the FS looks at the various methods available for treatment of the contamination, along with their relative costs.

Analysis of the data contained in these studies will form a firm foundation upon which decisions about specific cleanup alternatives can be made.

C. Litigation History.

In 1983 the Army initiated litigation against Shell Oil Company to recover for the costs of cleanup of contamination at RMA. The State of Colorado then initiated litigation against the United States and Shell for

damages to natural resources and to recover for the State's costs incurred during cleanup activities.

During the past five years numerous reports, studies, etc., have been prepared by contractors working for the Army to assist in both this litigation and the cleanup program.

On 1 February 1988 the United States lodged a proposed Consent Decree with the Federal District Court for the District of Colorado. The Decree sets out the terms of a comprehensive settlement of the litigation between the United States and Shell Oil Company related to the contamination and cleanup of RMA. (Five agencies of the United States are signatories to the Consent Decree. They are: U.S. Army, the Environmental Protection Agency (EPA), Department of the Interior (DOI), the Agency for Toxic Substances and Disease Registry (ATSDR), and the Department of Justice.)

The most significant terms of the Consent Decree are:

- * Allocation of Response Costs
- * Interim Response Actions
- * Emergency Actions
- * Selection of the Permanent Remedy
- * Design and Implementation of Response Actions
- * Shell's Participation in Response Actions
- * Stipulated Penalties and Deadlines
- * Restrictions of Ownership and Use
- * Periodic Review
- * Role of other Federal Agencies

After receiving public comments, a modified proposed Consent Decree was filed, on 7 June 1988 with the Federal District Court in Denver. The State of Colorado is not presently a party to the Consent Decree and the Decree does not resolve claims by the State in its litigation against the United States and Shell. Efforts are still underway to settle with the State of Colorado.

III. Organizational History of RMA

The command and control of operations at RMA has been an evolutionary process.

Between 1962 and the early 1970s, RMA was under the command of the Edgewood Arsenal Complex, a subordinate of Munitions Command.

In 1973, a reorganization that combined the Munitions and Weapons Command put RMA under the control of the newly established U.S. Army Armament Command (ARMCOM).

Another reorganization in 1977 had an effect on RMA when a separate Readiness and Research and Development Command were formed. Control of RMA operations went to the new U.S. Army Armament Materiel Readiness Command (ARRCOM).

In 1983, ARRCOM and the U.S. Army Armament Research and Development Command (ARRADCOM) consolidated and became U.S. Army Armament Munitions and Chemical Command (AMCCOM). RMA came under control of AMCCOM and has remained under this command until the formation of the Program Manager office.

A. USATHAMA Involvement

Due to the migration of contamination off RMA, a Contamination Control Program (CCP) was established in 1974 to ensure that RMA was in compliance

with State and Federal environmental laws concerning the release of pollutants into the environment. Both the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) and AMCCOM had a direct role in this program.

USATHAMA was given the responsibility for Installation Restoration and included the identification of contaminant migration from inactive waste disposal sites. In addition, USATHAMA was responsible for the initiation of technical programs leading to the development of any corrective actions to effect protection or cleanup of the Arsenal.

AMCCOM was responsible for keeping operations active at RMA and ensuring that these operations were in compliance with appropriate regulations as USATHAMA developed corrective actions.

B. Program Manager Involvement

The Program Manager for Rocky Mountain Arsenal Contamination Cleanup was established in 1985.

IV. Establishment of Program Manager's Office

On 25 February 1985, the Secretary of the Army directed the Commander, Army Materiel Command to appoint a Program Manager (PM) to direct RMA cleanup actions. With this appointment, a Concept Plan was developed to carry out these responsibilities.

A. PM Concept Plan

In March 1985, the Commander, USATHAMA (an O-6) was appointed the PM for RMA Contamination Cleanup; in this capacity, he was dual-hatted. He had a PM office in USATHAMA and a staff office at RMA. As Program Manager for

Rocky Mountain Arsenal (PMRMA), he was given the authority from the CG, AMC for the centralized management of the program to execute the environmental restoration of RMA.

The PMRMA office was divided into three major divisions: Program Coordination, Environmental Engineering and RMA Staff Office, all of which reported to the deputy PM (an O-6).

The PMRMA underwent further changes in 1987 when the organization became a separate entity reporting directly to the Commander, USATHAMA. The deputy PM became the PM thus eliminating the USATHAMA dual-hat organization.

In order to meet the requirements of the Consent Decree, a change in the structure of the PM was required. The 1988 organizational structure, as directed and approved by the Assistant Secretary of the Army for Installations and Logistics, consists of four Divisions: a Resource Management Division, Remedial Planning Division, Interim Response Division and a Technical Operations Division. The Technical Operations and Remedial Planning Divisions are located at RMA, as is the Deputy PM (GM-15).

The second major change was the provisional transfer of the Arsenal to the PMRMA in February 1988, a change that enhanced the capability of the PM to effectively maintain command and control over all aspects of the RMA as well as base operations support provided by the Arsenal. This transfer will become effective on 1 October 1988. The Commander of RMA now reports directly to the PMRMA.