NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA

THESIS

DEPARTMENT OF DEFENSE ENVIRONMENTAL CLEANUP COST ALLOWABILITY POLICY

by

John M. Murdock

December, 1994

Principal Advisor: David V. Lamm

Approved for public release; distribution is unlimited.

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE December 1994	3. REPORT TYPE AND DATES COVERED Master's Thesis

4. TITLE AND SUBTITLE DEPARTMENT OF DEFENSE ENVIRONMENTAL CLEANUP COST ALLOWABILITY POLICY	5. FUNDING NUMBERS
6. AUTHOR(S) Murdock, John M.	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey CA 93943-5000	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.	12b. DISTRIBUTION CODE

13. ABSTRACT *(maximum 200 words)*

The purpose of this thesis was to investigate the factors affecting the allowability determination of defense contractor environmental remediation costs. The primary objective of this thesis was to determine what policies and contracting cost principles the Department of Defense (DOD) should develop to address environmental costs in a consistent manner, providing a "single face" to industry. A secondary objective was to develop an audit framework and questions to allow for consistent policy analysis and application to a contractor's proposed environmental remediation costs based upon the materiality of the situation. Background material was presented to show the amount and complexity of environmental regulations, the effects of current judicial decisions and DOD's efforts to develop a consistent policy. Research material was provided from Congress, the General Accounting Office, DOD, defense contractors, California, Washington, industry associations and environmental protection coalitions. The researcher's analysis of the material produced an environmental cost principle. This cost principle was applied to a current environmental claim, producing an audit framework and tailored list of cost and/or pricing data analysis questions. Both the cost principle and audit framework are recommended for incorporation into DOD's final environmental cost allowability decision.

14. SUBJECT TERMS Environmental Policy, Hazardous Material, Cost Allowability, Pollution			15. NUMBER OF PAGES 218
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18 298-102

Approved for public release; distribution is unlimited.

DEPARTMENT OF DEFENSE ENVIRONMENTAL CLEANUP COST ALLOWABILITY POLICY

by

John M. Murdock
Lieutenant, United States Navy
B.A., State University of New York at Buffalo, 1984

Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1994

Author: _____
John M. Murdock

Approved by: _____
David V. Lamm, Principal Advisor

_____
Louis G. Kalmar, Associate Advisor

_____
David R. Whipple, Chairman
Department of Systems Management

ABSTRACT

The purpose of this thesis was to investigate the factors affecting the allowability determination of defense contractor environmental remediation costs. The primary objective of this thesis was to determine what policies and contracting cost principles the Department of Defense (DOD) should develop to address environmental costs in a consistent manner, providing a "single face" to industry. A secondary objective was to develop an audit framework and questions to allow for consistent policy analysis and application to a contractor's proposed environmental remediation costs based upon the materiality of the situation. Background material was presented to show the amount and complexity of environmental regulations, the effects of current judicial decisions and DOD's efforts to develop a consistent policy. Research material was provided from Congress, the General Accounting Office, DOD, defense contractors, California, Washington, industry associations and environmental protection coalitions. The researcher's analysis of the material produced an environmental cost principle. This cost principle was applied to a current environmental claim, producing an audit framework and tailored list of cost and/or pricing data analysis questions. Both the cost principle and audit framework are recommended for incorporation into DOD's final environmental cost allowability decision.

TABLE OF CONTENTS

I. INTRODUCTION

A. ENVIRONMENTAL AWARENESS

The world we live in today is becoming increasingly aware of our natural environment and the costs associated with our industrial, agricultural and personal activities. However, environmental damage is not a new subject. As the 1970's came to a close, a series of headline stories gave America a look at the dangers of dumping hazardous wastes.

One famous story that the researcher remembers quite vividly, involved the Love Canal area of Niagara Falls, New York. The Hooker Chemical Company had dumped 21,000 tons of hazardous waste into a landfill from 1942 to 1953. The site was closed and covered with a clay and soil cap. It was eventually sold to local developers and over a period of years, homes and a school were built on and next to the site. The waste migrated from the dump and contaminated the surrounding streams, groundwater and soil for over 35 years. In Elizabeth, New Jersey, the Chemical Control site contained over 40,000 barrels of hazardous waste and at least 100 pounds of explosives. [Ref. 1:p. 7] In rural Ohio, nearly 200 groundwater wells were found contaminated with Polyclorinated Biphenlys (PCBs). The PCBs were leaking from the submersible pumps used to pump the drinking water from the wells [Ref. 2:p. 15].

A series of liability suits involving hazardous waste sites continued. So many were filed that they were cataloged not by the plaintiff's name but by community. A partial list included the following locations: (1) Kellog, Idaho, (2) Jackson Township, New Jersey, (3) Hardeman County, Tennessee, (4) Triana, Alabama, (5) Woburn, Massachusetts, and (6) Times Beach, Missouri. [Ref. 3:p. 143] These examples show only a few of the situations where public health and the environment were threatened. In many such instances, thousands and even

millions of lives were endangered or disrupted and property values depreciated.

The country was becoming increasingly aware of the serious hazardous waste problems that were falling through the cracks of existing environmental laws and regulations. The magnitude of this problem moved Congress to enact several measures to remove the cracks and strengthen environmental laws and regulations. In 1980, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), more commonly known as Superfund.[1] It was the first Federal Law to address the dangers posed by abandoned and uncontrolled hazardous waste sites. [Ref. 2:pp. 8-9]

In the years following Superfund, hazardous waste has become a major environmental concern in every part of the United States. Not only was the land contaminated by past waste disposal practices, chemical emissions had spread into the atmosphere, groundwater (a major source of drinking water for many Americans), streams, lakes, and wetlands. In 1993, the National Aeronautics and Space Administration (NASA) issued a report confirming that the ozone layer had dropped to record low levels on a global scale [Ref. 4:p. 1A].

In addition, the United States Environmental Protection Agency (EPA) has attributed over 60,000 deaths per year to soot, emitted from the burning of wood, agricultural fields, fuels, and other activities [Ref. 5]. The lists of environmental damage and health risks are extensive and will undoubtedly grow as our awareness and knowledge about the risks related to chemical exposure increases.

---

[1] A complete list of acronyms used in this thesis is found in Appendix A.

B. DEPARTMENT OF DEFENSE AND THE ENVIRONMENT

Today the Department of Defense (DOD) is facing an environmental challenge that will affect the future of all contracts and contractors that pollute our global environment. The challenge includes balancing the economic interests of DOD and defense contractors against the environmental interests of the Federal Government and our citizens. To achieve this balance, our country must first address and correct the environmental mistakes of the past. We must clean up the hazardous waste generated before the enactment of various Federal and State environmental laws and regulations. Second we must provide the leadership, policy and plans necessary to reduce the total amount of pollution generated. Third, our country's leaders must ensure that all generated wastes are handled and disposed of in such a manner as not to cause harm to the public and environment.

DOD has a major influence on the industrial base of the United States, through contractual relationships with the private sector to provide goods and services. The industrial base dramatically expanded during and after World War II, an age of transition from just military goods and services to both consumer and military goods and services. This was an era of expansion greatly influenced by rapid advances in the development and application of chemicals and plastics. The technological advances also increased the generation of hazardous material and resulting pollution. [Ref. 6] The environment is directly affected by the industrial requirements and manufacturing processes necessary to provide those goods and services. As reported to Congress, the procurement budget for Fiscal Year (FY) 1993 was over $ 53 billion. [Ref. 7:p. 143] This represents funds placed directly into the economy using defense contractors and a significant portion of the industrial base. In addition, many

unique items required to provide for the defense of the country involve the use, generation, transfer and disposal of hazardous waste [Ref. 6].

The current environmental laws and regulations have a significant impact on the operations of defense contractors and on the internal operations of DOD. The Federal Government did not stop with Superfund. As public concern over health risks has increased, the amount of regulations governing environmental quality and control have increased. Over the last twenty or so years, the Federal Government attacked the problems of pollution identification, the cleanup of abandoned sites, transportation and dumping requirements for hazardous materials, and the prevention of pollution. It has become a significant portion of the annual military budget. In 1994, the DOD budgeted over $ 5 billion for environmental programs. DOD currently classifies its Environmental Security Programs as follows [Ref. 8]:

1. Cleanup.[2]
2. Compliance.
3. Conservation.
4. Pollution Prevention.

In 1989, the importance of environmental protection was outlined by the Secretary of Defense. He asserted that DOD should be "the Federal Leader" in agency environmental compliance and protection [Ref. 9:p. i]. This leadership position was elevated in 1993, during the President's Earth Day address. He set the Nation's policies and principles for reclaiming a clean environment. The President set a long term

---

[2] Definitions of "cleanup" and "compliance," along with several other key terms used in this thesis are provided in Appendix B.

strategy for pollution prevention, environmental restoration, water treatment, energy efficiency, solar energy and renewable energy sources. [Ref. 10]

The mutual impact of environmental regulations on DOD and defense contractors, the money appropriated for DOD environmental programs and the current level of environmental protection, all lead to the following question: How is DOD addressing the environmental cleanup, compliance, and pollution prevention costs of defense contractors?

Environmental cleanup of contaminated defense contractor facilities is of particular interest to DOD because of the associated costs. Such contamination was created during decades of military and commercial production before the enactment of environmental laws, regulations and in some situations before the determination of specific material and chemical hazards. Again, a similar type of question arises: How is DOD managing the activities and costs associated with environmental cleanup at defense contractor facilities?

C. AREA OF RESEARCH

This thesis investigates the challenges faced by DOD as it attempts to develop a policy regarding reimbursement to defense contractors for environmental cleanup costs.

1. Primary Question

The primary question this thesis attempts to answer is: What policies and contracting principles should DOD establish to determine the cost allowability of defense contractor environmental cleanup costs?

2. Subsidiary Questions

To answer the primary question listed above, it will be necessary to address the following subsidiary questions:

1. What are the factors affecting the cost allowability of defense contractor environmental cleanup costs?

2. What order of liability precedence should be established in addressing environmental cleanup costs?

3. What types of contracting methods and proposal analysis would prove the most advantageous to DOD, in carrying out environmental cleanup at defense contractor facilities?

D. SCOPE

During the past 20 years, the area of environmental science has undergone a growth rate similar to the plastics and chemical industries after World War II. During the same period, the Government has also enacted various forms of legislation that deal with pollution and environmental protection. The environmental science field is very broad and encompasses many issues facing our Nation, the industrial base, our economy and every citizen. Given the current military downsizing and the increasing damage to the environment caused from pollution, DOD is now facing the costs to cleanup military and defense contractor facilities.

This issue is further focused on the cost allowability of environmental cleanup to be conducted by defense contractors at their facilities. To date, neither DOD nor the Defense Contract Management Command (DCMC) has presented a "single face" to industry on environmental cleanup costs. The Government positions have ranged from 0% to 100% allowability of these cleanup costs. [Ref. 11:p. 1] The environmental cleanup area has many players, ranging from every branch of the Federal Government, to the insurance industry, citizens, environmental groups and the industrial base. To begin the process, DCMC initiated the Environmental Initiatives Task Force Pilot Cost Allowance Program at five locations [Ref. 12]. Because of the sheer magnitude of environmental laws, regulations, technologies and players, this thesis provides the following material:

1. A background of pertinent environmental regulations and their effect on the operations of DOD and defense contractors.

2. A review and analysis of current DOD and defense contractor policies directed toward the cost allowability of environmental cleanup at contractor facilities.

3. Information uncovered by the Defense Plant Representative Office (DPRO), FMC Corporation, San Jose, California during the execution of DCMC's Environmental Initiatives Task Force Pilot Cost Allowance Program.

4. An alternative environmental cost principle and a series of questions to assist in cost and price analysis of environmental remediation expenses.

Due to the lack of a single DOD environmental cost allowability policy, this thesis will highlight the major issues that DOD and its contracting activities confront as they attempt to return to a "single face" to industry. This thesis does not claim in any way to present the optimal plan for DOD to implement in addressing environmental cost allowability. It should be used as a general guide to uncover all the pertinent laws, regulations, contractor and situation specific information, before making any decisions involving environmental cost allowability.

E. METHODOLOGY

This thesis uses a variety of references to gain historical information as well as current laws, regulations, facts, figures and expert opinions. This section describes the general methodology used to gather information to answer the research question.

Growing up only several miles from Love Canal, the researcher has always been interested in environmental protection. Using that background, extensive bibliographies were obtained from the Defense Logistics Studies Information Exchange (DLSIE) and the Defense Technical Information Center

(DTIC). From these sources, specific references were chosen to provide detailed insight into environmental protection topics. The next step was to research other theses for added information on environmental protection and its effects on DOD's contracting methods.

Dr. Kenneth Manaster, Professor of Environmental Law at Santa Clara University, the Congressional Research Service (CRS) and other sources provided a chronological history of environmental laws, regulations and their effects on both Federal Government and defense contractor operations. In addition, several EPA publications provided specific information on current environmental laws and regulations. DCMC Headquarters and the DPRO located at FMC Corporation were contacted to research the operations of DOD's environmental cost allowability pilot program. They provided specific program information and approaches developed during the operation of the program.

Beyond the above information gathering methods the following sources were contacted to obtain information, insight, and opinions concerning the allowability of defense contractor environmental cleanup costs: (1) California Environmental Protection Agency, (2) Washington Department of Ecology, (3) Aerospace Industries Association, (4) National Security Industrial Association, (5) Silicon Valley Toxics Coalition, (6) Sacramento Valley Toxics Campaign, and (7) FMC Corporation, Ground Systems Division.

F. BENEFITS OF RESEARCH

Ultimately this thesis will benefit DOD, DCMC and possibly every Federal Government Department and Agency. This thesis provides information toward the creation of a sound uniform policy covering the cost allowability of defense contractor environmental cleanup costs. It will identify the key issues facing all DOD contracting activities as they

attempt to carry out a single policy covering environmental cleanup costs. Information will be provided to assist in the decision making process regarding the factors affecting the allowability of such costs.

This research is intended to help DOD in reaching the Secretary of Defense's goal to become the "Federal Leader" in environmental issues. An alternate environmental cost principle and analysis questions will be proposed for use in determining environmental cleanup cost allowability. A tailored list of the analysis steps and questions can be used for cost and pricing analysis of all future contracts that include environmental remediation costs.

G. ORGANIZATION OF RESEARCH

This section briefly describes the organization and format for the remainder of this thesis.

Chapter II provides a picture of the factors and organizational forces affecting environmental security and the allowability of defense contractor environmental cleanup costs. It begins by describing the impact that DOD exerts on the environment through its use of defense contractors to provide goods and services. This is followed by a brief description of what classifies a material or chemical as hazardous.

Next, the chapter provides the historical framework of Federal and California environmental laws and regulations. It describes DOD's efforts and programs designed to address the environmental cost allowability problem, including the draft environmental cost principle, policy memoranda and DCMC's pilot program. To complete the DOD picture, the current vision of environmental security is summarized. The chapter concludes by covering several recent court decisions that affect environmental cleanup cost recovery from Potentially Responsible Parties (PRPs).

Chapter III provides information from the Federal and State Government viewpoints concerning the allowability of defense contractor environmental cleanup costs. Materials from Congressional and General Accounting Office (GAO) reports covering the costs associated with Aerojet General Corporation, Boeing Company, and Lockheed Corporation are presented. In addition, the environmental positions of California and Washington are included to show the complexity of the cleanup issues facing DOD and defense contractors.

Chapter IV explores DOD's efforts to develop a single, consistent policy covering environmental cleanup costs. DOD created the Environmental Cost Allowability Program (ECAP) to study the problem, develop key issues and provide policy justification to the Director of Defense Procurement. The material also examines DOD's internal environmental cleanup and hazardous waste management programs. This includes the Defense Environmental Restoration Program (DERP) and the Defense Logistic Agency's management of hazardous material disposal.

Chapter V presents several different views of defense contractor environmental cleanup, ranging from contractors to two California environmental protection groups. This completes the picture of the forces trying to influence DOD as it attempts to develop a consistent policy covering defense contractor environmental cleanup costs.

Chapter VI analyzes the facts, opinions and associated interpretations of the material provided in the three previous chapters. Each interested party brings its own picture of environmental cost allowability into the design and publication of a public policy. The analysis examines these positions in relation to the current Federal Acquisition Regulation (FAR) cost allowability criteria and draft environmental cost principle. The chapter closes by introducing an alternative environmental cost principle, which

the researcher believes, will provide for the equitable treatment of all environmental costs.

Chapter VII applies that alternate environmental cost principle to a specific environmental remediation claim facing DOD. The claim was submitted by FMC Corporation for increased environmental remediation expenses to eight contracts at its San Jose, California facilities. FMC's claim for equitable adjustment focuses on increases to the environmental remediation expenses required by the State of California. Application of the cost principle produced an audit and analysis framework for use on future environmental claims.

Chapter VIII furnishes independent conclusions drawn from the researcher's analysis and application of the alternative environmental cost principle and audit program. The researcher provides several recommendations that will allow DOD to return to the "single face" to industry with regard to environmental remediation expenses. Answers to the proposed research questions are included to complete the application of the proposed cost principle and audit framework. The thesis concludes by providing suggestions for further research related to environmental cost allowability and further environmental protection.

II. BACKGROUND

A. INTRODUCTION

The DOD is a major contributor to the factors that affect the environmental quality of the United States through internal operations and the use of contracted goods and services. Internally, DOD generates more than 500,000 tons of hazardous waste each year [Ref. 13:p. 8]. The factors affecting waste generation within DOD and defense contractors include the operation and maintenance of equipment and facilities, production processes, research, development, testing and other related activities. Some hazard lies in the waste itself: its concentration, quantity and physical or chemical nature. However, the real danger arises from the improper handling, storage and disposal practices of DOD and defense contractors.

DOD must comply with Federal and State environmental regulations and budget for the costs of related programs. For FY 1994, Congress appropriated over $ 5 billion for DOD environmental programs, focusing on cleanup[3] or remediation, compliance, conservation and prevention. Of the total appropriated, over $ 2 billion was earmarked for the express purpose of environmental cleanup at DOD facilities. [Ref. 14:p. 3]

DOD has also increased the level of environmental quality awareness in the area of systems acquisition. This is currently being applied to major systems during the system design phase. For example, the Air Force has prohibited the use of specific hazardous and environmentally damaging chemicals in the design, manufacturing and operation of the new F-22 fighter. [Ref. 7:pp. 59-60]

---

[3]The top 20 DOD NPL sites are listed in Appendix C.

The emphasis on environmental quality significantly affects the business activities of defense contractors. These contractors must also comply with Federal and State environmental regulations which address cleanup, compliance, conservation and prevention. Given the mutual relationship between DOD and defense contractors, the environmental regulations create the same areas of cost generation for defense contractors.

As of 1992, the GAO determined that DOD did not collect information on defense contractors' past and future costs associated with environmental cleanup. In 1992, the GAO also reported to Congress on a study of environmental cleanup costs of the 15 largest defense contractors. [Ref. 11] The study found inconsistent procedures used by the respective Administrative Contracting Officers (ACOs), ranging from no actions to payments for the reimbursement of all environmental cleanup costs. A partial projection of the total cleanup cost for these 15 selected contractors was estimated at between $ 900,000 and $ 1.1 billion. [Ref. 11:p. 1]

B. HAZARDOUS MATERIAL

Before delving into the environmental regulations, a few definitions covering hazardous material must be presented. "Hazardous material" is a very broad term that covers all material, substances and wastes that may prove to pose an unreasonable risk to health, safety, property or the environment depending upon quantity, form and concentration. The EPA reduces this broad category into, "Hazardous Substances," which are identified and regulated under numerous laws and regulations. When the term "wastes" is substituted for "substances," it covers discarded material that may prove to pose a risk to health, property or the environment.

"Toxicity" refers to the capacity to cause toxic effects in living organisms. "Toxic pollutants" are identified under

the Clean Water Act (CWA). "Toxic substances" are chemicals that are identified under the Toxic Substances Control Act (TSCA). Both are regulated and administrated by the EPA. The last term is "Toxic waste," which refers to hazardous waste that is regulated under the Resource Conservation and Recovery Act (RCRA). [Ref. 15:pp. 1-6]

According to current Federal Government regulations, a waste is considered hazardous if it exhibits one or more of the following characteristics: (1) ignitability, (2) corrosivity, (3) reactivity, and (4) toxicity [Ref. 1:p. 12]. Also included are radioactive materials, exposure to which can cause alteration of body chemistry, and can eventually lead to death [Ref. 15:p. 9].

C. FEDERAL ENVIRONMENTAL LEGISLATION

Increased environmental awareness and health risks from exposure to hazardous material have contributed to Government actions designed to strengthen the position and operations of the EPA. The Government introduced numerous measures to (1) define the meaning of hazardous material and waste, and (2) control its use, generation and disposal. As major contributors to the hazardous waste stream, the DOD and contractors are affected by environmental legislation in almost every area of their operations. A summary of pertinent legislation is provided to show the complexities of the regulations, their relationships and areas of concern for both DOD and defense contractors.[4]

1. National Environmental Policy Act

The National Environmental Policy Act (NEPA) was enacted on January 1, 1970, and mandated a National Policy to encourage a productive balance between people and the

---

[4]Appendix D provides a list of additional laws that affect certain types of hazardous material and pollution.

environment. This policy was directed toward the operations of all agencies within the Federal Government. The Act required that an Environmental Impact Statement (EIS) be developed by the agency desiring to either construct facilities or conduct changes to basic operations. The process was to be performed as a study of impacts to the environment, assist in the information flow process and aid in the Federal Government decision making process. It directed that all policies, regulations and public laws must be in accordance with NEPA, considering the environmental implications of Government operations. However, NEPA lacked regulatory authority, because each agency only had to consider the environmental consequences of the change. The final operational decision remained with the initiating Government Agency. [Ref. 16]

2. Environmental Protection Agency

The United States Environmental Protection Agency (EPA) was created in December of 1970, resulting from the groundwork that was laid as part of the "Great Society" programs of the late 1960s and increasing awareness of damage to the environment. All environmental regulations, standards and requirements were to be enacted nationwide and all pollutant sources were to be controlled. In turn, most States followed the Federal Government's suit by organizing all or most of the environmental protection work in an independent or autonomous organization. The State organizations took control of individual programs and received funding for projects. [Ref. 17:p. 8]

3. Clean Air Act

The Clean Air Act (CAA) originated in the 1950s and helped to change the course of future environmental regulations. Prior to the 1950s, State and local governments individually controlled air quality and atmospheric emissions. The Act has been amended six times, the last coming in 1990.

The 1990 changes had the greatest impact on the national industrial base and significantly strengthened the environmental protection roles of the Federal Government. The EPA was designated to establish air quality standards. The National Ambient Air Quality Standards (NAAQS), are expressed as concentrations of designated pollutants. [Ref. 15:pp. 50-62]

The Act assigned the EPA responsibility for implementing the emission standards program and establishing a timetable for national compliance. This included both stationary and mobile sources of air pollution. In addition, the EPA was directed to establish additional national standards and programs for the following: new pollution sources, hazardous pollutants, mobile sources (including those covering motor vehicle fuels), the prevention of significant air quality deterioration in clean areas, and strict controls for areas that have not attained the national standards. To achieve these standards, Congress granted the EPA additional authority to assess administrative fines and penalties. [Ref. 15:pp. 50-62]

4. Clean Water Act

During the 1950s and 1960s, States individually set ambient water quality standards and developed the plans to implement those standards. In 1972 and 1977, Congress amended the Federal Water Pollution Control Act (FWPCA), first by combining water quality standards and effluent limitations, and second, by expanding it to include toxic and hazardous water pollution. After these amendments, the Act has been commonly called the Clean Water Act (CWA). [Ref. 16] The current CWA is a system that authorizes States to establish programs to implement the national ambient water quality standards. In addition, it is now illegal for any person or organization to discharge pollutants from a point source into any waters of the United States. The process included the

establishment of a permit system controlled by either the EPA or the State (the permitting authority). The permits are obtained under the National Pollution Discharge Elimination Standards Program (NPDESP), and only allow specific limited amounts of emissions. [Ref. 15:pp. 62-69]

The authorizations included the use of best management practices in controlling the emission of hazardous material into United States waters. However, the practices are descriptive in nature and do not list any quantifiable reduction amounts. The CWA also includes a reporting system for dischargers to report normal, non-compliance and emergency amounts of hazardous waste discharged. [Ref. 15:pp. 64] The CWA affected the operations of all defense contractors that emit toxic or hazardous material into United States waters. Through a permit and best practice system, all parties are required to meet or exceed the established national standards. As amended, the CWA includes the authority to impose fines and civil punishment for violations [Ref. 15:p. 65].

5. Toxic Substances Control Act

In 1976, Congress took action to regulate hazardous and toxic material, waste and the prevention of possible health and environmental risks. The Toxic Substances Control Act (TSCA) directed the EPA to:

> ...require manufacturers and processors to conduct tests for existing chemicals if: (1) their manufacture, distribution, processing, use or disposal may present an unreasonable risk of injury to health or the environment; or they are to be produced in substantial quantities and the potential for environmental release or human exposure is substantial; (2) existing data are insufficient to predict the effects of human exposure and environmental releases; and (3) testing is necessary to develop such data. [Ref. 18:p. 71]

The above was only a short excerpt of the authority granted to the EPA. TSCA also included: (1) the control of unreasonable known health and environmental risk levels, (2) the prevention of future health and environmental risks, and (3) the establishment of an informational flow process covering all aspects of potential harm to public health and the environment. To achieve these goals, the EPA was given the authority to regulate private industry. The authority allowed EPA to regulate production, processing, storage, distribution, use and disposal of chemicals that could cause potential harm to human health and the environment. To enforce the regulations, the EPA was given a range of authority. It included the total ban on production, the application of chemical warning labels and a system of fines for violations [Ref. 19:pp. 193-194]. This Act caused changes in all areas of operations for Federal Government agencies and defense contractors.

6. Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was signed into law in 1976 and was amended in 1978, 1980, 1984 and 1986. The Act was designed to establish a Federal program to regulate solid and hazardous waste management. As seen in the previous Congressional Acts, the roots of RCRA are present in earlier attempts to address environmental problems. RCRA stemmed from the Solid Waste Disposal Act (SWDA) of 1965 and the Resource Recovery Act (RRA) of 1970. The new program combined the requirements of the previous Acts, defining solid and hazardous wastes and the recovery of energy and materials from those solid and hazardous wastes. [Ref. 19:pp. 191-192] However, the 1984 amendments caused dramatic changes in the scope and complexity of the Act, increasing the Federal focus on current and future waste handling activities. The activities encompassed every person or organization in the waste management chain, beginning with generation and ending

with disposal. The amendments resulted in a disposal prohibition of untreated hazardous waste at landfills, minimum standards on all facilities handling hazardous material and a permit system for all treatment, storage and disposal facilities. The EPA created an accountable manifest system, covering all hazardous waste from generation to ultimate disposal or treatment. In keeping with the previous regulations, violations were now subject to fines and penalties. [Ref. 16]

7. Response, Compensation and Liability Act

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) was passed in 1980. Like many other environmental regulations, CERCLA has been amended and reauthorized due to increased public awareness, funding authorizations and limitations, and the expanding environmental knowledge base. The original Act and the associated amendments, authorized the Federal Government to cleanup toxic and hazardous waste at closed or abandoned sites, including Federal Government locations. However, this cleanup does not come without a price. The law permits the Government to recover the cost of this cleanup and associated damages by suing the responsible parties involved in the generation, storage, transfer and ultimate disposal. A fund of money created by taxes on chemicals, fuels and hazardous waste disposal, known as "Superfund," was established to assist in the cost of cleanup. [Ref. 15:pp. 101-104]

The amendments, specifically in 1986, established mandatory schedules for the completion of the phases associated with remedial response activities and provided detailed cleanup standards. It strengthened the EPA's existing authority to effect cleanup actions by making Federal agencies financially liable for cleanup and damage costs. This included the ability to collect enforcement costs and to establish unlimited liability for releases of hazardous

material due to negligence or misconduct. The Act also authorized Federal Government emergency response to spills, releases or threatened releases of hazardous or toxic substances into the environment that posed a known or potential threat. [Ref. 15:pp. 104-108]

From the beginning of Superfund, Congress recognized that the Federal Government could not be held responsible for the cost of every environmental problem. The problems resulted from past waste disposal practices and the increased knowledge of health and environmental hazards. Congress authorized and directed the EPA to establish a National Priorities List (NPL) of sites to target for cleanup.[5] The ranking system to construct the NPL included the following factors: the quantity and nature of specific hazards; the possible effects to the air, soil, surface water, ground water; and the number of people potentially and actually exposed. This list became the limiting factor for long term EPA managed cleanup of the closed or abandoned sites. Only sites that qualified for the NPL would be handled by the EPA; all other sites fall under the authority of RCRA and state managed programs designed to force or compel owners and operators to complete cleanup. [Ref. 19:p. 195] As of October 1991, the NPL contained over 1000 sites and was growing at a rate of approximately 100 per year. Cleanup progress has been made at almost 400 sites, resulting in 17.5 million fewer people who live within four miles of any NPL site. [Ref. 1:p. 8] A significant portion of the funding has been spent on consultants, engineers and lawyers [Ref. 16].

A key issue still facing DOD is the total number of actual and potential sites that remain contaminated at defense contractor facilities. Depending on the severity of the

---

[5]The top 50 Non-Federal Government NPL sites are listed in Appendix E.

problem, DOD could be found as a potentially responsible party at every site used by the Nation's industrial base to provide military goods and services. As referenced earlier, a GAO report on only the 15 largest defense contractors estimated the current environmental cleanup costs at approximately $ 1 billion.

8. Energy Planning and Right-to-Know Act

The Energy Planning and Community Right-to-Know Act (EPCRA) was designed to support State and local emergency planning efforts and information concerning potential hazards in their communities. To enforce this law, the EPA created the annual Toxics Release Inventory (TRI) for release to the public. Manufacturers are required to report to the State and EPA the amounts of over 300 toxic chemicals that they release into the environment or transfer to waste treatment or disposal facilities. [Ref. 19:p. 196]

For purposes of emergency planning, a Governor or a State Emergency Response Commission can designate additional facilities which are subject to the reporting requirements after public notice and the opportunity for comment. This Act was noted by a marked departure from the previous environmental laws. Federal facilities were not legally obligated to comply with the requirements because the word "person" was used and Federal facilities were not technically included in the definition of person. However, this Act did extend to current Government-Owned/Contractor-Operated (GOCO) facilities [Ref. 19:p. 196].

9. Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was first signed into law in 1974 to ensure safe drinking water to all citizens. Like many other environmental matters, it was amended in 1976, 1977, 1979, 1986 and 1988. This resulted in the establishment of primary drinking water regulations for 83 contaminants. Of particular concern to the general public was lead

contamination, which is now banned in all public water systems. [Ref. 15:p. 69]

The resulting directives required that all States develop programs to protect underground water wellhead areas. Federal facilities that are identified as actual or potential sources of contamination all must comply with all SDWA requirements. This extended into the enforcement area, making Federal facilities responsible for any penalties or fees charged by State government application programs. [Ref. 15:pp. 69-76]

10. Pollution Prevention Act

The Pollution Prevention Act (PPA) of 1990 stated that the policy of the United States covering pollution should focus on the prevention of emissions into the environment from the source of all pollutants. The Act stated that:

> ...pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner. [Ref. 18:p. 3]

This was a new direction in the environmental policy of the United States, which involved the reduction of both point source and non-point source pollution. To achieve this new direction, the EPA established the Office of Pollution Prevention, for the promotion of a source reduction campaign and subject related awards program. [Ref. 16]

D. EXECUTIVE ORDERS RELATING TO THE ENVIRONMENT

As noted earlier, the increased environment awareness and health risks from the exposure to hazardous material contributed to Presidential actions that strengthened the EPA's position. The President extended environmental laws and

regulations to all Government agencies. A summary of pertinent executive orders follows. They are provided to show the complexities faced by both DOD and defense contractors.

1. Executive Order 10789

While this Executive Order does not directly pertain to hazardous material, it does involve liability and the indemnification of defense contractors. Public Law 85-804 provides Extraordinary Contractual Relief to facilitate the national defense by recision, reformation or amendment of a contract to increase the price without additional consideration. The Executive Order implemented the law, giving Executive Branch agencies the authority to grant contractors and subcontractors relief to ensure completion of significantly important defense contracts. The text indicated the types of amendments and contracts authorized:

> The contracts hereby authorized to be made shall include agreements of all kinds (whether in the form of letters of intent, purchase orders, or otherwise) for all type and kinds of property or services necessary, appropriate, or convenient for the national defense, or for the invention, development, or production of, or research concerning, any such property or services, including but not limited to, aircraft, missiles, buildings, vessels, arms, armament, equipment or supplies of any kind. [Ref. 20:pp. 23-5]

The execution of this relief is at the discretion of the Government and the result of a claim or a refusal to grant such relief is not reviewable by any court [Ref. 20:pp. 32.2-4]. Relief has been routinely granted to contractors in circumstances involving unusually hazardous or nuclear material [Ref. 21].

2. Executive Order 11472

Issued in 1969, Executive Order 11472 established the Citizen's Advisory Committee on Environmental Quality and the Environmental Quality Control Council. By his signature,

President Nixon contributed to the future changes in the environmental policies of the United States. The Council and Committee actions led to the drafting of legislation that created NEPA. [Ref. 22:p. 11]

3. Executive Order 12088

In 1978, President Carter signed Executive Order 12088, which mandated that all Federal Agencies assume a leadership role in pollution prevention, control and compliance with all existing environmental laws, pollution control standards and regulations. The opening section stated that this applied to all Federal facilities and activities under the control of the agency. However, the definition of activities under the control of the Agency was not provided in the text of the Executive order. [Ref. 19:pp. 199-202]

4. Executive Order 12580

In 1986, President Reagan signed Executive Order 12580, which limited the EPA's jurisdiction in enforcing environmental compliance and cleanup at Federal Government facilities. It addressed the delegation of duties and powers assigned to the President under CERCLA. The Order required a National Contingency Plan (NCP) to provide teams to respond during national or regional environmental emergencies.

More important to Federal facilities, it exploited an enforcement loophole in Executive Order 12088. The Department of Justice (DOJ) was given the authority to approve any EPA enforcement actions against other Federal Agencies. The DOJ determined that one body of the executive branch could not sue another over environmental cleanup or compliance actions. The Order called for the Office of Management and Budget (OMB) to facilitate resolutions between agencies. [Ref. 19:p. 55]

5. Executive Order 12856

In 1993, the President signed an Executive Order directing all Federal Agencies to comply with the reporting requirements of the Emergency Planning and Community Right-to-

Know Act. This related to the use, processing, manufacture and release of hazardous and toxic chemicals. The Order also directed the Federal Government to incorporate pollution prevention through source reduction in management and acquisition activities to reduce the total release and off-site transfer for treatment and disposal of toxic chemicals. It further required acquisition policies to be changed, to reduce or eliminate unnecessary hazardous substances and toxic materials. In addition, the Executive Order encourages Federal agencies to develop and test innovative pollution prevention technologies, including the formation of partnerships with industry and academia to solve pollution problems. [Ref. 23]

6. Executive Order 12873

Also in 1993, the President signed Executive Order 12873, entitled "Federal Acquisition, Recycling and Waste Prevention." The order required the Head of each Federal Government agency to incorporate waste prevention and recycling into the agency's policies and daily operations. It also directed agencies to develop policies to use environmentally preferable products and services, and to implement cost-effective procurement preference programs favoring the purchase of such products and services. The Order also directed the procurement related requirements to be implemented in the Federal Acquisition Regulation within 180 days of signing. [Ref. 24]

E. CALIFORNIA ENVIRONMENTAL LEGISLATION

In 1986, California set the precedent for all other States to follow in terms of providing for safe drinking water and protection of the environment. The California Safe Drinking Water and Toxic Enforcement Act of 1986, or Proposition 65, is more stringent that the Federal SDWA or CWA. The law requires that the California's Health and

Welfare Agency publish a list of chemicals that the State's scientific advisers have determined cause cancer and reproductive harm. The original list contained 136 chemicals and ranged from arsenic to vinyl chloride. The list also included a class of chemicals known as reproductive toxicants, such as ethyl alcohol (as in alcoholic beverages), lead and the sterilizing agent ethylene oxide. The subject chemicals are prohibited from emission into the State's water supply. The manufacturers of the designated chemicals must inform consumers, workers and the public of the health hazards from exposure to the chemicals. [Ref. 17:pp. 61-62]

Under this Act, citizens and organizations can bring lawsuits against any manufacturer that fails to inform the required groups about a product's dangers, if the local or state prosecutor fails to take action. The chemical manufacturers bear the full burden of proof; they must be able to prove that the new or existing product has no significant risks to human health.

> The manufacturer must prove that exposure will have no observable effects assuming exposure at 1000 times the level in question for substances known to the state to cause reproductive toxicity. [Ref. 25]

If the lawsuit is successful and the products are removed from California, the citizens or organizations then get up to 25% of any fines that were imposed and collected. [Ref. 17:pp. 62-63]

F. COST ALLOWABILITY IN GOVERNMENT CONTRACTS

Before exploring the background and current actions taken by DOD to address the problems encountered with defense contractor environmental cost allowability, it is necessary to discuss the general cost allowability rules governing all Federal Government contracts. Not all costs experienced by a business are allowed to be charged under Government contracts.

The following factors must be considered in determining cost allowability on a Federal Government contract [Ref. 26:p. 133]:

1. Reasonableness.

2. Allocability.

3. Cost Accounting Standards (CAS), if applicable; otherwise, generally accepted accounting principles (GAAP).

4. Terms of the contract.

5. Limitations specified by Cost Principles.

Each of the allowability factors listed above will be briefly discussed in the following sections. This is included to provide a basic understanding of the allowability criteria that will be analyzed and applied to defense contractor environmental cleanup costs.

1. Reasonableness

When a determination of reasonableness is made concerning a cost, the nature and amount should not exceed what a prudent business person would incur in the conduct of a business in a competitive market. The cost principles state that, no presumption of reasonableness shall be associated to any costs. [Ref. 27] If a cost is challenged, the contractor bears the burden of proof to show the reasonableness of the proposed cost. In addition, the following considerations may apply: generally recognized as ordinary and necessary; accepted sound business practices; arm's length transactions; regulatory requirements; and the responsibility to other customers, employees and the public. [Ref. 28]

2. Allocability

A cost is considered allocable to a Government contract if it is chargeable to one or more cost objectives. It must be charged on a causal or beneficial basis or another

equitable type of cost relationship. Given the proper cost relationship, a cost is then allocable to a Government contract if: it is expensed for a specific contract; the incurred cost benefits a specific contract cost objective and other contractor work, and can be distributed based on the benefits received or another equitable distribution system; or a direct relationship to any specific cost objective cannot be determined, but it is necessary for the overall operation of the business. [Ref. 26:p. 136]

3. Cost Accounting Standards

CAS relates to the allocability of costs as opposed to the allowability of costs. The Standards are associated with the concepts behind cost measurement, assignment of costs to accounting periods and cost objectives. The Standards allow for a greater degree of uniformity in the accounting and classification systems of Government and defense contractors. The uniformity also is used to gain consistency in disclosing and reporting of costs from those contractors. The current regulations provide thresholds and exemptions that determine the applicability of the Standards. If the Standards do not apply, then GAAP applies to the allocability of costs and in many areas allows for a wide degree of discretion in the measurement, accumulating, reporting and accounting practices. This lack of standardization can increase the difficulty in comparing and evaluating offers for competing contractors. [Ref. 26:p. 137]

There are currently 19 established Standards. Some of these are: Consistency in Estimating, Accumulating and Reporting Costs (401); Consistency in Allocating Costs Incurred for the Same Purpose (402); Allocation of Home Office Expenses to Segments (403); Capitalization of Tangible Assets (404); Accounting for Unallowable Costs (405); Cost-Accounting Period (406); Depreciation of Tangible Assets (409); Allocation of Business unit General and Administrative

Expenses to Final Cost Objective (410); Accounting for Insurance Costs (416); and Allocation of Direct and Indirect Expenses (418). [Ref. 26:p. 138]

4. Terms of the Contract

When a determination of allowability is made concerning a cost, the terms and conditions of the subject contract must be examined. For example, environmental cleanup costs under review by DCMC could be subject to reopener clauses, awaiting a final determination of allowability.

5. Limitations Specified by Cost Principles

The current FAR addresses specific cost elements for limitations and exclusions, and in turn the cost principles define three categories of costs: (1) expressly allowable, (2) partially unallowable or requiring special consideration, and (3) expressly unallowable. [Ref. 26:pp. 139-141] The specific guidelines are contained in FAR 31.201. They do not address every possible cost, and the absence of a cost principle does not imply allowability. In addition, apparent disagreements between two cost principles (cost allowable under one and unallowable under another), requires examination of the relevancy of both when determining allowability. Several of the specific cost principles are listed below: Public Relations and Advertising; Automated data processing equipment leasing; Bad debts; Bonding; Civil defense; Contingencies; Depreciation; Economic planning; Fines and penalties; Gains and losses on disposition of depreciable property or other capital assets; and Insurance and indemnification.

G. CURRENT DEPARTMENT OF DEFENSE ACTIONS

Over the past several years, DOD has come under Congressional pressure to report procurement and other costs attributed to defense contractor environmental cleanup and any profit associated with those costs [Ref. 11]. Also at issue are the policies and management directions required by DOD to

correct outstanding defense contractor environmental cleanup problems.

Environmental costs are not a new subject of concern to DOD. In September of 1990, then Secretary of Defense, Dick Cheney, established the "Defense and the Environment Initiative." At a meeting of top Pentagon officials, environmental activists, Government regulators and industry representatives to discuss the military's environmental problems, Secretary Cheney addressed the audience and stated that:

> The real choice is whether we are going to build a new environmental ethic into the daily business of defense-whether we will make good environmental actions as a part of our working concerns, from planning to acquisitions to management. [Ref. 19:p. 115]

He also declared that the Pentagon's military mission "is no excuse for ignoring the environment." [Ref. 19:p. 117] However, while DOD was pushing for a leadership role in environmental protection, it was granting certain contractors environmental indemnification pursuant to Public Law 85-804. The environmental indemnification applied to prime contractors and their subcontractors of any tier:

> ...against losses, including liability to third persons and the Government, and loss of or damage to the contractor's or subcontractor's property, arising out of and resulting from nuclear risks or from unusually hazardous risks attributable to the utilization of high energy propellants, or from both. [Ref. 29:p. 1]

The criteria for indemnification include mandatory levels of liability insurance and other specific limitations. For example, the Secretary of the Navy annually grants environmental indemnification to prime contractors for the following [Ref. 29:pp. 1-2]:

1. Procurement of nuclear-powered vessels or components thereof; or

2. Procurement of POLARIS, POSEIDON, TRIDENT or Tomahawk Cruise Missiles, or components thereof, or other components or subcomponents of the POLARIS, POSEIDON, TRIDENT or Tomahawk Cruise Missile weapon systems; or

3. Repair, modification, support or services relating to nuclear-powered vessels, POLARIS, POSEIDON, TRIDENT or Tomahawk Cruise Missiles or other components of the POLARIS, POSEIDON, TRIDENT or Tomahawk Cruise Missile weapon systems or components thereof.

In response to Congressional inquiry about reimbursements for environmental cleanup costs, Eleanor R. Spector, Director, Defense Procurement, stated in a letter to the Chairman of the Committee on Government Operations, House of Representatives:

> When no contractor malfeasance exists, simple equity, as well as the FAR allowability criteria, dictate, that the government should pay for its fair share of environmental cleanup costs. Examples are when the environmental damage occurred notwithstanding the exercise of due care by a contractor who was complying with applicable laws or regulations, or when it resulted from specific government direction. In such cases, these are normal costs of doing business, which the firm involved must recover through the overhead rate applied to both its commercial and government customers. [Ref. 30:p. 1]

The following actions were taken by DOD to address the subject of environmental cost allowability: proposed cost principle, initial allowability guidance, updates and clarification to the guidance, and a pilot cost allowability program. Each is discussed in the following sections.

1. Proposed Environmental Cost Principle

In 1991, DOD established an ad hoc group to develop a draft environmental cost principle. In August 1992, the Civilian Agency Acquisition Council (CAAC) and Defense Acquisition Regulatory Council (DAR Council) approved the

proposed cost principle without change. A Presidential moratorium on the creation of new Governmental regulations, however, stalled the issuance of the cost principle. [Ref. 31]

The announcement of the draft environmental cost principle by Eleanor Spector on August 11, 1994 caused an immediate negative reaction from both industry and the American Bar Association (ABA) [Ref. 32]. If approved for publication, the proposed principle would be incorporated into the FAR at part 31.205-9.[6] It would divide environmental costs into either prevention/compliance or correction of environmental damage categories. Costs falling into the environmental damage category would be considered unallowable unless the contractor could demonstrate the following [Ref. 33]:

> 1. It was performing under a government contract and that contract contributed to the creation of the environmental damage;
>
> 2. It was conducting business in a prudent manner with the accepted industry practices of that time and was complying with the then existing environmental laws, regulations and permits;
>
> 3. It acted to minimize the damage and cleanup costs; and
>
> 4. It has exhausted or is pursuing legal action involving all potential responsible parties to decrease the costs of the environmental damage.

As of this writing, the draft cost principle has not been incorporated into the FAR. DOD has issued further guidance covering the allowability of defense contractor environmental cleanup costs and established a pilot program to further study this complex issue. The results of the study, lessons learned and a policy recommendation will be forwarded to the Director

---

[6]The complete text of the draft principle is located in Appendix F.

of Defense Procurement for the ultimate release of a single DOD policy covering defense contractor environmental cleanup costs. [Ref. 34]

2. Initial Allowability Guidance

Jointly, DCMC and the Defense Contract Audit Agency (DCAA) developed and released policy guidance on the allowability of defense contractor environmental cleanup costs under the current cost principles and CAS. The policy was released on October 14, 1992, and confirmed the earlier statement of Eleanor Spector that environmental costs, including prevention and cleanup, are normal business expenses that are generally allowable, if determined reasonable and allocable.

The guidance further stipulated that environmental cleanup costs (and the associated costs, such as legal fees) are unallowable when the contamination problems were caused by wrongdoing of the contractor. In addition, the policy limited the allowable costs to the contractor's portion based on the actual percentage of the contamination directly attributed to the individual contractor. [Ref. 35] The policy mandates that contractors must seek relief from potentially responsible parties and any uncollected amounts would then be considered unallowable bad debts.

The remaining guidance is considered to provide a "policy framework" for DCAA Auditors and DCMC Administrative Contracting Officers (ACOs) to assess environmental costs. Each contamination case and contractor must be reviewed and analyzed on its own facts and significant circumstances. [Ref. 36] In addition to the areas mentioned above, the policy addressed the following key issues: reasonableness, allocability, previous sites, capitalization vs. expensing, insurance recovery payments to third parties, and advance agreements. [Ref. 37] A summary of each key issue follows.

a. Reasonableness

The reasonableness of environmental cleanup costs requires an examination of the cleanup methods employed and the magnitude of the incurred costs, consistent with the prudent business person concept. A complete review of the circumstances behind the pollution must also be conducted. It must have occurred despite contractor attempts to avoid the contamination and compliance with the laws in effect during the contamination. [Ref. 37:p. 4]

b. Allocability

Environmental cleanup and prevention costs are generally allocated as indirect costs and are allocated using a causal or beneficial base. Cleanup costs generated from prior contractor operations will be allocated to the business segment or segments associated with the pollution in accordance with CAS 403, and to contracts as residual general and administrative expenses under CAS 410. [Ref. 37:p. 5]

c. Previous Sites

Costs associated with a site previously occupied by a contractor will be allocated to the business unit where the work was transferred. If the business unit has been closed, the situation becomes much more complicated, and the costs are not directly allocated to the other remaining units. Depending upon the circumstances, the costs may be allocated as residual home office costs or be treated as an adjustment of the extraordinary costs associated with the closing of the business unit. [Ref. 37:p. 5]

d. Capitalization vs. Expensing

GAAP in the Emerging Issues Task Force (ETIF) Issue No. 90-8 indicate that environmental costs would normally be expensed during the current period. However, if the costs make an improvement or were incurred to make the property available for sale, they should be capitalized. [Ref. 37:p. 6]

e. Insurance Recovery

This area is a source of great controversy and ultimately the courts will decide the limits of general liability under insurance policies that were in effect during the time of past contamination. The guidance indicates that if the contractor holds any insurance policies for which a claim for environmental cleanup is "possible and economically feasible," the contractor should present a claim. Any resulting recovery must be applied to the allowable portion of the costs. [Ref. 37:p. 7]

f. Payments to Third Parties

Third party payments is another area of cost allowability that will ultimately be decided by the courts. Defense contractor liabilities to third parties arising from tort or trespass will generally be considered unreasonable. However, the circumstances and facts of each case must be reviewed to determine if the payments are based on fault-based legal theories. [Ref. 37:p. 7]

g. Advance Agreements

The final costs and liability determinations associated with environmental cleanup have many uncertain variables. Therefore, any form of advance agreement should protect the Government's best interests in connection with the possible recovery of costs. Specifically, the guidance advises that environmental cleanup costs must be treated as contingent costs for incurred cost settlements and forward pricing rate agreements. [Ref. 37:p. 8]

3. Updated Allowability Guidance

On February 2, 1993, DCMC issued additional guidance covering the allowability of environmental cleanup costs and audits of environmental cleanup costs:

> All ACOs should coordinate environmental cost issues with their District legal counsel and advise the Corporate Administrative Contracting Officer

(CACO)...of the Government's position prior to concluding any related negotiations or agreements with the contractor. [Ref. 38:p. 1]

Since the environmental cost issue is highly visible to Congress, senior DOD officials and GAO, all concerned personnel should be knowledgeable of the total potential liability [Ref. 38:p. 2].

4. Environmental Cost Pilot Program

On March 25, 1993, the Environmental Cost Allowability Pilot Program (ECAP) was established by DCMC to "capture best practices" and ensure a consistent, single application of regulations and guidelines to all contracts and contractors. The area of environmental cost allowability is a highly visible and complex issue facing DOD, involving the coordinated effort of many specialists that result in an ACO's final decision. Results of the program will be incorporated into future guidance and regulations. [Ref. 12:p. 1]

To implement the program, one contractor from each DCMC District/DCAA Region was selected whose overhead pools contained environmental costs. The program contained five contractors, using a team approach by DOD to coordinate the functional specialists required to gain a complete picture of the contractor's environmental costs. The team consisted of the following personnel: (1) ACO, (2) DCMC Attorney, (3) DCAA Auditor, (4) Price Analyst, and (5) Technical Analyst. The ACO was designated as the team leader, coordinating all efforts and the assignment of additional specialists as necessary to complete the program. Each team was required to report to DCMC headquarters every 60 days. No specific completion deadline was established, due to the complexity of the environmental issues, but a goal of one year was set for completion of the program. A final report is to include the following information: (1) history, (2) current situation, (3) questions developed, (4) methodology used, (5) informational

sources, (6) lessons learned, and (7) problems encountered. [Ref. 12]

The teams were encouraged to be innovative and imaginative in approaching the pilot program. The following areas were to be addressed in completing the program: costs claimed, contractual basis, land use/site history, reasons for costs claimed, statutory and regulatory background, and other sources of funding. [Ref. 12] A summary of each area follows.

a. Costs Claimed

The teams were tasked to identify the amounts and sites generating the environmental costs. This included a process to determine the associated purposes of those costs and the allocation and accumulation practices of the contractor. In addition, a crucial step was to evaluate the accuracy of the contractor's estimating systems and disclosure statements relating to environmental costs. [Ref. 12:p. 3]

b. Contractual Basis

This section addressed the amount, level and type of Government involvement or percentage of the contractor's business as a whole. It also discussed the timing of contractual relationships, existing requirements, leases or property clauses and any unique terms and conditions found in any of the contractual arrangements. [Ref. 12:p. 3]

c. Land Use/Site History

The team was required to determine the sites's history of ownership, leasing arrangements and tenants of contaminated sites. This was to include the uses of any site for each of the tenants or owners, including the generation of pollution, waste handling methods, ownership at the time of generation, storage and disposal activities. Locations adjacent to the site(s) must also be investigated for their possible contribution to the contamination. [Ref. 12:p. 4]

d. Reasons for Costs Claimed

This section focused on the reasons and specific nature of the costs. The following questions must be answered: (1) What is the nature of the contamination?, (2) When did the contamination occur?, (3) Is the contamination related to specific Government contracts?, (4) Is the contractor voluntarily conducting the cleanup or was it a result of a judicial or administrative order?, and (5) Was the contractor ever cited for any environmental law or regulation violations? [Ref. 12:p. 4]

e. Statutory and Regulatory Background

The team was required to develop a list of all laws and regulations that affect the contaminated site(s). It should also include a history of the land and all companies that have either used, leased or owned the site. [Ref. 12:p. 5]

f. Other Sources of Funding

This area addressed Potentially Responsible Parties (PRPs). They were identified to include any organization, company or individual that could be potentially liable for all or any part of the contamination. As a requirement, the following questions must be answered: (1) Has the Government been named a PRP?, (2) Has the contractor filed insurance claims to help defray the cleanup costs?, (3) What are or were the operations on the sites adjacent to the contaminated site and could they have been a source of the contamination?, (4) Was this ever a Government owned or leased site?, and (5) Will the cleanup result in a capital improvement to the property? [Ref. 12:p. 6]

5. Allowability Guidance Clarifications

In response to questions raised during the initial phases of ECAP, additional clarification was issued on April 13, 1994. First, it addressed issues relating to when a violation of environmental law has occurred. Secondly, the guidance

clarified how a contractor's share of allowable cleanup costs should be calculated. It also clarified the capitalization or expensing of costs and the allocation bases associated with environmental compliance costs. The following areas of information were provided to assist the pilot teams in completing the program: PRPs, environmental wrongdoing, contractor's share of costs, capitalization vs. expensing, and the allocation of costs. [Ref. 39] A summary of each section is provided below.

a. Potentially Responsible Party Costs

The amended guidance incorporated a February 1994 decision by the Director of Defense Procurement limiting the circumstances under which a contractor must treat uncollectible amounts from other PRPs as unallowable bad debt expenses. The guidance stated that when a contractor is legally required to pay another PRP's share of the environmental cleanup costs, and that specific PRP is no longer in business (provided that no other company has assumed its liability), then the costs are not to be treated as bad debt expenses. [Ref. 39:p. 9]

b. Environmental Wrongdoing

The new guidance states that environmental wrongdoing relates to any situation where the contractor did not comply with the governing laws, regulations and permits and that a violation could occur without a formal citation or notification from a governmental or regulatory agency. This could include any situation where the evidence existed, but no administrative or judicial ruling was made. Also included were the warnings of potential contamination from a competent source, including sources internal or external to the corporation. Finally, the auditors and ACOs are not required to a make a legal decision regarding the contractor's actions. If the documentation points out that the contractor's actions were inconsistent with those of an ordinary, prudent business

person, the associated environment cleanup costs should be determined as unallowable. [Ref. 39:p. 9]

c. Contractor's Share

The guidance states that the calculation method for a contractor's share of allowable environmental cleanup costs must depend on the individual case circumstances. If a relationship exists or existed specific to a particular manufacturing process or specific business unit, then the costs should be allocated to that specific area. If this determination is not possible, another basis should be used, including periods of generation, major cost drivers or space requirements, using a causal or beneficial relationship. [Ref. 39:p. 10]

d. Capitalization vs. Expensing

The new guidance differentiates between the following areas: (1) costs associated with the acquisition of property or equipment for the specific purpose of containing, reducing or eliminating the contamination, (2) costs to cleanup property that was contaminated prior to its acquisition, (3) costs to cleanup property that was not contaminated when it was acquired, (4) costs associated with property that is held for sale, and (5) costs associated with contaminated building and structures. [Ref. 39:p. 11]

e. Allocation of Costs

Compliance costs, including the costs associated with obtaining permits for facilities that treat, store, handle or dispose of hazardous wastes, should be allocated on a causal or beneficial basis under CAS 418. The costs related to compliance with any regulatory agency's order to correct past contamination, should be allocated under a general and administrative expense base using CAS 410. [Ref. 39:p. 11]

6. DOD's Environmental Security Vision

The DOD vision of future environmental security is now referred to as "C-cubed, P-squared." [Ref. 14:p. 1] It stands for environmental cleanup, compliance, conservation and pollution prevention. Environmental security matters now fall under the cognizance of the recently created position, Deputy Under Secretary of Defense for Environmental Security. This also included the creation of the Defense Environmental Security Council (DESC) and supporting committee. The concerns associated with the turn over of facilities and land as a result of Base Realignment and Closure (BRAC) determinations are well covered. Indemnification is available for future owners and lessees, freeing them from potential liability for any DOD past contamination. [Ref. 14:p. 3]

While the security program does not specifically address defense contractor environmental cleanup, it does focus attention on all environmental related areas of concern. It also provides for the expansion of partnerships with industry to eliminate or reduce the use of hazardous material in defense procurement and the investment in an environmental technology program. It also establishes a research and development program that would develop a priority-setting mechanism, including partnerships with States and the public to target real pollution prevention and conservation requirements. [Ref. 14:p. 6]

H. CURRENT JUDICIAL ACTIONS

The field of environmental cleanup, compliance and associated liability is an area that has recently been in various levels of the Nation's judicial system and will continue to be affected by their decisions in the future. The following cases provide only a small glimpse at the current environmental issues facing our Nation's judicial system.

1. California Rules Against Insurers

On November 22, 1993, the California State Supreme Court unanimously ruled that insurers, in most cases, (subject to the individual facts and circumstances) must pay the costs of defending policyholders accused of environmental damage. The case could set the precedence for the entire insurance industry. The issue of who pays the defense costs is extremely important because the bill for defending environmental cases can easily amount to millions of dollars. The case involved Montrose Chemical Corporation, the world's largest producer of DDT from 1947 to 1982. The company is currently facing numerous lawsuits for allegedly causing environmental damage in the Los Angeles area. [Ref. 40]

The insurance carriers argued that they should not be held liable for the costs of defending Montrose because the company's actions were never covered by any insurance policy. The arguments centered around standard industry practices, failure to follow those standards and the intentional dumping of waste material by Montrose. However, the Court sided with Montrose, noting that the insurance companies had a duty to pay for the defense costs. "The carrier must defend a suit which potentially seeks coverage within the coverage of the policy," wrote Justice Edward Panelli in the Court's decision. [Ref. 40]

2. Lender Liability Rule

In a February 1994 decision, the United States Court of Appeals for the District of Columbia Circuit vacated an EPA regulation that limited the liability for lenders under CERCLA. The court ruled that the EPA lacked statutory authority to restrict by regulation the private rights of action arising under CERCLA. As currently written, the law shielded lenders who have secured interests in sites that are contaminated by hazardous waste. In a previous case, the 11th Circuit Court of Appeals, determined that the Congressional

intent of the law was to protect the commercial practices of secured creditors in the normal course of business. Following this ruling and pressure from the banking community, the EPA issued the final regulation that is the source of this case. That rule limited the liability of secured creditors against the environmental actions or inactions of the occupants. [Ref. 41:p. 3]

The Court stated that the EPA had overstepped its authority in limiting liability of those institutions:

> Under these circumstances, it cannot be argued that Congress intended EPA, one of many potential plaintiffs, to have authority to, by regulation, define liability for a class of potential defendants. [Ref. 42]

The Court recognized that many others, including State and local governments are possible defendants in the costs of cleaning up environmental contamination and that lenders bear some responsibility because they benefit from having a financial interest in the property.

The Court also noted that this ruling will put corporations in positions of difficulty in obtaining loans and improving facilities. However, the absence of clear regulations and intentions from Congress, requires the EPA to obtain clear guidance from Congress covering the liability of all parties involved with environmental contamination and cleanup. [Ref. 41:p. 6]

3. Supreme Court Blocks Fee Recovery

In a June 6, 1994 decision, the United States Supreme Court made it difficult for polluters and owners of contaminated property to, by legal action, force PRPs to share in the Government regulated environmental cleanup costs. The final ruling stipulated that plaintiffs cannot recover their legal expenses when they successfully sue PRPs for environmental contamination.

The decision resolved conflicts between the different Circuits of the United States Court of Appeals. The Sixth and Eight Districts have ruled that attorney fees were necessary costs and recoverable, while the First and Ninth Circuits have ruled that those same costs were not recoverable. The Supreme Court relied upon a long standing American rule of law, established in Alyeska Pipeline Service Company v. Wilderness Society, 412 U.S. 240 (1975), stating that attorney fees are not a recoverable cost of litigation absent explicit Congressional authorization. [Ref. 43:p. 3]

Writing for the majority, Justice Stevens stated that neither the liabilities and defenses provisions nor the claims contribution provisions of CERCLA, expressly mentioned attorney fees. If attorney fees were now to be considered recoverable, this would require a determination that Congress intended to reverse a long standing tradition of American law.

The action also included a division of legal expenses between those incurred to identify potentially responsible parties and the expenses incurred to successfully sue those parties. The court determined that the costs incurred in the identification and discovery process may be recovered in a successful lawsuit. [Ref. 44]

I. SUMMARY

The procurement and contracting activities of DOD have a major impact on defense contractors and the Nation's industrial base. The industrial base dramatically expanded after World War II and was greatly influenced by the rapid advances in the commercial and military applications of chemicals and plastics. However, those same technological advances have increased the generation and disposal of hazardous waste now being attributed to property damage, health risks and even death. As a result of past waste disposal practices and rapid increases in environmental and

health sciences, numerous laws and regulations were enacted to prevent pollution and cleanup the existing contamination problems. Today, defense contractors and DOD face a very complex matrix of environmental laws and regulations in providing for the Nation's defense.

The challenge facing DOD is to balance the economic and environmental interests of the Federal Government, defense contractors and the citizenry. To help meet this challenge, DOD is developing a policy regarding the reimbursement of environmental cleanup costs to defense contractors. The environmental laws, Executive Orders, FAR allowability provisions, DOD allowability guidance, and judicial rulings have been presented to show the numerous factors affecting the environmental cost equation. The next chapter will explore the environmental cost allowability positions of GAO, Congress, the California Environmental Protection Agency, and the Washington Department of Ecology.

III. FEDERAL AND STATE GOVERNMENT

A. INTRODUCTION

This chapter first explores information from GAO reports, Congressional testimony, and the United States House of Representatives, Committee on Government Operations report on defense contractor environmental cleanup costs. The material covers GAO and Congressional viewpoints of current cleanup efforts and DOD's proposed share of environmental costs. It covers Aerojet General Corporation's Sacramento, California site, the Boeing Company's cleanup role in two private landfills, and Lockheed Corporation's Burbank, California facilities. The chapter then presents the current environmental regulatory positions of California and Washington, including enforcement organizations and their policies affecting defense contractor environmental cleanup activities.

B. GENERAL ACCOUNTING OFFICE

In 1993, the GAO conducted a follow-up study to determine DOD's policy covering the reimbursement of environmental cleanup costs to defense contractors. The report covers the actions taken by DOD after two previous reports covering the same subject were published. [Ref. 45] It highlights the environmental remediation costs from DOD's 15 largest contractors and provides case studies involving Aerojet, Boeing and Lockheed Corporations. The following sections combine the case studies and environmental cost allowability material found in three GAO reports. [Refs. 11,46, and 47]

1. General Findings

The original 15 contractors had experienced environmental cost generating activities, such as site investigation, cleanup, remediation, mitigation of damage, capital investment and legal counsel. From their current environmental

activities and cost estimating systems, the future cleanup costs were estimated to total more than $ 2.1 billion. This was a significant increase over the estimate from June 1992, which covered the same contractors and represents a total increase of approximately $ 1 billion, in less than one year. [Ref. 46:p. 1]

The GAO's Director of Defense Management and NASA Issues confirmed that the cost figures for the initial list of contractors could be as much as $ 5 to $ 10 billion. This was reported to be caused by the rapid changes in environmental laws, cleanup standards, technology and the general uncertainty associated with the cleanup estimates. These plans and estimates extend for up to 30 years to fully clean the contaminated sites. [Ref. 45]

The reports also found incidents where profit was included in the reimbursements to contractors for environmental cleanup costs. The analysis showed that six of the contractors were currently charging environmental cleanup costs to overhead accounts other than general and administrative expenses. While not stating the specific contractors, GAO reported that four of those contractors reported reaching agreements with DOD activities on final cost settlements that included these expenses. [Ref. 46:p. 10]

The GAO report also highlighted Army and Navy agreements to indemnify contractors for environmental cleanup, after DOD stated that it was not aware of any cases where contractor liability was transferred to the Government. [Ref. 46:p. 11] The Navy case involved an indemnification clause used to pay for remediation of a low level radioactive disposal site at Maxey Flats, Kentucky. While not relating specifically to the current focus of environmental cleanup, the case reenforces the past and current use of Public Law 85-804. The law is used to indemnify contractors that work with nuclear material or for contracts that involve usual risk from high energy

propellants. The Army agreements were not specifically listed and only mentioned as possible sources of future expenditures. [Ref. 46:p. 12]

2. Aerojet General Corporation

In 1991, Aerojet General was the 34th largest DOD prime contractor, awarded over $ 547 million in contracts during that FY. The environmental contamination problem involves Aerojet's Sacramento, California production facilities. Since the 1950s, the facilities have been used for the development and production of solid and liquid fueled rocket motors. [Ref. 47:p. 14]

The environmental contamination was officially confirmed by the State of California in 1979, which was discovered in numerous groundwater wells surrounding Aerojet's 8,500 acre production facility. Shortly thereafter, Aerojet confirmed the same contamination on its property. The groundwater testing identified trichloroethylene (TCE) and other solvents such as perchloroethylene (PCE) and chloroform. All of these are defined as hazardous substances and controlled by the EPA. [Ref. 47:pp. 14-15]

After extensive environmental investigations, the contamination was traced to more than 250 locations on Aerojet's property and several adjacent industrial areas. The investigation and assessment process determined that the following activities contributed to the contamination [Ref. 47:p. 15]:

1. Waste cleaning and cooling water containing chlorinated solvents and propellants was discharged into evaporation ponds and drains.

2. Discharges of chlorinated solvents and metals directly into the ground.

3. Cleaning of rocket test stands and other equipment with solvents.

4. Burning of solvents, metals and rocket fuel.

Seven individual contamination plumes or concentrations have been identified and assessed in the groundwater underneath the Aerojet property. They range from one-half to three miles in length with levels of TCE reaching as high as 100,000 parts per million.[7] [Ref. 47:p. 15]

As a result of the confirmed contamination, the California State Attorney General filed a suit in 1979, which required Aerojet to stop the harmful discharge of hazardous substances and to clean the soil and groundwater. Aerojet's initial actions included, the removal of contaminated soil to approved disposal sites and alterations to their waste drainage systems. In 1981, Aerojet started construction of a water treatment facility, designed to clean the groundwater and control any further migration of the contamination. [Ref. 47:pp. 15-16]

After the initial cleanup actions began, CERCLA was enacted to regulate such contamination problems. In 1982, the EPA listed Aerojet's Sacramento, California site on the NPL, as one of the ten highest health risk areas in the United States. Between 1983 and 1989, the EPA, State of California and Aerojet negotiated a partial consent decree covering the initial investigation and cleanup of the site, subject to CERCLA and California regulations. [Ref. 11:pp. 4-5] The initial suit against Aerojet was dropped as part of the partial consent decree. In addition, the decree stated that none of Aerojet's payments under the agreements were considered fines or penalties. Per the 1989 decree, Aerojet agreed to [Ref. 47:p. 16]:

---

[7]The EPA and State of California safe drinking water standard for TCE has been established at 5 parts per million. To provide an understanding of concentration levels, a table of trace concentrations is provided in Appendix G.

1. Complete a remedial investigation and feasibility study (RI/FS) to identify the nature and extent of contamination.

2. Identify potential remedies, implementation plans and associated costs for each alternative.

3. Construct and operate additional groundwater treatment facilities.

4. Monitor contamination levels in private water supply wells and the American River.

In 1986, Aerojet sued its insurers for recovery of environmental cleanup costs because no insurer would acknowledge their claims for reimbursement. The case centered around the general corporate liability of the policies and in a 1988 decision, the cleanup costs were denied. But upon appeal, the State Appellate court overturned the decision and determined the insurance policies covered environmental contamination. Then in 1992, a different case was decided in favor of the insurers; the court finding that Aerojet should have expected that its disposal procedures would have contaminated the site. Aerojet remains in litigation with its insurers over environmental cleanup costs. However, using CERCLA regulations, Aerojet has recovered $ 11 million from PRPs and legal defense costs from its insurers. [Ref. 47:pp. 17-18]

As of the latest GAO report, Aerojet has constructed nine water treatment facilities, treating over 20 billion gallons of water and removing over 114,000 pounds of contamination from the soil and groundwater. [Ref. 47:p. 16] The remainder of the work agreed to under the partial consent decree is scheduled for completion in 1996. After completion of this phase, a final consent decree is scheduled to be negotiated covering the final environmental cleanup requirements. This effort is expected to proceed for several decades. [Ref. 47:p. 17]

Aerojet spent approximately $ 75 million from 1980 to 1991, on the environmental cleanup problems. This was divided into direct cleanup and indirect cost accounts. The direct expenditures, such as site investigations, sample analysis, and the construction and operation of the groundwater treatment facilities, totaled about $ 53 million. The remaining $ 21 million was expended for indirect activities, such as litigation, legal fees and payments required to the EPA and State under the partial consent decree. [Ref. 47:pp. 16-17]

Since 1991, Aerojet has continued to incur both direct and indirect environmental cleanup costs and include those in claims for reimbursement from DOD. As of March 1993, the remaining costs to complete the partial consent decree were estimated at approximately $ 68 million. While the actual requirements of the final consent decree remain uncertain, the EPA has estimated the final cleanup phase cost at between $ 140 million and $ 2.1 billion. The GAO noted that the wide range is affected by the large amount of time required and the remaining number of uncertainties associated with environmental cleanup. [Ref. 45]

The GAO confirmed that as of November 1991, DOD had reimbursed Aerojet about $ 36 million for environmental costs incurred up to June 1989. This included $ 24 million to settle a 1986 claim for reimbursement and $ 5 million from interest. It also included $ 7 million that Martin Marietta reimbursed Aerojet while performing as a DOD subcontractor. [Ref. 46:p. 5] The Government payments have been reduced by about $ 6.5 million from money Aerojet received from insurers and PRPs. The negotiated agreement between Aerojet and the Air Force requires Aerojet to credit the Government with 50 percent of any additional insurance recoveries and 25 percent of the interest for costs incurred through June 1989. [Ref. 47:p. 18]

In denying Aerojet's original claim for environmental cleanup costs, the contracting officer based the decision on the general cost allowability criteria contained in the FAR. The contracting officer interpreted the reasonableness standard as requiring compliance with then existing environmental laws and regulations. The contracting officer's final decision stated that Aerojet had not complied with State hazardous waste discharge permits. For example, one permit issued in 1952 specifically prohibited discharges of hazardous substances, including TCE, at the Aerojet facility in a method that would cause contamination of the American River or groundwater. After the initial problem was discovered, the State Water Resources Control Board determined that Aerojet's disposal practices had violated the intent of the discharge permits. [Ref. 46:p. 4]

After the contracting officer's final decision, Aerojet appealed to the Armed Services Board of Contract Appeals. Aerojet stated that: (1) the environmental cleanup expenses were an ordinary cost of doing business, (2) the emissions were not prohibited by the waste disposal permits, and (3) the company did not know that groundwater pollution would result from its disposal practices. The disposal methods were the industry standard or better at the time of contamination. [Ref. 47:p. 18]

The Air Force and Aerojet settled the dispute prior to any ASBCA actions. The Air Force presented the following reasons for the negotiated cost settlement [Ref. 47:p. 19]:

> 1. The agreement would limit the Government involvement and liability as a potentially responsible party under CERCLA.
>
> 2. Indemnification clauses in several contracts between DOD and Aerojet from the 1950s to 1979 could be interpreted to include the contamination that resulted from performance under Government contracts.

3. Some of the DOD contracts required the use of chemicals that were now contaminating the groundwater.

4. Government furnished equipment was used in the production and de-greasing operations that contributed to the contamination.

5. The State permits were not specific enough to establish Aerojet's negligence. The permits did allow discharges of hazardous material, but all permits did not require the monitoring of groundwater to test for possible contamination.

6. The partial consent decree was executed on a no-fault basis. No fines or penalties were assessed.

7. A military standard from 1950 required the use of solvents for metal cleaning, such as TCE and PCE.

8. During the contamination period, DOD accounted for over 80 percent of Aerojet's business.

9. The Navy leased about 3,500 acres of the facility, performing work similar to that of Aerojet and could have a been a major source of the contamination.

As of the middle of 1994, the environmental cost allowability issue between Aerojet, its insurers, and DOD remained unsettled. The DOD portion is currently under review by DCAA and DCMC. [Ref. 34]

3. Boeing Company

The case involving Boeing differs from Aerojet because the contaminated sites are located on two licensed hazardous waste disposal sites. In FY 1991, Boeing was the 18th largest DOD prime contractor, awarded over $ 1.2 billion in contracts. From 1954 to 1977 Boeing's Seattle, Washington facilities used two commercially owned and operated landfills, located outside Seattle, to dispose of industrial waste. The Queen City Farms site includes 320 acres of land located southeast of Seattle. The Western Processing facility is located south of Seattle and includes 13 acres of land. [Ref. 47:pp. 22-23]

After the implementation of CERCLA, the EPA investigated both sites and determined that industrial wastes had contaminated the surface, soil and groundwater. The list of CERCLA hazards included TCE, PCE, phenol, cadmium and PCBs. After initial investigations and studies were completed, both sites were placed on the NPL. During the studies, the EPA identified 44 PRPs for the Queen City Farms site and 363 for the Western Processing site. Under CERCLA regulations, the PRPs included the owners, transporters and originators of the wastes. Boeing was the largest contributor of waste at both sites and assumed the leadership role in maximizing the participation of PRPs to complete the cleanup requirements. [Ref. 47:pp. 23-24]

In 1981, the Western Processing site was closed to remove hazardous surface chemicals and identify the extent of the soil and groundwater contamination. The environmental cleanup was divided into two phases. In 1983, the first phase of a consent decree required the cleanup of surface soil, the removal of structures and stored wastes. The second phase, currently in process, was designed to cleanup the underground contamination. As with Aerojet, the decree required the construction and operation of a water treatment facility. The cleanup and monitoring efforts are expected to continue well into the next century. [Ref. 47:p. 23]

The Queen City Farms site investigations showed contamination very similar to Western Processing. In 1985, EPA, Boeing and Queen City Farms signed a consent decree to begin the initial cleanup operations. This included soil removal, draining of evaporation ponds, construction and operation of a groundwater treatment system and a groundwater well monitoring program. In 1988, monitoring indicated that the contamination could possibly migrate into neighboring areas. In response, the EPA ordered the construction of additional groundwater treatment facilities to combat the

contamination problems. As with many contaminated sites, the current estimate for completion is approximately 30 years. [Ref. 47:p. 24]

As of 1992, Boeing's direct and indirect cleanup costs totaled more than $ 100 million for both waste sites. Over $ 75 million was expensed directly on environmental cleanup actions and the remaining $ 25 million devoted to indirect expenses. The indirect costs included the monitoring of groundwater wells, legal fees and oversight expenses paid to the State of Washington and EPA. Boeing's current cleanup estimate (for both sites) at completion is $ 190 million. [Ref. 11:p. 5]

As of 1992, DOD has reimbursed Boeing approximately $ 11 million for environmental cleanup costs. The small Government share is based on Boeing's large commercial business base. Boeing's accounting records indicated that environmental cleanup costs were allocated to all of its business units and to all commercial and Government contracts. The GAO also determined that a portion of the reimbursement was profit, because all of Boeing's contracts included cleanup costs in the base used for profit computations. [Ref. 11:p. 6]

In 1987, Boeing negotiated a forward pricing rate agreement (FPRA) with DOD, which included environmental cleanup costs. The Government contracting officer's decision to allow those costs was based on the following information [Ref. 47:pp. 25-26]:

1. Boeing did not violate any environmental laws or regulations when it used the waste disposal facilities.

2. It appeared that Boeing's general corporate liability insurance would not cover environmental cleanup costs.

3. Boeing incurred the cleanup costs due to recent environmental laws and regulations.

4. The consent decrees stated that the costs were not the results of fines or penalties.

Both DOD and Boeing reported that the hazardous wastes resulted from its commercial and Governmental manufacturing processes and no that records were maintained to document the waste generation process. During the contamination period, Boeing produced major systems for DOD and other systems for the Federal Government. They included aircraft for each Service, missiles for the Air Force, lunar orbiters and spacecraft for NASA and rapid transit systems for DOT. During the production and waste disposal from 1955 to 1977, there was no requirement for a system to account for and document waste generation and disposal. In 1988, DOD and Boeing entered an agreement to allocate environmental cleanup costs on a square footage basis, which is split between Government and commercial contracts. [Ref. 47:p. 27]

In 1990, a court determined that Boeing, should have expected pollution from its disposal practices after 1971, but continued to use the disposal sites until 1977. This invalidated Boeing's insurance claim for costs at the Western Processing facility. Additionally, DCAA determined that environmental cleanup costs after 1971 would be considered unallowable. [Ref. 11:p. 6] As of the middle of 1994, the environmental cost allowability issue remained unsettled between Boeing, its insurers, DOD and other Federal Government Agencies. The DOD portion is currently under review by DCAA and DCMC. [Ref. 34]

4. Lockheed Corporation

In 1993, the soil and groundwater cleanup at Lockheed's Burbank, California site was estimated to cost $ 263 million and not to be completed until 2025. In FY 1991, Lockheed Corporation was the ninth largest DOD prime contractor, with contract awards totalling over $ 2.7 billion. The Burbank location has designed and produced military aircraft, such as the U-2 reconnaissance aircraft and the F-117A stealth fighter. The location is also in the process of being closed

and could be placed on the market for sale, as a result of a recent Lockheed decision to relocate the business segment to Georgia. [Ref. 47:p. 28]

In 1980, groundwater contamination was discovered in public water wells in the Burbank, California Area. The wells contained hazardous substances, primarily TCE and PCE, in concentrations over one thousand times greater than the established standard. The wells were closed and water was diverted from other sources. Subsequent studies identified numerous sources of contamination, including Lockheed's 425 acre production facility. Shortly after the problem was discovered, Lockheed began site investigations and sampling to determine the nature and extent of the contamination. In addition, Lockheed began the construction of a groundwater treatment facility. [Ref. 47:p. 29]

During the initial identification and cleanup process, the Los Angeles Regional Water Quality Control Board determined that Lockheed was primarily responsible for the contamination from its design and production operations. In addition, one major source of the contamination was connected to a GOCO section of the Burbank site. The specific site was Government owned from 1946 to 1973 and the environmental contamination was confirmed to have occurred during that period. [Ref. 47:pp. 28-30]

In 1986, the EPA added the Burbank site to the NPL. The results of initial studies lead to an EPA decision that named 34 PRPs, including Lockheed, as contributors to the waste problems. The decision included the type and requirements of the cleanup methods and the liability of each party. The EPA, Lockheed, Weber Aircraft, and the City of Burbank signed a consent decree which listed the following responsibilities and agreements [Ref. 47:p. 30]:

1. Lockheed was responsible for finishing the construction of the groundwater treatment facility. It is currently estimated to reach its full operational capacity of 12,000 gallons per minute in 1998.

2. The City of Burbank would design and construct the facilities required to move the cleaned water and blend it into the local water supply.

3. Weber Aircraft would contribute financially to Lockheed's water treatment facility.

4. Lockheed maintains total responsibility to cleanup all contaminated soil on its 425 acres of land.

5. The Regional Water Quality Control Board and EPA are responsible for monitoring the cleanup efforts.

As of 1993, Lockheed has not filed any claims for reimbursement for environmental cleanup costs nor has it received any reimbursements from DOD of those costs. [Ref. 11:p. 7] In addition, Lockheed's share of the costs will be affected by the final EPA negotiated agreements with the other PRPs. An initial memorandum of understanding between the Air Force and Lockheed established an allocation method of costs, moving environmental costs into general and administrative expenses. Environmental cleanupcosts were to be allocated to all of Lockheed's business segments, not only the Burbank facility. This was reviewed by DCMC, noting that it would result in lower overall costs by spreading the environmental cleanup amounts throughout the company. [Ref. 47:pp. 31-32]

The agreement also stipulated that Lockheed had not committed any environmental wrongdoing and that no environmental laws or regulations were broken. However, the GAO determined that the contracting officer never conducted an independent investigation to determine compliance with the environmental laws and regulations. The contracting officer instead relied on the consent decree when making the allowability decision. [Ref. 11:p. 7]

In 1990, after Lockheed's decision to close the facility and move the operations to Georgia, the Air Force questioned the allocability and allowability of the environmental cleanup costs. As of the 1993 GAO report, Lockheed's customer base was 70 percent Government and 30 percent commercial. The Burbank facility business base was over 90 percent DOD. With the differences in business bases, DCAA and the Air Force expressed concerns over the environmental cost allocation method. While the method would lower costs for DOD, DCAA stated that the segmentation of costs to business units that were not involved with the Burbank facility would violate current cost accounting standards. [Ref. 47:p. 31]

In 1992, Lockheed began negotiating with its insurers for potential policy coverage under general corporate liability provisions and retained a law firm that specialized in environmental insurance claims. [Ref. 47:p. 32] As of the middle of 1994, the environmental cost allowability issue remained unsettled between Lockheed, its insurers, DOD and other Federal Government Agencies. The DOD portion is currently under review by DCAA and DCMC. [Ref. 34]

C. HOUSE COMMITTEE ON GOVERNMENT OPERATIONS

On November 22, 1993 the United States House of Representatives, Committee of Government Operations approved and adopted a report entitled "Reimbursement of Defense Contractors' Environmental Cleanup Costs: Comprehensive Oversight Needed to Protect Taxpayers." [Ref. 48:p. 1] The report opened with a statement of the committee's jurisdiction and responsibilities.

> The Committee on Government Operations has primary legislative and oversight jurisdiction with respect to the overall economy and efficiency of Government operations and activities, including Federal procurement...the Committee may at any time conduct investigations of any matter without regard to the

> to the provisions...conferring jurisdiction on another standing committee. The committee's findings and recommendations in any such investigation shall be made available to the other standing committee or committees having jurisdiction over the matter involved....[Ref. 48:pp. 1-2]

Based upon the investigation and oversight hearing by the Legislative and National Security Subcommittee, the committee made the following findings [Ref. 48:p. 4]:

> 1. Major defense contractors will be liable for several billion dollars in environmental cleanup costs over the next 10 years.
>
> 2. The Department of Defense lacks a system for identifying contractors' past and projected environmental cleanup costs.
>
> 3. Current reimbursement policies and practices treat environmental cleanup costs as a normal business expense.
>
> 4. Current reimbursement policies and practices allow contractors to include environmental cleanup costs in account categories that are fee bearing.
>
> 5. Current reimbursement policies and practices do not provide for any recovery by the Government in the event that real property subject to environmental cleanup is subsequently sold.
>
> 6. Current reimbursement policies and practices do not address indemnification of contractors' environmental cleanup costs under Public Law 85-804.
>
> 7. Current reimbursement policies and practices do not endorse consistent treatment of contractor claims for reimbursement of environmental cleanup costs.
>
> 8. If current reimbursement policies and practices continue, the Department of Defense will reimburse hundreds of millions of dollars in contractor environmental cleanup costs over the next 10 years.

The committee's report continued with a discussion and analysis of the legal framework behind current environmental

regulations. It included differences between GAO and DOD statements, and DOD regulatory initiatives designed to study and clarify the current policy and reimbursement position. Summaries of each section follow.

1. Legal and Regulatory Framework

In general, the current FAR appears to treat environmental cleanup costs as normal business expenses, unless they are classified as fines or penalties. Because the current environmental laws and regulations require a system of joint and several liability, generally there is no finding of wrongdoing when a contractor is held responsible for environmental cleanup. While technically correct, the statements are not dispositive on the question of possible wrongdoing. The existence of such statements reflect the legal status of payments required under CERCLA, but they do not exonerate the contractors from guilt. [Ref. 48:p. 6]

Section 2324 of Title 10 United States Code is the general statutory guidance on allowable costs under defense contracts. The statute does not specifically address environmental cleanup costs, but it does disallow specific contractor expenses, including the costs of fines and penalties. The current FAR provisions that implement this statute do not specifically address environmental cleanup costs. The committee determined that the lack of specific guidance and CERCLA's disclaimers covering wrongdoing have created a situation where DOD has broadly allowed contractor environmental cleanup costs. The costs were subject to the general provisions covering cost allowability, without conducting independent investigations of possible contractor wrongdoing. [Ref. 48:pp. 7-8]

2. GAO vs. DOD Statements

The committee devoted a large section of the report to highlight differences between GAO and DOD statements. In the area of data collection and reporting, GAO determined that DOD

was not specifically collecting or reporting defense contractor environmental cleanup costs to Congress. In FY 1994, the Defense Authorization Act included an amendment requiring DOD to report such costs. As a result of the amendment:

> ...DOD is collecting environmental cost data on 27 companies-15 of the largest defense contractors plus 12 others where significant amounts of environmental cleanup costs have been proposed. [Ref. 48:p. 15]

The GAO reported inconsistent decision making processes on contractor claims for reimbursement covering environmental cleanup costs. This was challenged by Eleanor R. Spector, Director of Defense Procurement when she stated:

> Much of what has been characterized as inconsistency, however, is the result of contracting officers being confronted with differing fact situations at different points in the contract administration process. [Ref. 49:p. 1]

According to Director Spector, of the three contractors involved in GAO's studies, only Aerojet had submitted a "certified" contractor final overhead rate proposal that included environmental cleanup costs. Boeing and Lockheed have not submitted proposals, and in all cases no final determination of environmental cleanup cost allowability has been made. [Ref. 49:p. 2]

The next area of disagreement between GAO and DOD was over the payment of profit or fees on environmental cleanup costs. The GAO stated:

> Our further analysis disclosed that Boeing and 6 of the other 13 largest defense contractors currently charge prior-year cleanup costs to overhead accounts other than general and administrative expense. According to information provided by the contracting officers, these costs include a factor

> for profit. In four cases, the contractors have reported reaching agreements with DOD on final cost settlements that included these costs. [Ref. 48:p. 18]

In response to the findings of GAO, the DOD denied that it has allowed contractors to charge a fee or receive profit on environmental cleanup costs. On January 3, 1993, Director Spector responded by stating:

> The Department must also take exception to the GAO suggestion that Boeing was paid profit on its environmental restoration costs. Environmental restoration costs are normally accounted for in a contractor's general and administrative account. General and Administrative expenses are not fee-bearing under the DOD policy used to develop profit objective for negotiated contracts. [Ref. 49:p. 2]

However on May 20, 1993, the Deputy Under Secretary of Defense for Environmental Security, Sherri Wasserman-Goodman, testified to Congress that some defense contractors allocate environmental cleanup costs to accounts that are fee-bearing. She also stated that:

> We will examine those situations and, as suggested by GAO, we will consider the issue of excluding environmental cleanup costs from the base used to develop profit objectives on non-competitive contracts. [Ref. 48:p. 19]

The last area of disagreement between GAO and DOD was over DOD's use of Public Law 85-804 and the subsequent reporting requirements to Congress. The GAO reported that when DOD was questioned concerning the use of Public Law 85-804:

> ...DOD officials told us that they knew of no cases where DOD indemnified contractors for environmental cleanup, and that such cases, if they occurred, would be unusual. However, we found in one case that Navy has agreed in advance to assume

> site at Maxey Flats, Kentucky. Also, in our examination we found the Army has occasionally included similar clauses, and this is for contractors of its ammunition plants. [Ref. 48:p. 20]

In response to the GAO findings, DOD replied that it uses its authority under Public Law 85-804 to indemnify contractors against unusually hazardous or nuclear risks, not to indemnify contractors against environmental cleanup costs. The Navy decision was set forth in a memorandum from the Assistant Secretary of the Navy (Research, Development and Acquisition) Gerald A. Cann to the Commander, Naval Sea Systems Command. In the August 1993 memorandum, Mr. Cann stated:

> Three Navy contractors (Newport News, GD/Electric Boat and Ingalls) are PRPs and have contracts that contain the clause "Nuclear Risk--Indemnification under P.L. 85-804." Under this clause, the Navy has agreed to indemnify contractors for claims by third parties for damage to persons or property not otherwise covered by insurance....The contractors claims have been reviewed and the Navy agrees that it is appropriate to provide relief.... [Ref. 50:p. 1]

The committee expressed great concern over the Navy's decision to extend the Law's coverage to environmental cleanup costs. The committee noted that DOD had previously reported to Congress the use was limited to claims involving the following conditions: (1) death, (2) serious injury, (3) property damage from nuclear radiation and high-energy propellants, or (4) risks not covered by the contractor's insurance. The committee stated that:

> It is unclear whether the Public Law 85-804 indemnification clause was intended to cover environmental remediation costs at a low-level nuclear waste disposal site as unusually hazardous and uninsurable risks. The committee believes that the Department of Defense should review this policy question. [Ref. 48:p. 21]

> the Department of Defense should review this policy question. [Ref. 48:p. 21]

The reporting disagreement again focused on the Navy's Maxey Flats indemnification decision. The GAO determined that Navy did not report to Congress on the decision to indemnify the contractors involved with the Maxey Flats cleanup, despite the statutory requirement to report such indemnification. DOD's position was that such a notice is only required when the original contract was awarded. For the current situation, those contracts were awarded between 1963 and 1977. [Ref. 48:p. 21] The committee urged DOD to reexamine its position on indemnification and stated that it would be closely monitoring the use of Public Law 85-804 [Ref. 48:p. 22].

3. Regulatory Initiatives

The committee praised DOD for its work in providing audit guidance and a pilot program to study the environmental cleanup issues, but expressed concerns over any possibility of ambiguity in final regulations. The committee also expressed the need for the publication of a new cost principle to specifically address environmental cleanup costs.

> It is imperative that defense contractor claims are treated consistently. Before allowing environmental cost claims, the Department of Defense must be able to verify that a contractor behaved prudently, without negligence, and in full compliance with State and local laws and regulations. These are fundamental prerequisites for any reimbursement....A comprehensive FAR cost principle which explicitly addresses the allowability of environmental cleanup expenses should be promulgated as soon as feasible. [Ref. 48:p. 28]

Based on the findings and information presented, the Committee on Government Operations made the following recommendations [Ref. 48:pp. 4-5]:

1. The Secretary of Defense should develop and implement a system for identifying contractors' past and projected environmental cleanup costs.

2. The Secretary of Defense should evaluate the treatment of environmental cleanup costs as normal business expenses and determine whether there are circumstances in which such costs are extraordinary expenses that should be treated differently.

3. The FAR Council should promulgate FAR provisions which require contractors to include claims for environmental cleanup costs only in accounts which are not included in the calculation of fees.

4. The FAR Council should promulgate FAR provisions which establish consistent policy for recovery by the Government in the event that real property subject to environmental cleanup is subsequently sold.

5. The Far Council should promulgate FAR provisions which establish consistent policy for the application of Public Law 85-804 to contractor claims for reimbursement of environmental cleanup costs.

6. The Far Council should promulgate FAR provisions which establish consistent treatment of contractor claims for reimbursement of environmental cleanup costs.

D. STATE OF CALIFORNIA

In 1991, California Governor Pete Wilson created the California Environmental Protection Agency (CAL/EPA). This unified the State's environmental authority under a single accountable cabinet level agency. The reorganization brought together the Department of Pesticide Regulation, The Department of Toxic Substances Control, and the Office of Environmental Health Hazard Assessment, with the existing environmental regulatory boards: the Air Resources Board, Integrated Waste Management Board, the Water Resources and Regional Water Quality Control Boards. [Ref. 51:p. 1]

As a result of the reorganization, the Secretary for Environmental Protection is the administrative head of the agency and reports directly to the governor. CAL/EPA is

responsible for coordinating and prioritizing the State's efforts to protect the environment. The specific goals of the agency are to [Ref. 51:p. 2]:

1. Focus on those activities, processes and substances presenting the greatest risks to public health and the environment.

2. Set risk-based priorities using the best, most consistent science available.

3. Prevent pollution from being created, instead of controlling it after the fact.

4. View environmental protection and economic progress as complementary goals.

5. Provide vigorous and fair enforcement of the law.

6. Open the regulatory process for public participation.

The environmental cleanup of defense contractor facilities falls primarily under the authority of three organizations within CAL/EPA: (1) the Office of Environmental Health Hazard Assessment, (2) the Department of Toxic Substances Control (DTSC), and (3) the State Water Resources Control Board (SWRCB). The Office of Health Assessment is the lead agency for the implementation and enforcement of the SDWA and Proposition 65. DTSC is responsible for overseeing the cleanup of hazardous wastes and for monitoring and regulating hazardous waste transportation, treatment, storage, and disposal for California. These are accomplished by a combination of Federal and State Acts, and the implementing regulations, covering RCRA site cleanup, and CERCLA mandated participation. [Ref. 51:pp. 6-7]

The SWRCB has primary responsibility for maintaining water quality in the State through authority of the Porter Cologne Water Quality Control Act and the Federal CWA. The Board accomplishes this through planning, research and monitoring programs as well as regulatory oversight of the

State's surface, ground and coastal waters. Working with the State Board are nine Regional Water Quality Boards which implement programs and policies to ensure pollution cleanup, containment and prevention.

To implement these programs, the Regional Boards issue waste discharge permits and site cleanup requirement orders. This mechanism gives the Regional Boards the principal authority for permitting and enforcing pollution control requirements for any discharges into surface waters, groundwater or wetlands. [Ref. 51:pp. 14-15]

Defense contractors facing the cleanup of environmental contamination are directly involved with a Regional Water Quality Control Board. The Board issues a specific site cleanup requirement order for every contaminated area in the State, whether under CERCLA or RCRA cleanup programs. A cleanup order includes the following: site description and history, regulatory status and responsibilities of the dischargers. [Ref. 52]

Since 1949, there has been statutory law making water pollution illegal (Dickey Water Pollution Control Act of 1949) in the State of California. The original Act has been amended numerous times, and together with the CWA, is the current source of California water pollution controls. In 1993, the San Francisco Bay Region of the Water Quality Control Board provided the following statement with regard to the legality of water pollution:

> ...cases dating back to the turn of the century establish the principle that water pollution is a public nuisance, and that dischargers of waste that pollute waters of the state may be enjoined regardless of the discharger's intent or degree of care. Thus, even if the Regional Boards could not have taken administrative action at the time of the discharge, a subsequent order requiring cleanup and abatement of the effects of the prior discharge is justified because the discharge would have been illegal and subject to abatement under the laws

against water pollution and creation or maintenance of a public nuisance. [Ref. 53:pp. 1-2]

The discharge permits issued by the Regional Water Quality Control Boards have addressed pollution since their creation. For example, a 1952 waste permit included the following:

> Resolved, the following requirements govern the nature of the discharges from the Aerojet plant...process wastes which contain the following chemicals shall not be discharged in a manner which will permit their entry into either the groundwater or the waters of the American River...TCE...PCE.... [Ref. 54:p. 4]

The permits also included references to the possible health risk associated with the introduction of hazardous materials into California's public water supply. However, the permits also stated that the State's industrial waste chemists should conduct the research necessary to find alternate disposal methods for hazardous waste. [Ref. 54:p. 3]

While the waste discharge permits made pollution "technically" illegal, they did allow for the discharge of industrial waste into the groundwater, creeks and rivers of California. From the 1950s to 1970s, the permits included broad waste disposal criteria. For example, "the wastes discharged shall not cause detectable taste or odor in any public water supply." [Ref. 55:p. 1] In addition, the permits included the following three salient points [Ref. 55:p. 1]:

> 1. Dischargers will be required to monitor groundwater and surface waters and waste discharges in order to demonstrate compliance with these requirements.
>
> 2. These requirements do not authorize the commission of any act resulting in injury to the property of another or protect the discharger from his liabilities under Federal, State, and Local laws.

3. Dischargers accept the responsibility for control of all waste discharges originating from their property or operation.

Given the nature of the waste discharges and past permits, the State of California has turned its efforts to the cleanup of hazardous waste sites and the prevention of pollution. This has translated into consent decrees and cleanup orders that do not determine environmental wrongdoing or place blame on specific parties. The State of California has no current position covering the cost allowability of cleanup actions. The State issues cleanup orders and allows the responsible parties to submit cleanup plans that meet EPA and State requirements. If the parties do not comply voluntarily, then the State and EPA employ fines and a combination of the Department of Justice and the State Attorney General to force cleanup actions. The effective cleanup orders and consent decrees for Aerojet, Lockheed and FMC were completed voluntarily with corporate cleanup plans approved by the EPA and State. Therefore no fines or penalties have been assessed to require site cleanup. The State must achieve a balance between the environmental cleanup and pollution prevention priorities of the State, while providing a market to maintain the State's industrial base. [Ref. 52]

E. STATE OF WASHINGTON

In 1989, the State of Washington followed California's precedent in protecting the environment. The citizen-mandated toxic waste law mirrors its California counterpart and is more stringent than the Federal SDWA and CWA. The Model Toxics Control Act (MTCA) or Initiative 97, not only tightens emission standards, it changes the way hazardous waste sites are cleaned. [Ref. 56:p. 1]

The Washington Department of Ecology (WDOE) executed the environmental protection program for the State of Washington. Through CERCLA, RCRA and State Acts, WDOE has the legal authority to order a responsible party to cleanup any hazardous waste site. However, the State prefers to achieve cleanups through cooperation and partnerships. The regulations are intended to promote teaming arrangements between industry and regulators, avoiding the traditional adversarial relationship. MTCA rules, which were designed by representatives from citizen, environmental and industry groups, are designed to [Ref. 56:p. 2]:

1. Encourage cleanups initiated by potentially liable persons, thus providing for quicker cleanup with less litigation.

2. Encourage an open process for the public, Government and responsible parties to discuss cleanup options and tradeoffs.

3. Facilitate cooperative cleanup agreements, not WDOE initiated enforcement actions.

As in California, polluting has been illegal in the State of Washington since the 1950s. The State used a permit system to regulate industrial and hazardous disposal and processing facilities. The two hazardous waste disposal sites used by Boeing (Queen City Farms and Western Processing) were licensed by the State, with disposal appropriate permits from Ecology. After the EPA placed both sites on the NPL, Boeing took a lead role in organizing the PRPs and negotiating the consent decrees. The consent decrees focused on the mitigation of damages, the containment of pollution and the completion of EPA and Ecology approved cleanup plans. In addition, the consent decrees do not determine environmental wrongdoing or place blame on specific parties. [Ref. 57]

The cost allowability issue is not an area of concern to the State of Washington, unless DOD's actions could cause

delays in current cleanup projects. The consent decrees involving Boeing were voluntarily negotiated, using privately developed cleanup plans and as a result of the cooperation, no fines or penalties were assessed. The priorities of the State to protect the public, must be balanced with the economic realities of industry, investment and employment. [Ref. 57]

F. SUMMARY

This chapter has explored the positions of both Federal and State Government in relation to the current environmental cleanup actions facing defense contractors. The GAO pointed out the lack of a consistent DOD policy covering the allowability of environmental cleanup costs and their total cost implications for the future. To achieve a consistent policy GAO recommended that DOD: (1) conduct programs to determine what costs are allowable, (2) determine a process to properly allocate these costs, and (3) determine if profit can be applied to these costs. The House Committee on Government Operations conducted hearings on this subject and issued a report which recommended: (1) DOD track environmental costs, (2) DOD determine the allowability of these costs, and (3) the FAR Council promulgate acquisition regulations that establish a consistent policy covering real property improvement, the use of Public Law 85-804, and contractor claims for equitable adjustment covering environmental cleanup costs.

Following the Federal Government's lead in addressing environmental protection, California and Washington have passed even stricter cleanup and compliance laws. The focus is to balance economic interests of citizens and corporations, while mandating a teamwork approach to address pollution prevention, environmental compliance and contamination cleanup. State Governments are primarily concerned with completing the cleanup, not with the cost allowability or fault aspects of the environmental contamination. The next

chapter will explore the actions taken by DOD to address the environmental cleanup problem and determine cost allowability. Material is presented from DCMC's cost allowability pilot program, DOD's environmental restoration program and the Defense Logistics Agency's role in hazardous waste disposal and environmental cleanup.

IV. DEPARTMENT OF DEFENSE

A. INTRODUCTION

The chapter focuses on DOD's efforts to develop a single consistent policy covering environmental cleanup costs of defense contractors. Material is presented from DCMC's pilot program, using both headquarters and DPRO FMC Corporation, San Jose sources. This section examines environmental cleanup and cost information pertaining specifically to FMC Corporation and the overall operation of the pilot program.

Information is then presented showing DOD's internal efforts to comply with EPA environmental laws and regulations. This focuses on the contracting methods and procedures used by the Naval Facilities Engineering Command (NAVFAC) in addressing environmental restoration. To highlight the complexities of environmental regulations, information is then presented covering the Defense Reutilization and Marketing Service's (DRMS) role in hazardous waste disposal and environmental cleanup at DOD facilities. The chapter closes by presenting the DOD's hazardous material pollution prevention (HMPP) program.

B. ENVIRONMENTAL COST ALLOWABILITY PILOT PROGRAM

In response to the Congressional interest and media visibility of defense contractor environmental remediation costs, DOD created the Environmental Cost Allowability Pilot Program (ECAP). The ECAP was designed to "capture best practices," ensure a single consistent application of current regulations and make recommendations to the Director of Defense Procurement for future policy development. [Ref. 12:p. 1]

This section will concentrate on the efforts of the DPRO, FMC Corporation (San Jose, California) efforts in completing

the pilot program.[8] The section will also provide information from DCMC's "Environmental Team," which is coordinating all pilot program efforts and will forward a policy recommendation to the Director of Defense Procurement. In addition, the program includes a joint effort with DCAA and therefore, information will be provided from their investigations into environmental remediation costs. [Ref. 34]

The project teams were encouraged to be innovative and creative in approaching and completing the program. The following areas were to be addressed in final reports: (1) history, (2) current situation, (3) questions developed, (4) methodology used, and (5) informational sources. [Ref. 12] Information developed by the DPRO FMC Corporation project team, as well as, DCMC and DCAA material follows.

1. History

The DRPO FMC pilot program began in April 1993, by forming a team to coordinate, determine duties and responsibilities and set time tables necessary to complete the assignment. The team began working closely with their FMC counterparts, using open lines of communications and exchange of information to complete the history section of the program. Mr. McCarthy, DRPO FMC ACO and ECAP team leader, stated that lines of communications remained opened and information flowed freely until May 1993, when FMC's request for equitable adjustment (REA) was denied in a contracting officer's final decision. [Ref. 58]

Shortly after this denial, FMC submitted a claim under an environmental, health, and safety clause contained in eight current contracts to the Armed Services Board of Contract Appeals (ASBCA) and closed the lines of communications. After

---

[8]The pilot program also included: (1) Martin Marietta, Burlington, VT., (2) Martin Marietta, Bethesda, MD., (3) UTC-Pratt Whitney, West Palm Beach, FL., and (4) Thiokol, Brigham City, UT.

the appeal was filed, all communications from the team to FMC were subject to submission and review by FMC's legal department. Mr. McCarthy stated that this dramatically slowed the process and all team members were continuously frustrated in completing the program and especially in trying to be creative and innovative. [Ref. 58]

FMC Corporation had been operating at the San Jose location since 1909, with a business base primarily consisting of food processing and agricultural equipment. In response to Government needs for military hardware, FMC expanded its San Jose operations to include military requirements. This expansion included the purchase of additional land and facilities to meet the Government needs. [Ref. 58]

World War II production caused expansion of the production facilities and increased the Government share of FMC's business base. However, the San Jose facilities continued to produce both commercial as well as military equipment. To determine the exact use of specific facilities and sites, the DRPO team's research included the following items [Ref. 58]:

1. FMC Corporation records.
2. State and Local Government records.
3. Business and waste discharge permits.
4. Insurance policies.
5. Deeds.
6. Titles.
7. Facility drawing and blueprints.
8. Photographs.
9. Any other information that concerned land use and contractor operation.

The research determined that two of the contaminated sites were never used by FMC to produce military equipment. This was confirmed by FMC corporation and no environmental cleanup costs expensed to clean these commercial sites are allocated to Government contracts. [Ref. 58]

The remaining contaminated sites were made up of five locations that were either used for both military and commercial productions or were operated by other entities for a period of time. The other entities are now considered PRPs and FMC is allocating costs to each waste contributor. [Ref. 58] The San Francisco Bay Area Regional Water Quality Control Board has determined that a portion of the contamination can be attributed to the Federal Pacific Electric Company. [Ref. 59]

In its attempts to mitigate the cleanup expenses, FMC identified Olin Chemical Corporation as a PRP to one of the contaminated sites. However, the Regional Water Quality Control Board did not agree with FMC's determination and would not include Olin in the Site Cleanup Orders. [Ref. 52] FMC continues to evaluate sources that could have contributed to their contaminated sites. This includes one site where the highest contamination levels occurred about ten feet outside FMC's property line. [Ref. 58]

2. Current Situation

The DPRO team continues to investigate the specific uses of every facility and the period of those uses to determine the exact business mix during the generation of the contamination. This included the use of the Army Hygienic Command and the Army Corps of Engineers (COE) to conduct independent site inspections, preliminary assessments and to perform independent analysis of FMC's assessments, studies and remedial designs. In reviewing FMC's production history and waste handling procedures, the team determined that the practices used were considered standard practice for the

specific periods. In addition, the use of Government design specifications appeared to prove Government liability to the generation of the contamination. [Ref. 58]

In general, the team determined that FMC allocates environmental remediation expenses in the following manner: (1) to PRPs based on Regional Water Quality Control Board determinations, which include the type and amounts of contaminates that can be attributed to other parties; (2) to the operations that generated the pollutants; (3) to FMC's commercial or Government divisions based of the periods of operation at each specific site when the pollution was generated; and (4) for dual-use sites, to the numbers of acres divided between commercial and Government contract performance. In addition, FMC has requested its insurance carriers to cover the cost of the cleanup under its general corporate liability policies. However, FMC's insurance carriers (approximately 170 insurance carriers) refused to cover the cleanup costs, contending that the subject liability policies did not provide coverage for such environmental contamination. FMC has continued to pursue the coverage issue using the court system and has won an initial victory, which determined that the policies covered environmental cleanup costs. The insurance companies appealed the decision and upon review, the decision was reversed. The reimbursement cases remain in the appeals process and due to the complexity and amount of money at stake, FMC does not expect any final decisions for approximately five years. [Ref. 58]

After the cost allowabiltiy program started, FMC and HARSCO BMY Combat Systems Division began a corporate merger. As part of the merger, there will be a novation agreement and advance agreements covering costs. Currently, no remediation costs are being charged to any contracts due to objections by DCAA and the DPRO. Environmental compliance costs are currently being charged to all Government contracts.

Currently FMC's mix of contracts is 90% fixed-price and 10% cost type. Therefore any agreement regarding environmental remediation costs must be referred to the ECAP to ensure public funds are protected. [Ref. 58]

The merger has also accelerated a company position to close its San Jose operations and move the production facilities to BMY Combat systems facilities located in Pennsylvania. Therefore, any environmental remediation costs that could be considered as allowable to Government contracts would enhance the value of the property, allowing FMC to sell the property. [Ref. 58]

3. Questions Developed

As part of the ECAP, each member was to develop questions that should be asked to determine the allowability of environmental remediation costs. The following questions or issues were created during the execution of the pilot program [Ref. 60]:

1. Should soil and groundwater remediation costs associated with the contractor's own property be expensed in the period incurred or capitalized and amortized over future periods?

2. Rather than cleaning the contaminated soil, the contractor installs a structure in the ground which contains the contamination on the polluted property. Should the costs of the containment structure be capitalized?

3. Should the costs incurred to cleanup a property held for sale be expensed or capitalized under the following circumstances: (a) the contractor is cleaning up the property under a regulatory agency's order, (b) the cleanup costs will be realizable from the sale, (c) the cleanup effort will not improve the property beyond its conditions at acquisition, (d) there is no regulatory agency's order to cleanup the property, and (e) the property is unsafe and in its present condition cannot be used for the contractor's normal operations.

4. When is a property considered held for sale?

5. When are costs realizable from the sale?

6. How do we segregate what portion of the difference between book value and sales price is due to inflation and changing market values and what portion is the result of the environmental cleanup to the property?

7. Is the entire sales price realizable if the property is worthless prior to the cleanup because it cannot be sold until cleanup is completed?

8. Under CERCLA, the contractor is responsible for the cleanup costs attributed to contamination caused by other PRPs. Are these costs allowable if: (a) the other PRPs are no longer in business and no successor company can be found, and (b) the other PRPs are in business or a successor company has assumed the PRPs liability?

9. The original guidance stated that environmental remediation costs were to be allocated to contracts as part of the G&A expense pool. Why are no other allocation bases appropriate?

10. Must there be a formal or informal environmental violation, warning or other action identified or cited by an enforcement group to determine contractor wrongdoing?

11. Does the original guidance misinterpret the cost principle on bad debts?

12. How should remediation costs be associated to the type and nature of the contamination? For example, both a prior property owner and the contractor caused the same taye and nature of contamination.

13. If the contamination was caused by practices which were once legal but became illegal, how should the costs associated with each practice be calculated? For example, the same contractor dumped chemicals into the ground before as well as after the practice became illegal?

14. If the contractor cleans up the contamination on a site for which it is responsible and there was no intent to cause the contamination and no action is taken by an enforcement group, should its actions be considered legal and the related costs be considered allowable and recoverable?

4. Methodology

The basic methodology used by the DRPO FMC was a teaming approach, matching skills and abilities of the members to the areas requiring research. For example, the regulatory and site history for each site was coordinated by the legal representative with support from auditors, technical representatives and cost monitors. As the project progressed and the specificity of the questions directed to FMC increased, all communication was forced by FMC to move between the Government ACO and FMC's legal staff. [Ref. 58]

The project team requested the technical assistance of the EPA in determining the sources, nature and extent of the contamination problems, but the EPA denied the DPRO's requests for assistance. According to Mr. McCarthy, the EPA stated that because the FMC sites were not part of the Superfund program, the EPA would not provide any assistance. [Ref. 58]

After receiving no help from the EPA, the team turned to the Regional Quality Control Board and the California DTSC for assistance in determining the sources, nature and extent of the contamination. The team also requested the State to make a determination as to wrongdoing or violations of laws or regulations committed by FMC. The State could not specifically comment on possible wrongdoing committed by FMC at the San Jose locations. However, the State confirmed that FMC had caused soil and groundwater contamination and was currently performing cleanup work under State Site Cleanup Requirements (SCRs) orders at several sites in the San Jose area. The contamination was initially reported by various sources, including FMC, and FMC voluntarily conducted the required environmental studies and submitted remedial action plans. These plans were approved and incorporated into the SCRs. The State of California also reported that FMC had been cited several times by its regulators for environmental discrepancies, but these citations had occurred in the past

several years and no connection with the current cleanup actions could be determined. There were no instances where FMC had been fined or penalized for any environmental actions and the cleanup orders did not contain any references to fault for the contamination. [Ref. 58]

The Army Hygienic Command and COE were used to conduct independent investigations and analysis to confirm FMC's results and corrective actions. These requests for outside assistance were the largest source of problems and delay encountered in executing the project. When the project was initially created, no special funding was allocated for outside assistance. It took approximately four months from the initial request until technical assistance was received. [Ref. 58] That specific issue has been addressed by DCMC, each region will be receiving additional funding to develop internal environmental technology experts [Ref. 34].

The cost analysis team consisted of auditors, cost monitors, overhead specialists, financial services personnel and technical representatives. The analysis was conducted in the form of an audit, beginning with a review of the incurred costs to determine types, amounts and categories. The audit then continued to include FMC's cost accounting system for tracking and recording environmental costs and followed the progression of the project. [Ref. 61]

5. Information Sources

The DPRO team used the following informational sources: (1) State and Local government agencies, (2) Legal research sources, (3) DCMC headquarters, (4) DCAA headquarters, (5) Contract files, (6) Technical documentation and specifications, (6) Army Hygienic Command analysis, (7) COE analysis, (8) FMC Corporation records, and (9) Newspaper and magazine articles. [Ref. 58]

C. DEFENSE ENVIRONMENTAL RESTORATION PROGRAM

The DOD Report on Environmental Requirements and Priorities for 1992, documented that DOD has over 600 major domestic facilities and manages more than 20 million acres of property that must be in compliance with all environmental regulations. [Ref. 62:p. 1-1] To achieve EPA compliance at all activities, the DOD established the DERP to manage the cleanup operations of DOD properties. In addition, the Defense Environmental Restoration Account (DERA) was established to combine all funding into a single budget account. [Ref. 62]

Under the authority of DERP, each military Service manages an environmental cleanup or Installation Restoration Program (IRP). The Army programs are commanded by the COE and the Navy's commanded by NAVFAC. However, the Air Force manages its program with operational support from the COE, NAVFAC and the Department of Energy (DOE). [Ref. 19:pp. 144-146] The program consists of the following steps: site discovery, preliminary assessment and site inspection, coordination, remedial investigation and feasibility study, record of decision, remedial design and remedial actions. [Ref. 63:pp. 3-10] A summary of each requirement follows.

1. Site Discovery

The process begins with a discovery of either past contamination or contamination that resulted from a recent accident or discharge. After notification of the discharge, the installation's Commanding Officer (CO) must immediately notify the cognizant National Response Center (NRC).[9] CERCLA reporting requirements do not distinguish between an accidental spill and a dump site which has existed for years,

[9]NRCs are Federal Government communication centers that connect activities related to hazardous waste releases or response actions.

and is found to be contaminated. The CO is also required to review all installation records to uncover any additional contaminated sites. [Ref. 63:p. 7]

2. Preliminary Assessment/Site Inspection

The Preliminary Assessment/Site Inspection (PA/SI) is the initial step in correcting the environmental contamination. The preliminary assessment includes identifying the sources and nature of the problem. Depending upon the scope of the contamination problems, additional investigations would then be completed followed by the site inspection. The SI consists of a site visit and limited sampling of the contaminated areas. In turn, the results of the inspection are used by the EPA to rank the potential health risks of the site. This determines if the site is included on the NPL as a part of the EPA's Superfund program. [Ref. 63:pp. 7-8]

3. Coordination

Coordination with appropriate regulatory agencies and the public is a continual and critical requirement throughout the restoration process. CERCLA now allows any citizen to sue any Federal Government Agency that is alleged to be in violation of any regulation, requirement or administrative order authorized under CERCLA. [Ref. 63:p. 8]

4. Remedial Investigation/Feasibility Study

The Remedial Investigation/Feasibility Study (RI/FS) must be performed on all sites that pose possible environmental or health risks. Detailed water, soil, and air samples are collected to determine the exact contamination, concentrations and migration paths of the specific pollutants. The FS uses the detailed data to evaluate all potential remedial alternatives based on cost and relative effectiveness. [Ref. 63:p. 9]

5. Record of Decision

The Record of Decision (ROD) is prepared to document the cleanup alternative selected and the justification behind the selection. This is made available for public comment and any concerns must be addressed prior to further remedial action. [Ref. 63:p. 10]

6. Interagency Agreements

Interagency Agreements (IA) are formal documents between, the EPA, State, and DOD activity covering site remediation. The IA includes objectives, responsibilities, procedures and schedules for the remediation efforts attached to specific sites. DOD policy mandates that IAs be negotiated as early as possible in the remediation process for all sites. [Ref. 64:p. 21]

7. Remedial Design

The remedial design provides the specifications and basic statement of work to implement the plan selected in the ROD. This includes a process to ensure the basic statement of work and final design include all unusual and varying site conditions. [Ref. 63:p. 10]

8. Remedial Actions

The remedial action is the performance phase of the environmental cleanup process. A contract is used to specify the remedial actions necessary for the required environmental cleanup. [Ref. 63:pp. 10-11]

9. Long Term Monitoring

Depending on the nature and extent of the contamination and the remedial actions required, long term monitoring (LTM) may be required to demonstrate that the remedy selection has achieved its goals. This could last for several decades depending upon the severity of the contaminations and associated health risks. [Ref. 64:p. 21]

From the steps listed above, the process of environmental remediation is much more involved than simply contracting for

the actual cleanup. It typically takes up to six years to fulfill the legal and regulatory requirements, prior to beginning any actual remedial actions. [Ref. 63:p. 11]

10. Navy Environmental Resources Program

The Navy's Environmental Resources Program listed the following as a major objective for NAVFAC and the Navy:

> ...clean-up Navy shore activities at which past waste disposal practices have resulted in the potential for contamination of groundwater and adverse health effects to the general population. [Ref. 65:p. 4]

To achieve these goals, NAVFAC designed one contract to cover the purchase of engineering services from the discovery to design phase of the environmental restoration process. The actual contract used is called Comprehensive Long-Term Environmental Action Navy (CLEAN) and is primarily structured as a cost-plus-award-fee contract. [Ref. 63:pp. 11-12]

The successful CLEAN contractor performs most of the functions needed to ensure the Navy stays in compliance with all levels of environmental laws. This includes, but is not limited to, conducting the assessments, obtaining permits, document preparation, performance of field and laboratory tests, the coordination with regulatory agencies and the preparation of the remediation designs. [Ref. 66:p. 2]

The CLEAN contract produces the specifications and statements of work required to enter the acquisition process to contract for the actual performance of the environmental cleanup. The remedial actions have been accomplished using various contracting methods and types. The actual environmental restoration has caused numerous problems during the performance of cleanup. The cleanup contracts have been affected by the following factors [Ref. 67]:

> 1. Uncertainties in the scope of work arising from differing site conditions after performance has started.

2. Changing environmental regulations.

3. New information and technology.

4. Different States and localities enforcing environmental regulations to varying degrees.

5. Different regulators within locations enforcing and emphasizing environmental regulations to varying degrees.

D. DEFENSE REUTILIZATION AND MARKETING SERVICE

In 1980, DOD designated the Defense Logistics Agency (DLA) responsible for disposing of hazardous waste, resulting from operational and maintenance activities, at all military installations and activities. As a part of DLA, the Defense Reutilization and Marketing Service (DRMS) was delegated the responsibility to contract for the disposal of hazardous waste within DOD. The DRMS solicits proposals and bids, evaluates those proposals and bids, awards contracts, performs quality assurance reviews, performs contract administration duties and authorizes progress payments to hazardous waste disposal contractors. [Ref. 68:p. 1]

DOD determined, however, that individual Services would retain disposal responsibility for several categories of hazardous waste. These waste categories were: (1) toxicological, (2) biological, (3) lethal chemical warfare material, (4) municipal garbage and trash, (5) contractor generated materials that were the responsibility of the contractor, (6) sludge from waste water treatment facilities and the remains generated from an industrial process or operation, (7) refuse from mining and dredging, (8) construction and demolition, and (9) nonrecurring wastes generated by research and development programs. [Ref. 69:p. 11]

DLA uses both small and large contractors to transport, treat, store and dispose of hazardous waste generated by various DOD activities. As of July 1990, DLA had a total of

79 active contracts valued at an estimated $ 86.2 million, with 30 different contractors. Acting for DLA, DRMS assumed control over active waste disposal contracts that were awarded by the military Services. This process also lead to the conversion from one-time removal requirements to annual requirements contracts. [Ref. 10:p. 11]

DRMS used both sealed bid and competitive proposal contracting methods for the disposal of hazardous waste. The contractors' bids or proposals were evaluated and the awards were based on the lowest priced, technically acceptable offer from a company that was determined to be responsible. The contracting officers also requested the advice of environmental specialists and legal council. In addition, to advice, DRMS used preaward surveys to determine that the contractors' facilities and operations would be able to perform in accordance with the terms and conditions of the contract. Significant problems were observed from the contracts awarded to small businesses. During 1990, four of the small business concerns defaulted on their contracts. In addition, several others encountered performance and financial difficulties in the execution of the hazardous waste disposal contracts. In every case, a preaward survey was conducted and all contractors either received certificates of competency from the Small Business Administration or were determined as responsible by DRMS. The specific problems included the following [Ref. 68:pp. 14-15]:

1. Falling behind on performance schedules.

2. Loss of adequate insurance coverage.

3. Bankruptcy.

4. Facilities maintenance problems that resulted in areas that did not meet EPA regulations.

5. Illegal sales of hazardous waste to unlicensed activities.

6. Transfers of hazardous waste to illegal dump sites or sites without EPA permits for the subject material.

7. Incorrect identification and verification of hazardous waste manifests.

These problems resulted in several court cases, where DOD was ultimately found to be liable for the cleanup costs and additional damages when a contractor illegally or improperly disposed of hazardous waste. The following three cases point out financial implications and environmental hazards caused from contractor actions and by inactions of DOD in the monitoring and surveillance of those contractors.

In 1987, a United States District Court in Jacksonville, Florida, determined that a contractor illegally sold DOD hazardous waste, which had been contaminated by PCBs, as fuel to an asphalt paving company. The manifest was correctly documented that the material was supposed to go to a hazardous waste disposal facility. The asphalt company sued the Government for damages. The Court determined that DOD had not properly monitored the contractor to ensure that the disposal facility had received the waste. The Court held DOD liable for $ 1.1 million in damages to the asphalt company. [Ref. 69:p. 19]

In the same year, the United States District Court found DOD liable to the EPA for $ 1.6 million for the environmental cleanup at two Superfund sites in Florida. These were sites where the same contractor mentioned above improperly stored and disposed of other DOD related wastes. [Ref. 69:pp. 19-20]

In 1982, a private waste incineration facility transferred Army hazardous waste to an illegal dump site after its normal incinerator became inoperative. The dump site was discovered in 1984, and the cleanup was managed by the EPA. Through research, the EPA determined the presence of DOD related waste and waste byproducts. The EPA billed DOD $ 126,000 for its share of the cleanup costs. Until the EPA

notification, neither the Army installation nor DRMS knew of the contamination problems and cleanup actions, because the contractor had submitted falsified certificates of destruction. [Ref. 69:p. 20]

E. HAZARDOUS MATERIAL POLLUTION PREVENTION

It is DOD policy to manage all hazardous material over its life cycle to minimize cost requirements and pollution effects, while protecting human health and the environment. The DOD directive states:

> The preferred method of doing this is to avoid or reduce the use of hazardous material. Where use of hazardous material may not reasonably be avoided, users shall follow regulations governing its use and management as required by appropriate issuances. In the absence of regulations, users shall apply management practices that avoid harm to human health or the environment. Emphasis must be on less use of hazardous materials in processes and products, as distinguished from end-of-pipe management of hazardous waste. [Ref. 70:p. 1]

The directive applies to all commands and agencies with DOD and each is required to publish a plan of action and milestones outlining responsibilities to minimize the risk from hazardous material and waste. Each agency is responsible for modifying functional area efforts, procedures and practices to make the management and minimization of hazardous material "common practice" within DOD. [Ref. 70:p. 4] Individual agency efforts will be reviewed by the Defense Acquisition Board (DAB) committees to: (1) ensure coordination of minimization efforts, (2) offer advice on system priorities, and (3) evaluate the economic analysis of possible alternatives. [Ref. 70:pp. 3-4]

F. SUMMARY

This chapter has presented DOD's efforts to address the allowability of defense contractor environmental cleanup costs, its internal efforts to comply with current environmental regulations and its program to minimize the requirements for hazardous material. The ECAP is the major instrument currently being used by DOD to develop a consistent policy covering environmental costs. DOD is also conducting its own program to conduct environmental remediation. In many instances DOD is cleaning up the very same pollutants at military sites that are found on defense contractor sites. To control the use and disposal of hazardous waste, DOD delegated the disposal and administration requirements to the DRMS.

The chapter points out that DOD is facing a very complex situation in determining the allowability of defense contractor environmental cleanup costs. In many instances, the costs incurred by defense contractors are the result of no-fault consent decrees or other negotiated agreements. This stops short of determining liability for the environmental damage and the ability to prove reasonableness of the related business practices. The next chapter will explore the positions of defense contractors, industry associations and private associations as they approach the complex issue of defense contractor environmental cost allowability.

V. DEFENSE INDUSTRY AND ASSOCIATIONS

A. INTRODUCTION

This chapter presents material supplied from Congressional testimony, prepared statements, and interviews. First, information covering environmental cleanup efforts and costs associated directly with defense contractors, their facilities and contaminated sites is presented. The following corporate positions are included: (1) Aerojet General Corporation, (2) Boeing Company, (3) FMC Corporation, and (4) Lockheed Corporation. Second, several industry association positions are provided to show a collective picture of the environmental cleanup problems. The following association comments are presented: (1) Aerospace Industries Association (AIA), (2) Financial Executives Institute (FEI), and (3) National Security Industrial Association (NSIA).

Last, the position of the American Bar Association (ABA) and two private associations are provided covering environmental cleanup cost allowability. Together these comments and positions complete the picture of the forces affecting the Federal Government and DOD as they attempt to develop a consistent policy covering the allowability of defense contractor environmental cleanup costs.

B. AEROJET GENERAL CORPORATION

On May 20, 1993, Suzanne Phinney, Vice President, Environmental of Aerojet General Corporation testified before the Legislation and National Security Subcommittee, Committee on Government Operations, United States House of Representatives, concerning the reimbursement of environmental cleanup costs to defense contractors. Aerojet was founded in 1942 by scientists who began development in rocket technology in the United States, ultimately becoming a focal point of America's national defense and space programs. A summary of

Aerojet General's position concerning environmental cleanup costs follows [Ref. 71].

1. Historical Perspective

The historical section opened by exploring the dramatic scientific and social changes that have led to the cleanup problem that we now face. The largest contribution to environmental contamination dates back to the industrial and military expansion following World War II. This expansion was pushed along by rapid advances in the chemical industry, and that same expansion ultimately caused today's environmental cleanup problem. To address and correct the contamination problems, Congress enacted CERCLA, and "mandated that cleanup proceed on a strict liability, no-fault basis." [Ref. 71:p. 2] Aerojet points out that:

> It is very tempting, in looking at current cleanup problems, to judge the conduct which caused these problems by today's standards rather than by the knowledge and practices that prevailed in the 1950s or 60s, when the conduct occurred. But before there can be equitable, effective solutions to the cleanup issues confronting us, there must be a better understanding and acceptance of the limitations of the past. [Ref. 71:p. 2]

In the 1950s and 60s there was no such thing as an environmental scientist nor was there an EPA. Environmental infancy was reported in both Government and contractor operations. As programs began they were included as part of health and safety functions. In the 1970s, the University of California, Los Angeles created one of the first environmental science doctoral programs in the nation, and in that program there was "no mention of waste management practices or groundwater contamination problems!" [Ref. 71:p. 3]

In the 1950s, TCE, the principal contaminate at many Superfund sites, was widely used as a solvent for cleaning metal parts by industry and Government. Aerojet was simply

following the manufacturers' instructions for disposal. The instructions stated that waste TCE could be disposed of on the ground, where it would quickly evaporate. During the same time, the health risks associated with TCE focused on its use as an anesthetic. In addition, TCE was used as a coffee decaffeinator, septic tank cleaner and was an ingredient in many products found on grocery and hardware stores. It was not until the late 1970s, following numerous years of Government and commercial use, that TCE was the subject of carcinogenic studies. At the same time, there were no instruments in common commercial use that could measure or detect minute quantities of chemicals in groundwater. [Ref. 71:p. 3]

Aerojet pointed out that they did not dispose of TCE or other chemicals directly onto the ground. They used lined evaporation ponds, percolation methods and traps to prevent any chemicals from contaminating groundwater. These waste handling procedures were the standard business practices used by hundreds of industries and the Federal Government. [Ref. 71:pp. 3-4]

Aerojet never intended to cause contamination. The use of TCE and other solvents was required by military specifications (MILSPECS) incorporated in contracts. DOD representatives constantly maintained oversight on contract performance, and in many cases approved the designs of waste disposal facilities. [Ref. 71:p. 6]

Aerojet concluded by the historical perspective section stating it has always provided the hardware answers to meet the security needs of the United States. Aerojet has developed propulsion systems for Polaris, Minuteman and Titan rockets. In addition, Aerojet has contributed to space exploration, as a contractor in the Gemini and Apollo programs. The Sacramento facility operations have always involved some form of lease arrangements with the Navy and Air

Force. In addition to the historical perspective, Aerojet stated that they had never gained financially from the resulting contamination. [Ref. 71:p. 5]

2. The Cleanup Picture

The overriding concern in working with high explosive materials, was safety. To avoid fire and explosion, metal parts, equipment and tooling were to be absolutely clean at every step of the production and testing process. For this purpose, TCE and other chlorinated solvents were highly effective degreasers. The "safety chemicals," would not burn at normal temperatures, like other solvents. This significantly reduced any chances of fire or explosion in the testing and production phases of rocket propulsion development. [Ref. 71:p. 7]

In 1979, long after the use of TCE was discontinued, it was discovered in the groundwater under Aerojet's Sacramento plant and various off-site wells. About the same time, TCE contamination was discovered also at nearby McClellan and Mather Air Force Bases and at hundreds of other commercial and Government facilities. Immediately after the contamination was discovered, Aerojet took steps to "prevent any further release of chemicals and to protect its neighbors." [Ref. 71:p. 7]

This occurred prior to the establishment of Superfund. The Government programs of today were not available to provide expert knowledge and direction. Aerojet has made a commitment to fix the problems, becoming a pioneer in groundwater investigation and cleanup, and continues today to serve as a model for all other contractors. A groundwater extraction and treatment system was built to correct the contamination problems. As of the testimony, Aerojet reported that the facility had treated more than 24 billion gallons of water and removed more than 200,000 pounds of chemicals. In June of 1989, a partial consent decree between Aerojet, the EPA and

the State of California was signed. The decree required Aerojet to complete the remedial investigation and feasibility study, continue the operation of the groundwater treatment facility and perform monitoring of offsite wells, but no fault was assigned to any party for illegal or improper activities. [Ref. 71:pp. 8-9]

3. The Cost Picture

As of April 1993, Aerojet reported expending over $ 89 million on environmental cleanup at the Sacramento facility. The Government split between DOD and NASA, has provided about $ 37 million in reimbursements under a negotiated agreement. In addition, Aerojet has received approximately $ 17 million from insurers, crediting $ 7 million back to the Government. Aerojet has and will continue to pursue the recovery of expenditures from insurers and PRPs. Due to the amount of cleanup expenses, Aerojet included environmental response costs in its overhead cost pool for the Sacramento facility. The cost pool was allocated to all Aerojet contracts, both Government and commercial. [Ref. 71:p. 9]

Initially, the contracting officer rejected the costs, using a 1979 California Regional Water Quality Control Board report that stated Aerojet acted improperly in allowing the contamination. In pricing all subsequent contracts, Aerojet reserved the right to include those costs if the allowability issue was decided in its favor. Using the Contract Disputes Act, Aerojet submitted a claim in 1986 for the environmental response costs, which were denied again by the contracting officer. The case was appealed to the ASBCA. Before the ASBCA received the appeal, the Air Force and Aerojet negotiated a settlement, with the Government share set at the previously stated $ 37 million. [Ref. 71:p. 9] The settlement, titled Settlement A, included the fact that the Water Board statements of wrongdoing could not be proven and were dismissed during the final consent decree.

Following the settlements, Aerojet filed additional claims against the Government for the allowance of current environmental cleanup costs in current proposals and rate agreements. Again the costs were denied by the contracting officer and were appealed to United States District Court. Aerojet's position is that the Government's involvement contractually, with direct oversight, make it directly responsibility for a share of all costs, as a PRP under CERCLA. [Ref. 71:p. 11]

The total environmental response costs required under the consent decree are estimated at approximately $ 140 million. This covers only the initial part of the cleanup operations. The final costs will depend upon the results of the RI/FS, regulatory requirements, available technological alternatives and other uncertain factors. Together they will all effect the final cost of the soil and groundwater cleanup operations. [Ref. 71:pp. 12-13]

4. Draft Guidance Comments

Aerojet's comments concerning the proposed environmental cost principle mirrored those of the ABA.

> ...the draft principle proceeds from the false premise that Superfund liability connotes contractor culpability. The draft places the burden on the contractor to reach back in time and prove, to the satisfaction of the contracting officer, that it was acting prudently when the pollution occurred. [Ref. 71:p. 17]

In their opinion the proposed principle would add confusion and delay to the contracting process at every level, forcing contracting officers to become historians, scientists and environmental experts. This would require devoting time and resources that could be applied to actual environmental cleanup.

The DCAA guidance also was of concern to Aerojet, because they believe it calls for contracting officers to make

subjective judgments covering a contractor's prudent business practices in handling chemicals 30 or 40 years ago. The nature, time, governing regulations and other factors could lead to arbitrary decisions. They repeated the need for industry and Government to work together in cleaning the environment, instead of diverting time and resources to programs and policies that will end in costly litigation. [Ref. 71:p. 19]

5. Conclusion

The following were listed as salient points of the contamination that occurred at the Sacramento facility [Ref. 71:pp. 20-21]:

1. Aerojet and the Government are jointly responsible for cleanup.

2. The Government's contractual responsibility depends on the reasonableness of Aerojet's past business practices, when the pollution occurred. In the first case, the Government ultimately entered a partial settlement with Aerojet.

3. Aerojet has aggressively pursued an outstanding environmental response program, without Government participation. The only settlement occurred eleven years after discovery of the groundwater pollution.

4. Aerojet has also aggressively pursued insurance recovery, to reduce the Government liability.

5. Aerojet and Government teams were able to avoid trial on contract claims, reducing the overall total costs by using a negotiation and settlement alternative.

Aerojet provided ideas to help solve the problems, working jointly to remove the guilt and build partnerships to provide for the defense needs of our nation. Aerojet pointed toward the future, noting that if defense contractors are made to carry the full costs of environmental cleanup, it would cause severe financial consequences to the industrial base of the nation. Instead, cooperation between the Government and

defense contractors to an equitable solution of environmental cleanup would reduce the overall costs. For example [Ref. 71:pp. 21-22]:

> 1. Avoid litigation time and expense. Keep with President Clinton's expressed desire to funnel the funds to actual cleanup, instead of lawyers.
>
> 2. The Government's environmental cleanup share must be funded. The industrial base is currently suffering from drastic defense procurement budgets and should not be forced to suffer additional losses. The potential could be devastating to the nation, forcing the loss of vital industries.
>
> 3. The contractors must also continue to meet their cleanup obligations. When a contractor goes out of business, the DOD or another Government agency could be left with the sole responsibility for the cleanup and costs.
>
> 4. This problem can be attacked by partnerships between Government and industry. This would speed the site remediation process, while providing relationships that provide the most cost-effective solution.
>
> 5. The United States has the opportunity to make investments in environmental technology, keeping the industry number one in the world.

C. BOEING COMPANY

On May 20, 1993, Dale Babione, Vice President of Contracts, Defense and Space Group, Boeing Company testified before the Legislation and National Security Subcommittee, Committee on Government Operations, United States House of Representatives concerning the reimbursement of environmental cleanup costs to defense contractors. The statement opened with Boeing's business background and the waste problems in the Queen City and Western Processing disposal sites located outside Seattle, Washington. Boeing used the two commercially operated disposal sites from the 1950s to 1970s. [Ref. 72:p. 1]

During that period, Boeing manufactured commercial aircraft and military hardware, including aircraft, missiles and spacecraft. Since that period Boeing reported a significant learning process in the area of environmental protection, citing a 1991 company statistic, "overall emissions into the environment were reduced by 19 percent." [Ref. 72:p. 1] A summary of key issues and a conclusion of Boeing's position concerning environmental cleanup costs follows.

1. Seattle Waste Disposal Sites

Between the 1950s and 1970s Boeing used two commercial hazardous waste dumpsites - Queen City Farms and Western Processing. Both dump sites were licensed and approved by the responsible environmental agencies during the time that Boeing delivered hazardous waste. At the same time, the dump sites were used for hazardous waste disposal by many other commercial as well as Government customers. Specifically, the Western Processing site was used by the Army, Navy, Air Force, Department of Agriculture and the United States Public Health Service. Also during that period, Boeing built aircraft, missiles, hydrofoils and gas turbine engines for the military, lunar orbiters and modular spacecraft for NASA and other products for other agencies of the Federal Government. [Ref. 72:pp. 3-8]

The Queen City Farms site is located in a rural area, southwest of Seattle and is a family owned corporation. Boeing used the site to dump hazardous wastes from the mid-1950s to 1968. In 1981, an initial EPA site investigation concluded that the facility posed a potential health threat. A complete investigation was then conducted which resulted in placement of the site on the NPL. As part of the CERCLA process, the EPA identified 44 PRPs for the cleanup costs. [Ref. 72:p. 3]

As the largest contributor of waste to the site, Boeing signed a consent decree with Queen City Farms, Washington State Department of Ecology and the EPA. Jointly, the parties conducted surface cleanup actions and the monitoring of drinking water wells. In 1984, no wells showed evidence that the contamination had spread beyond the facility. However, as part of the required monitoring process, a 1987 EPA survey determined that toxic chemicals had migrated offsite and additional studies would be required. Again the original parties, working jointly, determined the following actions necessary:

> ...the construction of a vertical barrier system to isolate contaminated soil; removal, treatment and discharge of contaminated groundwater; excavation, offsite treatment and disposal of contaminated soil; and removal and offsite incineration of oil from groundwater. [Ref. 72:p. 5]

Boeing's statement then turned to the other dumpsite, Western Processing. Located approximately 20 miles south of Seattle, Western Processing was an approved industrial waste processing facility, which during the 1950s and 1960s provided recycling and reclamation for over 300 public and private customers. Boeing used the facility for disposal of hazardous material from 1964 to 1977. In 1983, the EPA closed Western Processing because of potential health risks. The site was listed on the NPL as one of the 50 most contaminated sites in the nation. The 13-acre site, and adjacent creek and groundwater had become contaminated. Immediate emergency cleanup operations were initiated by the EPA and the Washington Department of Ecology. As the largest source of waste, Boeing organized a committee of the PRPs, which planned the cleanup strategy and designed a cost allocating system for all parties. As of 1994, the committee continues to work on the site remediation. [Ref. 57]

The first consent decree, titled Phase I, was signed in 1984 by about 200 parties. It involved the removal of surface waste, tanks and equipment and the construction of a groundwater treatment system to purify the water prior to entry into the public treatment facility. The second part, titled Phase II, decree began in 1987, and involved the:

> ...excavation and disposal of approximately 26,000 tons of contaminated soil; remediation of certain off-property contamination; and extraction and treatment of over 40 million gallons of contaminated groundwater. [Ref. 72:p. 6]

Boeing's cleanup efforts continue today at both sites, and each is estimated to continue for approximately 30 years. The company statement also included a new company focus toward protection of the environment. Their emphasis was stated to be on designing out the requirements or needs for hazardous material and finding alternative chemicals that do not pose harm to the environment. [Ref. 72:pp. 7-8]

2. Environmental Cost Accounting

Boeing reported that it treats environmental cleanup costs as "ordinary business expenses," a necessary business overhead expense in the year the amounts were paid. The costs are allocated to all contracts, commercial and Government, using Boeing's Government approved accounting practices. This resulted in approximately 65 percent of the costs allocated to commercial contracts and the remaining portion allocated to Government contracts. Any reimbursements from PRPs or insurers are then credited to both commercial and Government contracts using the cost allocation percentage. Boeing believes that the costs are normal and necessary, and should be allowable under all contracts, commercial or Government. [Ref. 72:pp. 10-11]

As of 1993, Boeing reported expending approximately $ 100 million for environmental cleanup at the Queen City Farms and

Western Processing sites. Boeing has received approximately $ 11 million from DOD sources and $ 300,000 from other Government agencies. In addition, Boeing reported an additional $ 12 million in expenses at other Superfund sites. Boeing stated that the costs are properly treated as necessary business expenses, pointing out that Superfund regulations clearly state that all parties that used a hazardous waste site may be fully responsible for the cleanup whether or not they committed any wrongdoing. According to Boeing, the liability issue is also clear. Superfund is based on a no-fault system, which emphasizes cleanup actions, not the assignment of blame. [Ref. 72:p. 7]

Boeing then introduced the GAO report covering reimbursements to contractors for environmental cleanup costs and the inclusion of profit to those costs. According to Boeing, environmental cleanup costs are included in all contracts.

> Environmental cleanup costs are simply one of many costs that make up the total cost base of a contract. They are not treated differently than other costs in terms of negotiating profit. Boeing accounts for these costs strictly in accordance with the Federal Acquisition Regulation, Government Cost Accounting Standards and a system of accounting which has been disclosed to and approved by the Government. [Ref. 72:p. 11]

Boeing concluded this section, by noting that in no case would profit increase if the costs of environmental cleanup increased. Boeing makes a profit on its contracts, not from any one specific cost element but on the contract as a whole. [Ref. 72:p. 12]

3. Cost Allowability Regulations

Boeing's position was straight to the point. The current regulations adequately cover all determinations of cost allowability, including the allowability of environmental

cleanup costs. Any new regulations are unnecessary and would only add time, confusion and cost to the contracting process. If the Government believes that new regulations are required, they should be fair and equitable to contractors and Government agencies. In light of the no-fault nature of CERCLA, the draft cost principle would be inconsistent with the Congressional intent covering environmental cleanup. The draft cost principle presumes a contractor is guilty, forcing a contractor to prove the absence of wrongdoing. Boeing believes this would create an administrative nightmare, because every contract and contractor must be individually reviewed for a determination on the allowability of environmental cleanup costs. [Ref. 72:pp. 13-16]

Boeing closed by restating the no-fault message from Congress and their belief that the current FAR adequately covers environmental cleanup costs and our nation's concern should be focused on cleanup efforts, not costly litigation. [Ref. 72:p. 17]

D. FMC CORPORATION

FMC Corporation's formal position covering the allowability of environmental cleanup costs in defense contracts was presented in a claim for equitable adjustment under environmental, health and safety contract clauses. The claim was filed with the ASBCA on July 1, 1993, where it is currently pending. [Ref. 73] To date, FMC has expended approximately $ 35 million on environmental cleanup activities, but the current appeal only covers selected contracts and performance periods. [Ref. 58] The claim was certified by Peter Woglon, Vice President of the Ground Systems Division (GSD), FMC Corporation and is broken down into the following areas: introduction, statement of facts, legal entitlement, pricing methodology, and cost and pricing schedules. [Ref. 74] Key issues associated with the claim,

environmental cleanup problems and a telephone interview with FMC Corporation's Counsel, Donald Conant follow.

1. Introduction

FMC's claim was submitted for a price adjustment on several contracts and totaled approximately $ 5 million. The price adjustments requested were based on the clause which appears in the selected contracts, entitled "Environmental, Health and Safety Requirements."[10] FMC's position stated:

> ...the Environmental Clause provides that although the contract price includes an amount for compliance with existing environmental requirements, changes to environmental requirements occurring after the contract award date that cause an increase in the cost of performance shall be the subject of an equitable adjustment under the changes clause of the contract. [Ref. 74:p. i]

Following award of the subject contracts, the San Francisco Bay Regional Water Quality Control Board issued orders which required FMC to conduct additional environmental work at the GSD facility. This additional work resulted in an increase in the cost of performing those contracts. These environmental orders constitute post award changes that have increased the cost of performance and are subject to an equitable adjustment under the changes clause. [Ref. 74:p. 2]

FMC's claim was submitted for only those costs attributed to environmental agency orders issued after the date of contract award. In all instances:

> ...costs were included beginning on the date FMC gave notice to environmental authorities leading to the agency's order, and ending on July 31, 1992, the cutoff date selected by FMC for costs to be included in the claim. [Ref. 74:p. iv]

---

[10]A copy of the specific Environmental, Health, and Safety Requirements Clause is provided in Appendix H.

The environmental costs incurred prior to notification to proper authorities of the contamination were not included and will not be included in any further actions. However, any expenditure excluded from this claim or future expenditures, subsequently determined as allowable and allocable indirect expenses, will be included in any future claims or included in FMC's final indirect cost submissions for the final pricing of "flexibly priced contracts in the appropriate years." [Ref. 74:p. iv]

2. Statement of Facts

This section of FMC's REA covered the following areas: historical overview, manufacturing processes, contract specifications, waste handling and disposal procedures. The key issues and supporting information from each section follow.

FMC Corporation, formerly known as the "Food Machinery Company," has been conducting business in the San Jose, California area since 1929, when it opened its first location in the center of San Jose. Over the next decades, FMC expanded in response to the expanding Government contract base, resulting in today's GSD of over 170 acres located adjacent to the San Jose International Airport. Until World War II, FMC was primarily engaged in agricultural harvesting and food processing machinery. Once the War began, FMC was awarded a contract to develop an amphibious tracked vehicle or "Amtrac," for the Navy and Marine Corps. [Ref. 74:pp. I1-2]

During the decade after World War II, the facilities grew in close coordination with the Army, which constructed several buildings between 1951 and 1953. These facilities included various items of industrial equipment and machinery used for the designing, fabricating and assembling of armored tracked vehicles under Government contracts. After several years of production use, the buildings were purchased in the late 1950s by FMC. The products produced at those facilities included

the T18, M59 and the manufacture of over 80,000 M113 aluminum-hulled vehicles. Also, during that time frame, one building was used for manufacturing agricultural and fire fighting equipment. [Ref. 74:p. I3]

In the 1960s, FMC's Government operations expanded further into missile programs, manufacturing equipment for the "NIKE," "THOR," "HAWK," and BOMARC." To meet the dramatic increase in Government programs, additional land and facilities were purchased in San Jose. FMC established a Corporate Technology Center to perform research and development exclusively for Government systems. As a result, FMC expanded again into the manufacture of projectiles, shell casings, laminated armor, while maintaining its role as a major supplier of tracked and amphibious vehicles. [Ref. 74:p. I4]

The modern history of FMC includes the production of the M113, Bradley Fighting Vehicle and the LVTP7. However, FMC did acknowledge that:

> ...during this period, FMC also engaged in various commercial ventures at the GSD facility. Logging vehicles and motor coaches were produced by FMC...and the Company continued manufacturing agricultural, cooking and canning equipment...until 1979. [Ref. 74:p. I5]

In addressing the commercial and Government business mix, FMC stated that the eight contracts specified in the claim for equitable adjustment from FY 1968 to 1990, represented approximately 70% of its Government contract work. The FY 1990 Bradley Fighting Vehicle contract comprised approximately 25% of FMC's remaining Government contract work.[11] Each

---

[11] Environmental cleanup costs are excluded from this contract due to a specific provision in the contract, which precludes FMC from charging the first $ 14,516,000 in remediation costs allocable to that contract.

contract requires FMC to supply a specified number of Bradley Fighting Vehicles and M113s, together with additional equipment and support services. Overall, Government contracts were nearly 100% of the business base during that period. [Ref. 74:p. 7]

FMC devoted many pages to the specific manufacturing processes used at the San Jose facilities. These processes included: routing, cleaning, welding, electroplating, painting, and testing. The processes involved the use and disposal of coolants, degreasers and solvents, such as, TCE, trichloroethane, phosphoric acid, chromic acid, zinc phosphate, cadmium, cyanide, fuel oils, gasoline and diesel oil. In relation to the specific processes, FMC provided an example of the Government design specifications that included the use of the chemicals listed above. For example:

> ...the Government's specification for cleaning of ferrous surfaces by solvents (TT-C-490) is included in the drawing for the manufacture of a hook for a hatch cover to be installed on an M113A armored personnel carrier. Degreasing operations are presently required by specifications in current Government contracts. [Ref. 74:p. I9]

The other manufacturing processes used to produce the Bradley Fighting Vehicle and M113 for the Government are specified in the contracts in the same manner described above.

FMC's waste disposal procedures were covered in the next portion of the claim. The procedures mirrored Aerojet's and Boeing's, listed in the proceeding sections. Prior to 1978, FMC used the following waste treatment and disposal methods [Ref. 74:p. I10]:

> 1. All wastewater from rinsing activities was discharged directly to the sanitary sewer, which discharged into the publicly owned Santa Clara and San Jose Waste Treatment Plants.

2. The sludge generated from the electroplating processes, which contained heavy metals, was disposed of at licensed waste disposal facilities.

3. Some sludge and used solvents were disposed of on FMC property at two sites. The first was a five-acre landfill and the second was an unlined bermed surface impoundment.

4. A number of underground storage tanks were used for the storage of petroleum waste oils, gasoline, diesel fuel and waste chemicals.

In 1978, FMC constructed a wastewater treatment facility to process industrial wastes prior to their entry into the sewer system. The plant currently operates under a permit from the Santa Clara/San Jose Water Pollution Control Plant. Also, FMC removed a majority of the underground storage tanks in conjunction with the San Jose Fire Departments' tank removal program. By 1979, FMC discontinued the use of the landfill and surface impoundment areas. Generated hazardous wastes are now maintained in a permitted drum storage area before they are taken for permanent disposal at a licensed treatment and disposal facility. [Ref. 74:p. I11]

The cleanup costs now claimed are a result of investigations initiated by FMC during 1986. These actions are conducted pursuant to requirements imposed by the Regional Water Quality Control Board. Currently FMC is cleaning four sites located at the San Jose facilities. In every case, FMC has submitted a comprehensive environmental assessment report to the Regional Water Quality Control Board, and none of the sites meet the criteria for addition to the NPL and the Superfund program. Therefore, cleanup orders are issued by the State, specifically, the Regional Water Quality Control Board and agreed to by FMC. In addition, FMC has independently designed and submitted the cleanup plans to meet the terms of the cleanup orders issued for each site. [Ref. 75] In short:

> FMC's historical waste handling and disposal practices have been conducted in compliance with all applicable Federal, State and Local laws and regulations. There have been no enforcement proceedings brought by any of the environmental regulatory agencies against FMC with respect to these waste handling and disposal activities. [Ref. 74:p. I11]

3. Legal Entitlement

This section of the claim explained why the costs are related to the "Environmental, Health, and Safety" Clause, and that the costs are allowable, reasonable, and allocable to FMC's Government contract. FMC stated that there has been a change, after contract award, to environmental requirements at the facilities where the contract is performed. In addition, the change to the environmental requirement caused an increase to the cost of performing the contracts. In FMC's opinion, the "Site Cleanup Requirements," meet the requirements of the clause. In that same position, FMC states:

> ...the claim pricing methodology included a careful comparison of the dates of contract awards and Order issuance: all costs allocable to contracts awarded after the issuance of a Board Order have been excluded in their entirety from the claim. Thus, FMC has ensured that this claim includes only costs relating to changes in requirements that occurred after contract award, in accordance with the Environmental Clause. [Ref. 74:pp. II-6]

To prove its environmental cleanup costs are allowable, FMC addresses each of the allowability criteria contained in the FAR and references the October 1992 DCAA Audit Guidance on Environmental Costs [Ref. 35] and the Director of Defense Procurement's letter to Congressman John Conyers dated September 1, 1992 [Ref. 30]. Reasonableness is shown using the widely accepted rule that environmental cleanup costs are necessary costs of doing business. FMC uses the Director of Defense Procurement's letter to Congressman John Conyers in

which she stated that these costs can be considered as normal costs of doing business. FMC also stated that it acted prudently in abiding by environmental laws and regulations in fulfilling its responsibilities to the public at large. [Ref. 74:p. II10]

FMC states that its costs satisfy all the criteria in the DCAA Audit Guidance and that none of the costs are the result of improper business behavior. Pointing out that:

> ...there have been no allegations or proof of any improper conduct by FMC with respect to the chemicals that are being remediated at the GSD Facility. The orders issued by the local Regional Water Quality Control Board contain no findings of improper conduct by FMC with respect to these materials. [Ref. 74:p. II13]

FMC has also aggressively pursued every opportunity for recovering the costs from third parties. Since 1987, FMC has been in litigation with its insurers in an attempt to recover costs under comprehensive general liability policies issued from 1950 to 1985. To date, one case has been ruled upon in FMC's favor, but the final judgment may not come for years due to the appeals available to its insurers. When final decisions are reached in insurance coverage, the Government would be credited its share to the extent the Government has allowed the environmental remediation costs. [Ref. 74:p. II15]

4. Summary

FMC believes that its environmental remediation costs meet the allowability requirements published in the FAR, the DCAA Audit Guidance and are in compliance with CAS. FMC believes in environmental protection and is currently working on converting the M113 armored personnel carrier into a hazardous material emergency response vehicle. [Ref. 76] FMC stated that they have always been proactive in responding to environmental remediation and in 1992, created a Vice President, Environment, to ensure that environmental

protection was a company priority. The total costs to complete FMC's environmental cleanup are estimated at $ 170 million and are expected to continue well into the next century. [Ref. 75]

E. LOCKHEED CORPORATION

On May 20, 1993, Ronald Finkbiner, Vice President of Contracts and Pricing delivered the Lockheed Corporation position covering the allowability of environmental cleanup costs before the Legislative and National Security Subcommittee, Committee on Government Operations and National Security, United States House of Representatives. He began by addressing the existing regulations and DCAA guidance, stating that with some modifications they would provide the basis for protection to all parties and the equitable allocation of environmental cleanup costs. Environmental pollution that resulted from standard business practices and requirements of Governments contracts should be considered a necessary cost of doing business. Key issues associated with the environmental cleanup cost problem and a summary follow. [Ref. 77]

1. Cleanup Costs

Lockheed has been named a PRP at twelve Superfund sites, of which nine are hazardous waste disposal facilities and the remaining three sites are owned and operated by Lockheed. The waste disposal facilities were legally operated commercial enterprises to which Lockheed sent approved hazardous wastes. However, the EPA is now requiring environmental cleanup at those sites. The site requiring a majority of time and expenditure is owned by Lockheed and located in Burbank, California. As of 1993, Lockheed had expended a total $ 5 million for the environmental cleanup at the Superfund sites, excluding Burbank. The future cleanup for the other eleven sites is currently estimated at $ 24 million. In addition, Lockheed has incurred environmental cleanup costs at several

non-Superfund sites, totaling $ 22 million, with an additional $ 71 million estimated to complete the non-Superfund cleanup operations. [Ref. 77:pp. 4-5]

The remainder of his testimony was centered around the Burbank site. The cleanup expenditures totaled more than $ 38 million, with an estimate at completion of $ 263 million. Lockheed emphasized that they have not received any reimbursement to date from DOD or any other Federal Government agency. They have included these costs in their proposed FPRAs. Given the projected mix of commercial and Government contracts, Lockheed has projected the recovery of approximately 50 to 70 percent of the total from the Government. The remaining will be allocated to all commercial customers. [Ref. 77:p. 5]

The following specific points were provided as pertinent to Lockheed's operation at the Burbank, California site [Ref. 77:pp. 7-10]:

1. The site has been used for aircraft research, development and manufacturing for over 60 years, and prior to 1973, about 128 acres were owned by the Government. It was known as Air Force Plant 14.

2. In 1990, due to the anticipated budget cuts, Lockheed management decided to close the facility and move operations to other plants.

3. Government contract specifications required the use of PCE, TCE, and other solvents and petroleum based products. These same products are now contaminating the soil and groundwater.

4. Under direction from the California Regional Water Quality Control Board, the contamination problem was discovered and since the early 1980s Lockheed has been performing groundwater cleanup efforts.

5. In March 1991, Lockheed and two PRPs - Weber Aircraft and the City of Burbank signed a consent decree with the EPA. Lockheed agreed to design and construct a groundwater treatment facility to begin the approved cleanup process of the Burbank site.

2. Federal Regulations

Lockheed provided a position on current cost allowability regulations, the October 1992, DCAA/DCMC environmental cost allowability guidance, and the draft environmental cost principle as follows:

> Lockheed's environmental remediation costs are plainly an allowable type of cost under this standard. Those costs are of a type that is generally recognized as ordinary and necessary for the contractor's business...and are being incurred in part to discharge the corporation's responsibilities with respect to the health and safety of the public at large (FAR 31.201-3(b)(3)). Moreover, the costs relating to groundwater and soil remediation are being incurred pursuant to the direction and under control of Federal and State Environmental authorities. [Ref. 77:pp. 11-12]

In Lockheed's opinion, the DCAA environmental guidance is generally consistent with existing acquisition regulations. However, it appears that costs associated with ordinary mistakes will be classified as unallowable, even though many court cases have ruled that unless the mistakes were obvious or willful, the costs should be allowed. The position included a statement that the guidance represents a step in the right direction, but it is generally imprecise and will be a source of confusion for both contractors and the Government. [Ref. 77:pp. 12-13]

In response to the proposed environmental cost principle, Lockheed noted that it was generally ambiguous and would probably result in an enormous increase in wasteful litigation. This was based on the assigned burden of proof. By placing the burden on the contractor, more effort will be placed on the bureaucratic process than the cleanup process. Lockheed pointed out that the principle conflicts with the no-fault reality of Superfund and the realities facing the industrial base during the downsizing of DOD. [Ref. 77:p. 17]

3. Summary

The industrial base of the United States is required to comply with all environmental laws and regulations. The previous Congressional direction has clearly been focused on correcting the problems and not assigning blame. As for the status of the economy, Lockheed stated that, "our economy cannot afford to make dirt safe to eat." [Ref. 77:p. 20] The existing regulations adequately cover the allowability of environmental cleanup costs. With modifications, the DCAA/DCMC guidance would appear to treat all parties on a fair and equitable basis [Ref. 77:p. 21]. In closing:

> ...Government and industry share responsibility for the creation of these environmental concerns and, if they are to be adequately remedied, we must fairly share the responsibility for the necessary cleanup activity. If, however, the Government develops an environmental cleanup policy which financially weakens the industry partner in the process, the Government will limit its ability to achieve the environmental goals we all desire. [Ref. 77:p. 21]

F. AEROSPACE INDUSTRIES ASSOCIATION

The AIA's "Guiding Principles" include the following statement concerning health and environmental protection:

> ...member companies are committed to...protecting the health and safety of aerospace workers and surrounding communities... and to being conscientious stewards of the environment. [Ref. 78]

The official AIA position on the allowability of environmental cleanup costs in Government contracts was published in 1993, by its president, Mr. Don Fuqua. The position was published due to criticism the aerospace industry was receiving over pollution problems, specifically the perception that industry is responsible for whatever pollution has occurred, and should not recover any of the cleanup costs.

The following specific points were addressed in the statement [Ref. 79]:

1. The statute establishing Superfund is a strict liability statute. Those who create or contribute to waste are responsible for cleanup without regard to fault.

2. Cleanup costs are a necessary cost of doing business and most industries build them into the price of their products.

3. Many of the materials now considered hazardous were considered safe at the time of their disposal. The disposal methods used at the time were considered "best practice" and, in many instances, were approved by the Government.

4. Government contractors should not be singled out by making environmental cleanup costs unallowable. All commercial contractors are free to include these costs in their overhead expense accounts.

The AIA believes that the current regulations covering cost allowability are adequate to address the environmental cleanup issues. "We have managed without a specific cost principle on environmental costs for decades." [Ref. 79] However, they did acknowledge, that if environmental laws (in effect at the time when the pollution was generated) were violated or improper business conduct specifically created a portion of the pollution, that share of the cleanup costs should be unallowable. [Ref. 79]

G. FINANCIAL EXECUTIVES INSTITUTE

The Financial Executives Institute (FEI), Committee on Government Business position was presented to Federal Government leaders on September 2, 1993. FEI also conducted an environmental survey of leading defense contractors and the results were tabulated on March 4, 1994. Key points from FEI's environmental cost allowability position and survey are presented below. [Ref. 80]

It began with a historical overview of CERCLA, Superfund and the waste handling practices of the past that caused the environmental contamination the nation is now facing. Specifically:

> ...decades ago, when most Superfund problems were generated, waste handling and disposal practices were simply not designed to keep parts per billion of TCE out of the groundwater....there were no means of measuring parts per million in those days, and TCE was used in decaffeinating coffee. [Ref. 81:p. 2]

Superfund has also brought about a change to the old idea that "liability should be connected to fault," something that can be avoided or controlled. However, Superfund holds all parties subject to joint and several liability, with any one of the waste contributors held liable for the entire cleanup costs, if others are unable to pay or are no longer in business. In addition:

> ...EPA's Section 106 authority to order immediate cleanup on pain of $ 25,000 per day penalties and treble damages, not challengeable until after the cleanup work is performed and then only on a very hard to meet "arbitrary and capricious" standard. [Ref. 81:p. 3]

The typical PRP is currently portrayed in the media as the "dirty industrial polluter," but we should not forget the farms, residential neighborhoods, drycleaners, auto shops, hospitals and many other entities that have released chemicals into the environment. [Ref. 81:p. 4] Our Institute's concern for the environment and the lead role our member companies have taken to correct the environmental problems, has brought them up against their insurance companies for relief. Most companies hold general liability policies, sold as "comprehensive protection from all manners of risk." [Ref. 81:pp. 4-5] In all cases, our member companies have filed

suit against their insurance carriers, and as of July 1994, every case was being appealed. The legal battle will last for many years, and defense contractors have no choice but to spend the energy and resources to seek recovery. [Ref. 81:p. 6]

FEI concurred with the comments of Aerojet, Boeing and Lockheed concerning the status of cost allowability regulations and the problems associated with the draft cost principle and DCAA environmental audit guidance. They point out:

> ...that it follows the same pattern...by weighting the contracting officer's determination of Superfund cost allowability with complicated, subjective judgements concerning the contractor's "prudence" in handling chemical wastes decades in the past, and is defective in other respects. [Ref. 81:p. 19]

Defense contractors should be allowed to include environmental remediation costs in their indirect pricing until such time as there is a resolution of insurance claims, at which point the Government will be credited any amounts paid as damages. Cost allowability does not mean "full cost recovery," only that the Government must pay its fair share. In closing, the FEI quoted a July 1993 report by the Under Secretary of Defense to the Senate and House Appropriations Committees:

> ...it is important to note that since CERCLA is a no fault statute, a contractor may be financially responsible for an environmental cleanup without ever having done anything wrong. Accordingly each situation must be judged on its own merits, utilizing appropriate FAR cost allowability criteria. [Ref. 81:p. 28]

The survey conducted by FEI was completed by 28 member corporations and covered current environmental activities and

expenditures.[12] The results indicated that all contractors were experiencing expenditures to maintain compliance with current environmental regulations. All contractors were also engaged in activities associated with past waste handling practices associated with either current or previously owned property or as a PRP at other sites. The survey also pointed out that over 60% of the contractors have allocated environmental remediation costs to overhead cost pools that are included in profit calculations. [Ref. 82]

H. NATIONAL SECURITY INDUSTRIAL ASSOCIATION

The NSIA position covering the allowability of defense contractor environmental cleanup costs was made to Congress in December of 1991. NSIA pointed out that:

> In today's environment, these liabilities could be crippling, particularly if the contractors affected are unable to recover the deleted costs due to the reduced business base or inequitable Government treatment of the costs for contract costing purposes. [Ref. 83]

In NSIA's opinion, environmental costs are no different from any other "general management cost reasonably incurred" to comply with applicable laws and regulations, except that environmental costs can be extremely large. [Ref. 83:p. 16] The costs associated with the environmental obligations and liabilities for the defense industry as a whole are expected to total in the billions of dollars. Therefore, unless improper business behavior or wrongdoing was evident, environmental costs should be treated no differently for Government contract costing purposes from any other necessary cost of doing business. [Ref. 83:p. 14]

---

[12]A list of the corporations that participated in the survey is contained in Appendix I.

NSIA feels that current Government regulations covering environmental costs are inadequate and are conducive to disputes and litigation. Due to the large dollar figure attached to environmental cleanup, and the fact that no provision in the FAR directly addresses the allowability of those costs, a cost principle is required. The environmental cost principle should, at a minimum [Ref. 83:p. 17]:

> 1. Make it clear that, generally speaking, environmental costs, including costs to clean up contamination caused by past activities, are ordinary and necessary expenses of doing business and, therefore, allowable contract costs.
>
> 2. Clearly distinguish between unallowable fines and penalties and allowable environmental costs.
>
> 3. Clearly distinguish between unallowable costs associated with legal and other proceedings, and environmental costs required pursuant to judicial decisions or administrative rulings resulting from such proceedings.
>
> 4. Emphasize the importance of equitable treatment for all parties and specifically require the negotiation of advance agreements to ensure such treatment when the usual methods of measuring costs, assigning them to cost accounting periods, and allocating them to cost objectives would produce inequitable results.

In closing their position, NSIA pointed out that the existing statutory and contractual provisions related to environmental cleanup costs and liabilities are inadequate. The acquisition regulations do not address or delineate a clear division of responsibility between the Government and contractors. While contractors must pay for wrongdoing, the Government must also pay its fair share of environmental cleanup. NSIA applauded the Army's recent decision to provide Public Law 85-804 indemnification to its GOCO ammunition plant contractors by stating that:

> ...it strikes a better balance between greater accountability, on the one hand, and Government responsibility for unusually hazardous risks, including pollution prevention and cleanup costs on the other hand. [Ref. 83:p. 17]

In addition to the establishment of a consistent and equitable cost principle covering environmental cleanup and compliance expenses, NSIA believes that the Government should develop a policy of "rewarding contractors for being good environmental citizens." [Ref. 83:p. 18]

I. AMERICAN BAR ASSOCIATION

In August 1992, the ABA Section of Public Contract Law, filed comments with the DAR Council, CAAC and E. R. Spector, Director of Defense Procurement, covering the proposed environmental cost principle. The ABA's position was released prior to the proposal's publication for comment due to the potential adverse legal implications for the public, Government and the contracting community. [Ref. 84] These comments received extensive consideration by the Environmental, Accounting, and Cost and Pricing committees. [Ref. 85]

The ABA believes that the treatment of environmental damage costs as "presumptively unallowable" conflicts with the procurement policy framework found in the FAR covering the determination of cost allowability. The ABA points to the common waste disposal practices of the past, including the contamination caused by all levels of Government agencies. Tying the industry and Government practices together, the ABA states that:

> ...absent any indication of unlawful or improper conduct by the contractor, remediation costs should be recognized as ordinary and necessary business expenses in the pricing of Government contracts. [Ref. 85:p. 2]

To categorize environmental remediation costs as unallowable is inconsistent with the legal bases on which environmental liabilities are imposed. This could undermine important Governmental policies relative to the environment, such as CERCLA. For clarification purposes, CERCLA and its State Government counterpart programs, impose liability on persons or organizations with specified connections to the contaminated site or facility that requires remediation, without regard to fault of any party connected. [Ref. 86]

In a majority of cases, contractors incur cleanup costs under liability statutes that do not permit a defense based on the contractor's business conduct at the time the wastes were discharged. Therefore, since liability is uniformly applied without regard to fault, Government contracting officers should not have to make decisions regarding the proper conduct of contractors. [Ref. 85:p. 14]

The unallowability of cleanup costs would place defense contractors on a different playing field than all other companies and contractors. This includes publicly regulated utilities, where rates often include environmental cleanup and compliance costs. Commercial corporations are free to include environmental remediation costs when establishing the prices of their goods and services. This policy could also have serious implications on defense contractor balance sheets and their ability to obtain future financing. Creditors will recognize the amount of unallowable expenses associated with defense contracts and contractors. [Ref. 85:pp. 14-16]

> It is not feasible or fair for one category of industry to shoulder the entire cost of addressing the effects of activities that benefitted all parties to the contracts when they were performed many years ago. [Ref. 85:pp. 8-9]

The ABA continued by addressing the complexity of the environmental cleanup and compliance issues facing not only defense contractors, but the entire nation. They assert that the proposed environmental cost principle would be impractical to administer. The new rules would put contracting officers and auditors in the unique position of making determinations and decisions of contractor compliance with Federal, State and Local environmental laws, in addition to the applicable industry standards at the time of contamination, without being experts in the field of environmental law and science.

> Such determinations are likely to be unpredictable and arbitrary because they lie outside contracting officers' experience. The Section urges a more objective standard. [Ref. 86:p. 2]

On the subject of PRPs, the ABA points out that the draft cost principle would, by definition, exclude environmental costs that result from the liabilities associated with third parties. The possibility exists that the principle could jeopardize the cost recovery from other private sources, including insurance corporations. This provision is unnecessary since under the credits cost principle of the FAR, the Government would receive the benefit of any insurance recovery for costs it has recognized on Government contracts. [Ref. 85:p. 23]

The position then discussed how the principle would unfairly damage contractors that are required to perform environmental cleanup that was caused by previous owners or occupants of the current site. Costs under the above circumstances should not be subject to the same allowability requirements due to the difficulty associated with obtaining evidence covering the actual creation of the contamination. [Ref. 85:p. 24]

The ABA concluded, by stating that the environmental issues facing the Government should not be addressed by

issuing a separate cost principle. But if the Government believes that a cost principle is necessary, it must include the following points [Ref. 85:pp. 18-19]:

1. Provide a clear and objective test for determining which environmental costs will be considered as unallowable.

2. Enable contracting officers to rely upon the decisions of individuals with the responsibility and expertise in environmental regulations.

3. Make clear that liability under CERCLA and other liability statutes does not constitute a violation of law.

4. Environmental costs should not be classified as unallowable unless they arise from a violation of law. A violation of law can only occur if an unappealable final judicial or administrative order has been entered.

5. When no judgment has been entered, the Government should have the burden of proving improper or inconsistent business conduct by the contractor.

6. A decision concerning a contractor's business conduct should be made in accordance with the standards applicable at the time of the conduct and addressed to the management level responsible for environmental policies and practices.

J. SILICON VALLEY TOXICS COALITION

The Silicon Valley Toxics Coalition (SVTC) is a broad based community coalition formed in 1982, for the development of solutions to groundwater pollution throughout California's Silicon Valley. In presenting its views on the allowability of defense contractor environmental cleanup costs, it is joined by the Silicon Valley Conversion and Job Retention Project, South Bay AFL-CIO Labor Council as well as the Military Toxics Network. [Ref. 87]

The position combines two issues facing many communities today: (1) the environmental contamination from industries and (2) the potential loss of defense related jobs due to the

current military force reductions. The group's position is focused on FMC. [Ref. 87]

FMC produced both military and agricultural equipment at its San Jose facilities for many years and those facilities have created toxic environmental contamination. For example [Ref. 88:pp. 1-2]:

> 1. It operated two unlined disposal areas where the company dumped sludge including lead, waste oils and paint thinners.
>
> 2. The company operated a sludge impoundment site from 1959-1979, where it dumped liquid and sludge from metal finishing, including cyanide, chromium, zinc, aluminum, cadmium, lead, and copper.
>
> 3. Soil was excavated from contaminated sites and actually used as filler material for unpaved areas around the site. This toxic material was then paved over with asphalt without any environmental safeguards or testing.
>
> 4. Several FMC sites are under cleanup orders by the California Regional Quality Control Board. Site investigations showed that FMC had contaminated the soil and groundwater.

The SVTC and the other organizations listed above have provided a unified position covering their major concerns [Ref. 87:pp. 1-2]:

> 1. To ensure that the contaminated sites are cleaned up in a manner that protects the health of all area residents.
>
> 2. To ensure that the public is fully informed and involved in the environmental cleanup decisions at the effected site(s).
>
> 3. That FMC and other defense contractors are attempting to get DOD to pay for the cleanup costs, without proper oversight.
>
> 4. That FMC will close all San Jose facilities after environmental cleanup is completed and the community will suffer from the job loss.

The group believes that this area can be a source of new laws and regulations, using Federal Government leverage to encourage contractors to convert from defense to commercial manufacturing facilities. The group supports allowing partial Government participation in defense contractor environmental cleanup costs, consistent with the following recommended conditions [Ref. 87:pp. 2-3]:

1. The contamination occurred as a result of operations that were conducted by the Federal Government, including DOD.

2. In all other cases, the contractor must develop and implement a plan to convert the current facility into an environmentally compliant defense or commercial production facility.

3. The compliant facility must remain a source of long term, high wage and high technology jobs.

4. That cleanup contractors should give hiring preferences to current or former defense and defense related workers.

K. SACRAMENTO VALLEY TOXICS CAMPAIGN

The Sacramento Valley Toxics Campaign (SACVTC) is also a broad based community coalition. Formed in 1987, the SACVTC mission is to promote the health and quality of life in the Sacramento Valley from toxic chemicals. In presenting its views on the allowability of defense contractor environmental cleanup costs, it focuses specifically on Aerojet General Corporation. [Ref. 89]

Aerojet operated several facilities in the Sacramento area, with sites located directly over groundwater aquifers supplying drinking water to adjacent communities. From 1951 to 1979, Aerojet used as much as 65,000 gallons per month of TCE as a degreaser and washing agent during the design, test and manufacture of solid and liquid fueled rocket motors. The use and disposal of TCE as well as other chemicals has caused

environmental contamination to the Sacramento area. For example [Ref. 89:pp. 1-3]:

1. Used TCE was discarded into unlined dirt trenches.

2. Prior to the current environmental regulations, Aerojet senior officials were aware of the possible contamination caused from the disposal methods used at their facilities.

3. The 1982 NPL listed the Aerojet facility as one of the 10 most threatening sites to public health.

4. Based on a 1989 consent decree between Aerojet, the California Attorney General, the State Water Resources Board and EPA, Aerojet has undertaken extensive cleanup efforts to treat contaminated groundwater.

The SACVTC provided their top concerns in the form of common myths concerning defense contractor environmental cleanup. The myths are provided below [Ref. 89:pp. 6-7]:

1. Use of TCE was required by the military, so the military should pay for the cleanup. The military required the use for cleaning purposes, but never intended it to be dumped into the groundwater.

2. The military owned much of the location during the contamination and therefore should pay for the cleanup. The contractor, not the Government made a profit off the contracts and therefor the contractor should pay for the cleanup.

3. Aerojet used acceptable industry standards at the time of contamination. This area comes down to the subject of knowledge. The coalition stated that; the contractor knew or should have known, being an expert in the field, about environmental contamination.

4. With knowledge of TCE disposal, State and Federal regulators condoned the practices and therefor should share in the environmental cleanup costs. Again the coalition believes that the contractor must be held responsible for its actions, paying for the environmental contamination.

The SACVTC stated the following should be incorporated into the final decision concerning a Federal Government policy covering the allowability of environmental costs [Ref. 89:p. 7]:

> 1. In the general case, no reimbursement of environmental cleanup costs should be authorized.
>
> 2. The DOD and EPA should review every case claiming reimbursement for possible violations of the False Claims Act.
>
> 3. If reimbursements are authorized, GAO should investigate the amount of profit incurred on the cleanup contracts. Profits should not be allowed for the correction of environmental problems.
>
> 4. Defense contractors "should be held to the same standard and not bailed out by taxpayers" for fixing problems that the contractors themselves created.

L. SUMMARY

This chapter has presented a wide variety of views covering the allowability of defense contractor environmental cleanup costs. The material included facts, opinions and differing interpretations of the factors affecting cost allowability. In general, the defense contractors and industry associations agree that environmental cleanup costs are a normal and necessary cost of doing business and therefore should be considered allowable in Government contract pricing. However, there is disagreement in what approach DOD should use in resolving the burden of proof issue in determining environmental wrongdoing and the need for additional acquisition regulations. One area of consistent agreement was found in the no-fault basis of consent decrees and cleanup orders, where the contractors point out that no environmental wrongdoing has been proven.

The chapter closed by presenting the positions of two private associations that represent local citizens, labor

unions and environmental protection groups. Their positions generally support Government intervention and cost sharing to correct the current environmental pollution problems in return for jobs, and the conversion of defense contractors into commercial contractors.

The next chapter will analyze the various positions presented that affect DOD and the Federal Government as they attempt to develop a consistent policy covering the allowability of defense contractor environmental cleanup costs. It will concentrate on positions developed with respect to the existing cost principles, cost accounting standards, draft environmental cost principle, and DOD's interim allowability guidance to develop a proposed cost principle that will consistently treat environmental cleanup costs charged to all Government contracts.

VI. ANALYSIS

A. INTRODUCTION

The previous three chapters were devoted to documenting the positions presented by various organizations in response to the environmental cleanup costs facing DOD, the defense industrial base and to some degree the national economic base. This chapter will analyze the facts, opinions and associated interpretations of the material that each party brings to the allowability and policy equation. The analysis will examine the positions in relation to the following criteria: (1) the current FAR provisions covering cost allowability, and (2) the draft environmental cost principle.

The allowability issue of environmental remediation costs has caused a great deal of interest from every concerned party. In analyzing the positions of each party, the researcher will develop an alternative environmental cost principle that should provide for fair and consistent treatment of environmental cleanup costs.

B. COST ALLOWABILITY

This section will analyze each allowability factor with respect to the information presented by the interested parties. Before beginning the analysis, the researcher must note that environmental cleanup cost allowability has been partially predetermined by DOD's Director of Procurement. As cited in previous chapters, environmental cleanup costs are to be considered allowable when no contractor wrongdoing has taken place and that the costs are in accordance with each of the allowability criteria located in the FAR. Given that determination, the following FAR cost allowability factors will be analyzed in relation to environmental cleanup costs:

1. Reasonableness.

2. Allocability.

3. CAS or GAAP coverage.

4. Terms of the contract.

5. Limitation specified by the cost principles.

1. Reasonableness

Reasonableness can be determined when applying the following set of criteria [Ref. 28]:

1. The amount and nature should not exceed what a prudent business person would incur in the conduct of a business in a competitive market.

2. The contractor bears the burden of proof to show reasonableness.

3. Arm's length business transactions.

4. A responsibility to the customers, employees and the public exists.

The researcher believes that the last item, responsibility to the customers, employees and the public is documented throughout the material. Defense contractors, DOD and Congress have all taken action to cleanup the contaminated sites created by past waste handling and production procedures. Congress enacted Superfund to begin the cleanup process by identifying and correcting the worst environmental contamination problems. Congress also modified RCRA to correct the remaining locations that could not be included on the NPL. In response, State Governments have passed similar laws to implement the Federal mandates and in some instances, they have adopted tougher emission restrictions and cleanup standards.

In response to Congressional and State actions, DOD created the DERP. The DERP's mission is to identify and

correct DOD's past environmental problems and to provide the leadership and direction necessary for DOD to become the Federal environmental leader among all Government agencies. Defense contractors are also involved in Federal and State managed cleanup programs, at both NPL and non-NPL sites. The Federal and State environmental restoration programs include no-fault consent decrees or cleanup requirement orders, which contain remedial actions that were designed and implemented by the responsible parties. For whatever reason that has motivated each source, from financial burden to actual concern for the environment, each participant is currently working toward reclaiming contaminated sites. All participants agree that the contamination created during the nation's industrial expansions must be corrected. However, the question of who should pay and in what percentage remain a hotly contested subject.

The researcher believes that all remaining reasonableness criteria must be applied to individual situations associated with cost and pricing data analysis. Supporting the prudent business person concept is the financial impact facing DOD and contractors, and therefore each situation must be judged on its individual merits. DOD and defense contracts will cleanup thousands of contaminated sites across the country and, in the researcher's opinion, both would have included prevention costs in the original contracts. Today, and in general, the allowability of environmental compliance costs are not in question. These costs are viewed by all parties as normal and necessary costs of doing business, from a legal viewpoint and from an environmental protection viewpoint.

From the information provided in this thesis, the researcher feels that, in general, reasonableness has been established for environmental remediation costs. The two environmental organizations, SVTC and SACVTC would consider these costs reasonable as a last resort and only when attached

to conditional actions. As conditions, they suggest environmental cleanup costs be linked to continual employment, defense conversion programs or removal of the costs from the profit calculation base.

While not agreeing on a specific basis for reasonableness, each has presented a position that would effectively treat the costs as allowable. However, the specific nature and amounts of remediation costs must be determined for each contract and contractor through cost and price analysis or for commercial items, through price competition. For example, it might be reasonable for a company to contract for a water treatment facility to cleanup environmental contamination, but not reasonable for that same company to consistently use overtime during installation, unless the associated health risks are so great that any delay could cause the immediate loss of life.

The nature and amount of the environmental costs must also be questioned in relation to any superior knowledge held by contractors or Government personnel with respect to contamination risks. In every case presented, contractors and the Government were either aware at the time of disposal or became aware later of the possible contamination and health risks posed by the specific hazardous substances. The researcher believes that to make a reasonableness determination on any specific expenses, an expense limiting calculation must be made with respect to the time lag between knowledge of contamination and health risks and the actions taken to first mitigate and remove the problems. When the contamination and health risks became known, actions should have been taken immediately to mitigate that risk and unreasonable delays in corrective actions should result in limitations to what could be considered reasonable.

In the researcher's analysis, the main point a contractor must prove to gain a determination of reasonableness is that

the amounts and nature of the expenses do not exceed what a prudent business person would incur in the conduct of a business in a competitive market. This includes the period between knowledge of the contamination and the initiation of corrective actions; any unreasonable delays would then result in a deduction of the amounts and nature of what a prudent business person would expend. A prudent business person would not wait and allow the problem to increase.

2. Allocability

Allocability can be determined if the environmental remediation costs can be attributed to one or more final or intermediate cost objectives. The FAR also requires that the costs must be charged on a causal or beneficial relationship or another type of equitable cost relationship. Going one step further, costs can also be allocated directly to individual contracts, using specific types of costs and direct relationships. From the material supplied in the three previous chapters, all the positions support a specific relationship between military and commercial business activities and the use of hazardous substances and their subsequent disposal. The requirement facing a contracting officer during cost and price analysis, would be to verify that the contractor's cost allocating system provides the most appropriate and consistent method of allocating environmental costs.

There was no difference of opinion concerning the use of many hazardous chemicals, such as TCE and PCE, for the express purpose of cleaning machines, associated parts and test stands required in the production of military hardware. Several positions cited specific MILSPECS that required the use of such solvents and the Air Force noted this fact as a reason for the initial environmental remediation settlement with Aerojet General Corporation. In the researcher's analysis, the direct relationship between the use of these chemicals and

the hardware ultimately produced and accepted by Government customers meets the FAR requirements for allocability. Chemical use and disposal caused environmental contamination while simultaneously contributing to the completion of specific contract requirements. This ultimately resulted in financial benefits to the corporation and completion of Government missions.

Given the relationship between the work performed, chemicals used and benefits derived by both parties, a variety of allocation methods could be used. The contamination from development, testing and production has been documented throughout the various positions and has accumulated in the following locations:

1. Waste and coolant evaporation ponds.

2. Municipal water treatment facilities.

3. Dumping of wastes into corporate, commercial, or municipal dumpsites.

4. Leaks and spills from storage tanks, pipelines or other company facilities.

5. Runoff from cleaning and spraying operations.

6. A direct result from illegal or improper behavior.

Given the contamination sources and the production processes used by defense contractors, an allocation method can be developed that matches the chemicals used and waste produced to the specific production process. In the researcher's view, this would provide for the most direct allocation of the cleanup expenses and could be used to identify each chemical to the period that it was used. For common use chemicals, a relationship could be developed on a level of contractor operations, square footage, the specific process that creates the most waste or other basis that

relates the disposal of hazardous waste to production and testing sources.

To some degree this allocation method can be found in the site discovery phase of the DERP. Site discovery includes the acknowledgment of past contamination, and after the required notification processes, a complete review is required to determine if any other installation activities could have created additional contamination. If conducted properly, the review should look at all activities that involved the use and disposal of hazardous substances. This should then yield a relationship between activities and specific chemical use. However, because the contamination took place many years ago, the researcher believes that it might be impossible to allocate the cleanup costs to current cost objectives. Therefore, cleanup expenses should be pooled and charged to contracts as General and Administrative (G&A) expenses.

The FAR also mandates that any applicable credits received by the contractor, relating to an allowable cost must be credited to the Government as a cost reduction or cash refund. [Ref. 90] This is directly related to the environmental cleanup equation because every contractor presented in this thesis has pursued possible insurance coverage. While this credit requirement is specifically listed in the FAR, the researcher believes an effective environmental cost principle must restate both the credit requirement and the pursuit of insurance recovery.

3. Cost Accounting Standards

The current Cost Accounting Standards (CAS) do not specifically address environmental cleanup costs. However the following areas are addressed by CAS and the researcher believes these to be of importance when determining the allowability of environmental remediation costs: (1) capitalization, (2) allocation of business unit general and administrative expenses to final cost objectives, and (3)

allocation of direct and indirect expenses. A discussion and analysis of each area follow.

a. Capitalization

In the researcher's opinion, CAS 404 clearly defines that the acquisition cost of a tangible capital asset shall be capitalized in accordance with a reasonable and consistent policy set by the contractor. The property and equipment acquired to mitigate, prevent or remediate environmental contamination, which meets the contractor's capitalization policy should therefore be capitalized. However, CAS 404 states:

> ...costs incurred for repairs and maintenance to a tangible capital asset which either restore the asset to, or maintain it at, its normal or expected service life or production capacity shall be treated as costs of the current period. [Ref. 91]

The researcher believes that the cleanup of environmental contamination could only restore a site to its original value and therefore could not be considered as a betterment. The cleanup cases studied in this thesis have all contained negotiated consent decrees or cleanup orders that mandate the cleanup requirements and procedures, and in the researcher's analysis, these should not be viewed as betterments. They should be viewed as the requirements necessary to return a site to its original condition. This should also extend to sites that were polluted by previous owners or operators. As noted earlier, CAS does not specifically address environmental cleanup costs. However, GAAP as discussed in the EITF Issue No. 90-8 state that, in general, environmental remediation costs should be expended in the period when incurred. The EITF further states that the costs may be capitalized if recoverable but only if any one of the following criteria is met [Ref. 60:p. 2]:

1. The costs must extend the life, increase the capacity, or improve the safety or efficiency of property owned by the company. For purposes of this criterion, the condition of that property after the costs are incurred must be improved as compared with the condition of that property when originally constructed or acquired, if later.

2. The costs mitigate or prevent environmental contamination that has yet to occur and that otherwise may result from future operations or activities. In addition, the costs improve the property compared with its condition when constructed or acquired, if later.

3. The costs are incurred in preparing for sale the property currently held for sale.

Therefore, the decision to capitalize or expense during the current period is an issue that is determined by the definition of betterment. The researcher believes that removing the contamination does increase the value of the property, but the best it can do is to return the site to its original condition, no matter when the contamination occurred. So to remain consistent with the GAAP, DCMC and DCAA interpretations of a betterment to a site, the researcher endorses capitalization for any expenses on tangible capital assets that meet the contractor's capitalization policy. [Ref. 60:p. 1] All other expenses should then be expended during the current period. In addition, the researcher believes that environmental prevention and compliance costs associated with tangible capital assets should also be expended during the current period unless they meet the contractor's policy covering capitalization requirements.

b. General and Administrative Expenses

General and Administrative (G&A) expenses are defined by CAS 410 as:

> Any management, financial, and other expense which is incurred by or allocated to a business unit and which is for general management and administration of the business unit as a whole. G&A expense does

> not include those management expenses whose beneficial or causal relationship to cost objectives can be more directly measured by a base other than a cost input base representing the total activity of a business unit during a cost accounting period. [Ref. 92]

The researcher believes that when applying an allocation method to account for environmental costs, they must be separated into remediation and prevention costs (for this division prevention will include compliance costs). From the positions presented in this thesis, the researcher believes all interested parties would agree that prevention costs should be allocated to cost objectives in proportion to the most beneficial or causal relationship of the total costs to the cost objectives. By relating the costs to current cost objectives, the researcher believes the prevention and compliance costs should be allocated in accordance with CAS 418, unless the contractor's capitalization threshold has been achieved.

The researcher believes that the allocation of past environmental costs to current Government contracts is a different relationship, than the prevention costs associated with current contracts. Prevention costs can be directly associated with current contracts, while cleanup costs relating to contracts that go back as much as 40 years can only be related to the overall operation of the business unit. In several cases, the business units have changed such key items as location, the types of contracts used, commercial and Government business mix, and the actual work performed. Therefore, the researcher believes that remediation costs cannot be related to any current cost objectives through a beneficial or causal relationship and should be allocated using the G&A cost input base. However, if the contractor can prove a more causal or beneficial relationship exists, then costs can be allocated as expenses covered under CAS 418.

c. Allocation of Expenses

As discussed in the previous section, the researcher believes that any DOD environmental cost policy should divide environmental costs into the correction of past contamination and prevention of future occurrences. Prevention costs should either be capitalized or expended in the current accounting period and allocated using a causal or beneficial relationship. CAS 418 states that:

> Pooled costs shall be allocated to cost objectives in reasonable proportion to the beneficial or causal relationship of the pooled costs to cost objectives as follows...a base shall be used which is representative of the activity being managed or supervised. [Ref. 93]

CAS 418 further states that other bases might be reasonable depending upon the type and level of costs. [Ref. 94] The researcher believes that this area of cost allowability and allocability is the most straight forward in the environmental cost problem facing DOD. The positions examined in this thesis do not disagree with the basic allowability and allocability of prevention costs, however, the citizen groups would include a requirement for defense conversion and job creation programs for allowability. The researcher believes that the subjects of job creation and defense conversion should remain with Federal industrial policies established by Congress and the President and the actions of the nation's industrial base.

As noted in the previous section, the researcher believes that environmental remediation costs should be allocated to the G&A expense pool of the business unit responsible for the creation of the contamination. However, an environmental policy should include a provision that allows a contractor to show why another allocation scheme would be appropriate. The contractor must also show how this would

relate to the required written statement of accounting policies and practices.

The researcher believes that, no matter the allocation method or cost pool used for environmental remediation expenses, the overriding issue is the base for Government profit calculation. The researcher believes that the profit policy of DOD is the subject of Congress and the President. Without further direction, profit should be allowed on remediation or prevention costs allocated under CAS 418.

4. Contract Terms

In the researcher's analysis, this area of cost allowability depends on individual contract contents and each party's interpretations of the specific clauses contained in the subject contracts. For existing contracts, a limitation or reopener clause might have been negotiated between the parties to cover the nature and amounts of allowable environmental remediation costs. The clause used in several contracts between FMC and the Government is also an example of specific environmental contract requirements. In brief, the clause provides for changes in environmental laws and regulations after contract execution.[13] The next chapter provides a more detailed analysis of the contract terms associated with FMC's REA due to environmental remediation costs.

5. Cost Principles

Limitations and exclusions of specific cost elements are included in the FAR. These cost principles define three categories of cost: (1) expressly allowable, (2) partially unallowable or that it requires special consideration, and (3) expressly unallowable. [Ref. 26:pp. 139-141] DOD's first attempt to solve the current problem was the formation of a

---

[13]The complete contract clause is provided in Appendix H.

group to study the issues and prepare a new cost principle covering all environmental costs. As referenced in the background material, the group produced a draft environmental cost principle which, to date, has not been incorporated into the FAR.[14] The draft principle will be analyzed later in this chapter.

The environmental cleanup costs resulting from the requirements of CERCLA and State level programs could also require expenditures that apply to many of the cost principles. In the researcher's analysis, environmental costs will also cause expenses governed by the following cost principles: (1) Bad debts, (2) Fines, penalties, and mischarging costs, (3) Insurance and indemnification, and (4) Costs related to legal and other proceedings. An analysis of the relationship between environmental costs and the cost principle follows.

a. Bad Debts

The FAR contains the following cost principle covering bad debts:

> Bad debts, including actual or estimated losses arising from uncollectible accounts receivable due from customers and other claims, and any directly associated costs such as collection costs, and legal costs are unallowable. [Ref. 95]

There may be a difference of opinion between a contractor and a contracting officer on the allowable level and nature of specific costs, but the Government pays its debts. Therefore, bad debts are treated as expressly unallowable. However, environmental remediation costs that are required under CERCLA and various State laws include both joint and several liability statutes. This may cause any

---

[14]Complete text of the draft environmental cost principle is contained in Appendix F.

single contributor to a contaminated site to become legally responsible for all cleanup costs, if the other contributors are no longer in business or otherwise unable to pay. In the researcher's analysis, barring any contractor wrongdoing, the bad debt cost principle would penalize the contractor for costs that were a result of other Federal or State regulations. An alternative cost principle should include a position of allowability for bad debts that result from environmental liability laws.

b. Fines and Penalties

The area of fines and penalties is viewed the same by all the positions presented in the previous chapters. All parties, including the researcher, believe that fines and penalties resulting from violations of Federal, State or Local laws are expressly unallowable. This would also make the contamination resulting from such violations unallowable. The defense contractors and industry associations highlight the no-fault basis of site cleanup requirements, consent decrees, CERCLA regulations and State laws. The process and resulting documentation does not include any finding of guilt nor does it require the payment of fines or penalties.

However, as referenced earlier, both the GAO and defense contractors did report consent decrees that included the payment of administrative fees to California and Washington. While not specifically classified as fines or penalties, this has the appearance of a fine and in the researcher's view the contracting officer should question cost allowability. Therefore, the researcher believes that if such costs are present, this should be a signal to question the nature and amounts of proposed costs. The researcher believes that a consistent environmental policy, will allow each contracting officer the flexibility necessary to disallow specific costs if evidence points to wrongdoing, even if no fault was ever determined.

c. Insurance and Indemnification

The defense contractor statements covering individual company efforts to mitigate their environmental remediation costs all included claims against their insurance carriers. All corporations included in this thesis maintained general corporate liability during the period of environmental contamination. As referenced in the background, several current judicial rulings have set the precedence for environmental remediation expenses. The initial precedence generally includes (subject to the individual facts and circumstances) the following points:

1. Insurers must pay the costs of defending policyholders accused of environmental damage.

2. Lenders and creditors can be held liable for the environmental actions or inactions of the tenants or occupants.

3. Costs incurred to determine potentially responsible parties may be recovered in a successful lawsuit.

4. Plaintiffs cannot recover their legal expenses when they successfully sue potentially responsible parties for environmental contamination.

5. General corporate liability policies do include coverage for the remediation of environmental contamination.

In the researcher's analysis, when insurance corporations are required to pay claims for environmental remediation, this will decrease the current costs allocated to DOD, but this could also lead to a situation that will dramatically increase the future insurance cost structure of defense contractors. Depending upon the insurance industry's share of the remediation costs, liability policy costs could increase to a point of unaffordability or issuance of policies that exclude all future environmental liabilities. This could cause corporations to create self-insurance programs or

request the Government to increase its assumption of risk and indemnification practices.

When the Air Force settled Aerojet's initial claim for environmental remediation costs, one of the key factors that lead to the decision was the inclusion of indemnification clauses in many of the contracts. DOD's use of contractor indemnification has been relatively small in terms of the total procurement budget. Since inception of the indemnification law in 1958 until 1982, DOD has awarded contract adjustments totaling approximately $ 1.4 billion. [Ref. 96:p. 1] The researcher believes that if insurance coverage becomes increasingly more expensive, many corporations will demand that the Government assume more risks which could cause increased use of extraordinary contractual relief provided in Public Law 85-804. For contracts that included an indemnification clause, while not its original intent, DOD shares the environmental cleanup cost now claimed. For claims under indemnification and only after insurance recoveries, DOD should use the final environmental cost allowability policy and adjust the contracts as necessary.

d. Legal Costs

A recent United States Supreme Court decision stipulated that plaintiffs cannot recover their legal expenses when they successfully sue potentially responsible parties for environmental contamination. The Government requires contractors to pursue all possible sources of funding available to share in the remediation process. If the contractor is forced to sue for insurance coverage, the associated legal fees are now not considered as recoverable in the lawsuit. The researcher believes that the subject cost principle could also be interpreted to treat these legal costs as unallowable. The cost principle states:

> Costs incurred in connection with any proceeding brought by a Federal, State, local or foreign Government for violation of, or a failure to comply with, law or regulation by the contractor (including its agents or employees) are unallowable if the result is...Disposition of the matter by consent or compromise if the proceeding could have led to any of the outcomes listed in subparagraphs (b)(1) through (3) of this subsection.... [Ref. 97]

The outcomes mentioned in the previous quotation include criminal conviction, administrative misconduct or the imposition of monetary penalties. Therefore, not only could environmental costs be interpreted as unallowable, but the legal costs necessary to force others to pay could be viewed as unallowable.

As referenced earlier in this thesis, a large portion of the money spent on environmental problems has actually gone to lawyers. The researcher believes that the Supreme Court's decision has set the precedence for both Government and industry to leave the courtroom and devote the money and time to actual environmental cleanup. While motivating cleanup actions is an overriding concern, affordability is also an overriding concern. An environmental cost policy must mandate actions to defray the possible costs allocable to the Government.

Given this need, the researcher believes that, if legal fees are not recoverable from a successful lawsuit, they should follow the current cost principles. No new conditions covering the allowability of legal costs should be added to the FAR.

C. DRAFT ENVIRONMENTAL COST PRINCIPLE

In 1991, DOD established a committee to develop an environmental cost principle. In 1992, the draft principle covering compliance and remediation expenses was approved by the CAAC and DAR Council. It was scheduled for public comment

release, but a Presidential moratorium on the creation of new regulations stalled its issuance. The draft principle has been shelved during the ECAP. In the researcher's view, a cost principle would serve as the quickest, simplest and most effective method to implement a single face to industry covering environmental costs. The following analysis is based on the various cost allowability positions presented in the previous chapters and the text of the draft principle which is located in Appendix F.

The draft environmental cost principle divides cost into two categories: (1) preventing environmental damage, and (2) correcting environmental damage. The researcher did not uncover any position that disagreed with the allowability of prevention expenses contained in the draft principle. The prevention expenses include the requirements for proper use, handling and disposal of hazardous waste and the expenses necessary to comply with Federal, State and local laws and regulations. Before proceeding to the contested issue concerning environmental remediation, the researcher must note that when looking at compliance and prevention costs, we must not forget our nation's environmental history.

We are currently faced with the cleanup of manufacturing wastes from 30 to 40 years ago. To only require the minimum compliance to existing laws would seem appropriate, but could leave our country open for another disaster 30 to 40 years from now. It is believed that the key to solving the current environmental problems while preventing a future recurrence is to provide a policy that rewards contractors for the research and development required to find alternative materials that do not cause harm to the environment.

The researcher also believes that research and development should be directed into alternative technologies that could decrease the cost and schedule of cleanup actions, while increasing the level of performance. However, the

researcher's opinion this direction must be provided by our elected officials.

The next section of the draft principle pertains to correcting environmental damage. It begins by stating that any costs resulting from a liability to a third party are considered unallowable. The researcher believes this to be contrary to the joint and several liability requirements contained in CERCLA. While not all contaminated sites currently fall under CERCLA, placement on the NPL is governed by risk criteria and the assignment of a number. The number or risk rating is the final deciding factor for inclusion into Superfund. Since a level of risk is the determining factor, it would seem prudent to extend in principle the CERCLA liability requirements to all contaminated sites. CERCLA makes all waste contributors liable for contamination and a confirmed contributor or property owner shall not dispute that liability. No determinations of fault are made in the investigation and cleanup process and the contributors shall not base a legal defense on the adherence to the then existing laws and regulations. Therefore, in the researcher's analysis, when this is all mixed together, if you contributed to a contaminated site, you have no legal recourse to avoid liability and could be liable for all remediation expenses.

The next section states that compliance and disposal costs are allowable, unless they are a direct result from a violation of law, regulation, or compliance agreement. The researcher and all the material studied agreed with this section. Costs resulting from violations of law or regulations, go against sound business practices and should be expressly unallowable. The remainder of the principle begins by making all environmental cleanup costs unallowable, except when the contractor can demonstrate specific criteria have been attained to gain allowability. In the researcher's analysis, while the contractor bears the burden of proof in

determining the specific level and nature of allowability, the Government must not begin the process by presuming that remediation costs are generally unallowable.

In the researcher's analysis, by presuming environmental remediation costs as unallowable unless proven otherwise, the draft principle fails to embrace the direction provided by Congress, the President, the Secretary of Defense and even DOD. DOD has identified thousands of its own contaminated sites and created the DERP to remediate these sites. The Government mandates the same actions from contractors, but begins by assuming that the cleanup costs are unallowable. It appears to the researcher that, all concerned want the contamination removed and therefore, all should be held to the same standards and criteria.

When Congress enacted CERCLA and other environmental legislation, liability for contamination was not considered an issue, because all contributors would pay for the remediation. The researcher believes that Congress never envisioned that this liability would be taken by defense contractors and placed back on DOD and the Federal Government. The purpose of the cleanup legislation is to cleanup environmental contamination, not assign fault to the contributors.

Therefore, the researcher believes that DOD must take responsibility for its actions and pay for an equitable share of environmental cleanup. If items are purchased under sealed bid procurement procedures or for items procured under truly competitive markets, the prices of environmental cleanup and compliance are factored into the offered price. In the researcher's analysis the following points must be addressed in an equitable environmental cost principle:

1. Divisions must be made between the costs required to perform remediation, to provide for compliance with existing laws and regulations and costs for the prevention and reduction in the amount of pollution produced.

2. In following with the direction of Congress, the President and the Secretary of Defense, DOD should make all environmental costs allowable, with provisions that then make portions unallowable under specific conditions.

3. The liability issue must be clarified. CERCLA and other State statutes assign strict joint and several liability to all parties concerned, and these requirements do not constitute a violation of law.

4. When a contractor is forced to cleanup contamination from a previous owner, the costs should be allowable if the present contractor did not know of the contamination at the time of purchase and is using all possible methods to force the payment from the other parties.

5. The final decision governing allowability must remain with the contracting officer. The presumption of general allowability does not mean that the contracting officer should not determine the nature and level of allowability subject to the facts and circumstances in every case.

The draft principle appears to set a negative tone toward the allowability of remediation or damage costs. The researcher believes that this presumption of unallowability fails to provide the motivation and leadership necessary to create an atmosphere of teamwork between DOD and contractors. The researcher does not suggest that every cost proposed by contractors should be considered allowable, but that an open mind and careful analysis should be used to determine the nature, extent and level of allowability of environmental remediation costs. Further, the DOD could use incentives to match the cleanup costs with research and development efforts to improve both cleanup and prevention technologies. Not only DOD, but the entire Federal Government could use the current problem to help build the environmental technology sector of the industrial base. The current global market for

environmental goods and services has been estimated at over $ 200 billion and is estimated to grow to over $ 300 billion by the year 2000. [Ref. 98:p. i] The researcher suggests that, DOD should take the lead in building environmental partnerships, which should decrease the cleanup and prevention costs at both contractor and military sites.

D. ALTERNATIVE ENVIRONMENTAL COST PRINCIPLE

In response to the positions and analysis presented in the previous sections, an alternative environmental cost principle is suggested by the researcher. The researcher's version of the principle includes the liability requirements of CERCLA and other environmental regulations. It also includes the researcher's belief that defense contractors did not enter into contracts to cause harm to the environment. The goal of business has and will be to make a profit and the Government did benefit from its past contractual relationships with the contractors now facing environmental cleanup. The researcher believes that a cost principle must not single out defense contractors. The Government can be seen as an equal party to the contamination. As of 1990, the military has confirmed more than 17,000 sites contaminated by pollution that resulted from the same activities performed by defense contractors. The military contamination sources include the following [Ref. 19:pp. 171-188]:

1. Arsenals and Ammunition Plants.
2. Industrial Manufacturing and Maintenance.
3. Depots.
4. Bases, Forts, Camps, Air Stations, Naval Stations, and Shipyards.
5. Proving Grounds and Test Sites.
6. Nuclear Production Facilities.

Can we now hold a defense contractor subject to a cost principle that would presume environmental costs as unallowable, when DOD has created the same contamination and is facing the identical cleanup? The researcher believes that the following cost principle will provide an equitable solution to the environmental costs facing DOD:

31.205-9 Environmental Costs

(a) Environmental costs are those incurred by a contractor for:

(1) The primary purpose of preventing pollution or environmental contamination, properly disposing of hazardous substances and wastes generated or used and not consumed by business operations, complying with environmental laws and regulations required by Federal, State, or Local authorities, or

(2) the remediation of contamination or other damage that has resulted from activities affecting the environment.

(b) Environmental costs in paragraph (a)(1) of this subsection, generated by current operations, are allowable, except those resulting from violation of current laws or regulations.

(c) Environmental costs in paragraph (a)(2) of this subsection, incurred to remedy environmental damage caused by past business practices, or for which it has been administratively or judicially determined to be liable (including where a settlement or consent decree has been issued), are allowable, expect where:

(1) The contractor was not performing under Government contracts at the time the environmental damage was created.

(2) The contractor was not in compliance with then existing laws and regulations. This does not require a

judicial decision of contractor guilt, only a reasonable amount of evidence that the contractor was aware of the contamination and failed to cease the activities associated with the generation of the contamination.

(3) If the operations could not be ceased, the contractor did not promptly act to minimize the damage and costs associated with correcting the activities associated with the generation of the contamination.

(4) The contractor failed to conduct its business in a prudent manner by not exercising the proper degree of care and oversight commensurate with the health risks or potential health risks associated with the materials and processes under its control.

(5) The contractor has failed to diligently pursue or exhaust all available legal and contributory sources (e.g., insurance, responsible parties, or indemnification) to defray the environmental costs. Environmental costs recovered under this section are governed by 31.201-5.

(d) Allowable environmental costs in paragraph (a)(1) will be allocated by the contractor to cost objectives in reasonable proportion to the beneficial or causal relationship of the pooled costs to cost objectives.

(e) Allowable environmental costs in paragraph (a)(2) will generally be allocated to business unit G&A expenses, unless the contractor can show an alternate allocation method would more accurately represent the causal or beneficial relationship of the pooled costs to cost objectives.

(f) Costs attributed to other parties that have resulted from joint and several liability statutes will be allowable, after the contractor has exhausted the requirements contained in paragraph (c)(5).

(g) Costs incurred in legal and quasi-legal proceedings, and fines and penalties resulting from such proceedings, are governed by 31.205-47 and 31.205-15, respectively.

(h) The contracting officer may disallow environmental costs otherwise considered as allowable if he determines that the individual facts and circumstances make such allowability unfair to the Government. That determination must be contained in a contracting officer's final decision and is subject to the Disputes Clause contained in 50.233-1.

(i) Paragraph (c) of this subsection does not apply to costs incurred in satisfying specific contractual requirements to correct environmental damage (e.g., where the Government contracts directly with a contractor for the correction of environmental damage at a facility that it owns).

E. SUMMARY

This chapter has analyzed the allowability of environmental prevention, compliance and cleanup costs. The FAR cost allowability factors and the draft environmental cost principle have been examined with respect to the positions presented by Federal and State Government agencies, DOD, defense contractors, industry associations, and environmental coalitions. The researcher believes the environmental cost allowability issue is focused around risk, knowledge, profit and leadership.

The researcher has suggested an alternative environmental cost principle that should provide for the equitable treatment of all environmental costs. In addition, the researcher believes that DOD should provide an incentive program that will allow it to become the Federal leader in environmental protection. DOD should leverage the environmental industry to decrease costs and shorten the cleanup schedules, while increasing contract performance levels. This should benefit the entire nation and allow the United States to dominate the global environmental industry market.

The next chapter will take the alternative environmental cost principle developed by the researcher and apply it to the

REA submitted by FMC Corporation. The claim covers adjustments under environmental, health, and safety clauses contained in eight contracts between DOD and FMC. The claim was filed with the ASBCA on July 1, 1993, where it is currently pending. [Ref. 73]

VII. APPLICATION

A. INTRODUCTION

The previous chapter presented the researcher's analysis of the environmental cost allowability situation facing DOD and defense contractors. As a product of the analysis, an alternative environmental cost principle was proposed. This chapter will apply that cost principle to FMC Corporation's REA to eight current contracts under environmental, health, and safety clauses. The claim was submitted to the ASBCA on July 1, 1993, after being denied by a contracting officer's final decision. FMC's claim is focused on changes in environmental remediation requirements to its San Jose facilities during the performance of the subject contracts. According to FMC, the changes caused additional environmental remediation work, which resulted in an increase in the cost of performing those contracts. The claim includes all remediation expenses that FMC allocated to the Government from 1986 to 1992. The total claim is approximately $ 5 million and represents only the beginning phases of the environmental cleanup process. Based on the outcome of the ASBCA's decision, future environmental remediation costs will be included in forward pricing rate submissions and contract proposals. [Ref. 74]

This application provides information to help in the analysis of environmental remediation claims and proposals that include environmental expenses. As part of the cost principle application, the researcher developed audit steps and questions to assist in cost and price analysis of environmental remediation expenses. In the researcher's analysis, the material should be used to develop an environmental cost section for the Armed Services Pricing Manual (ASPM).

B. ALTERNATIVE ENVIRONMENTAL COST PRINCIPLE

The alternative cost principle divides environmental costs into prevention and remediation categories.[15] FMC's claim is submitted entirely for remediation expenses allocated as changes to the cost of performance on current contracts. Therefore, the remainder of the application will focus on the remediation portion of the cost principle. There is no question that environmental contamination has occurred at FMC's San Jose, California facilities. This fulfills the first allowability requirement, paragraph (a)(2) of the cost principle. The researcher believes that FMC's past business practices were the industry standards of that period. However, these practices contributed to the environmental contamination. The corporation is currently performing cleanup operations at several locations under administrative cleanup requirement orders. [Ref. 59] In the researcher's analysis, these environmental remediation costs are considered allowable under paragraph (c), unless they fall under the defined exceptions.

The first condition classifies remediation costs relating to the contractor's commercial business units as unallowable. The DPRO and FMC statements agree that FMC's San Jose facilities were used for Government and commercial contract work during the period of environmental contamination. In the researcher's analysis, the existence of Government contracts held by FMC satisfies the cost principle exception. However, the presence of commercial contract work adds an additional analysis step to an allowability decision. A contracting officer must divide the contamination between commercial and Government sources. This should include the listing by

---

[15]The cost principle defines prevention requirements to include all costs necessary to comply with current Federal, State and Local laws and regulations.

contaminated location and the generating process, to ensure the contractor does not allocate commercial environmental remediation expenses to Government contracts. In addition, the presence of commercial work during the same period signals a further review of the following factors:

1. Business mix during the period of contamination.

2. Division of facilities and resources between commercial and Government contracts.

3. The manufacturing and testing processes used on individual contracts.

4. The specific chemicals and materials used on individual contracts.

5. The dumpsites of specific waste products by contract and generation process.

The next two exceptions require only a reasonable amount of evidence that: (1) the contractor was aware of the contamination and not in compliance with the then existing laws and regulations, and (2) once the contractor became aware of the contamination, he did not cease or minimize the generation processes. In the researcher's analysis, the heart of environmental cleanup cost allowability revolves around the contractor's actions or inactions to cease or minimize the contamination. The researcher believes that all organizations, including the Government, have created pollution and therefore, all should share in the cleanup costs. However, an organization which had knowledge of problems and then did nothing to correct the contamination, should bear the full cleanup cost. FMC stopped the dumping of hazardous waste products in 1979 and Congress enacted CERCLA in 1980, but FMC delayed until 1986 to begin cleanup operations. The researcher believes that this delay makes part of the cleanup costs unallowable. To simplify the equation, the dumping took place for about 40 years and the

period between the enactment of CERCLA and the initiation of cleanup was six years. Therefore, the additional expenses caused by six additional years of contaminate migration should be unallowable. In the researcher's analysis, this allowability reduction equates to 15 percent of the total costs when using a linear migration rate. The researcher believes that any presence of delays in the cleanup process signal an in-depth analysis of the following:

1. The processes and time periods that lead to contamination.

2. The time delay between dumping and the beginning of cleanup operations.

3. The specific chemical sources of contamination and when the possible health risks became general industry knowledge.

4. Other possible owners or operators (including periods of operation) that contributed to the contamination.

5. The existence of consent decrees or other administrative orders and any delays involved with the required cleanup actions.

The next allowability condition involves the contractor's policies and practices covering risk management. A contractor must practice the appropriate care and oversight commensurate to potential or actual environmental risks associated with its materials or processes. In the researcher's analysis, FMC used the then accepted industry methods for processing and handling hazardous materials. In addition, FMC has recently created a Vice President position to set corporate priorities and coordinate all environmental protection activities. [Ref. 75] Therefore, the researcher believes this condition would not apply to this claim. However, if analysis points to specific or general management problems, the researcher suggests the following areas of inquiry:

1. The contractor's written procedures and processes for handling material and waste.

2. Determine the standard industry waste disposal practices and compare them to the contractor practices.

3. Look at the general environmental, health and safety policies and procedures that the contractor used during the period of contamination.

4. Review the Government oversight and monitoring activities during the contamination periods. Did Government MILSPECS require specific chemicals and processes that are now suspected to have contributed to the contamination?

The last allowability condition of this paragraph requires the contractor to diligently pursue all legal and contributory sources to defray the environmental remediation costs. The literature has documented FMC's efforts to pursue legal actions against its insurance carriers and other responsible parties. FMC is pursuing five corporations that have contributed to the contamination. This share represents approximately 40 percent of the total environmental expenditures. [Ref. 74] The researcher believes that FMC is pursuing this requirement and the condition has been satisfied. Because the legal process can take years to reach a final decision, if recovery payments are made, they must be tracked by the Government to ensure proper crediting. If this area is questioned during analysis, the researcher suggests the following:

1. Review all corporate insurance policies in effect during the period of contamination for possible coverage.

2. Review all records associated with the land, including owners, tenants, business permits, discharge permits, and actual business operations.

3. Review all Federal, State and Local Government environmental actions and orders involved with the site.

4. Determine the extent that adjacent land could have caused and/or contributed to the contamination. This should include specific chemical contaminates by name and the responsible party.

5. Determine if the Government ever owned the site or the manufacturing facilities and if the Government performed any operations independent of the contractor.

The researcher's cost principle then addresses the contractor's cost allocation methods for prevention and remediation expenses. FMC's claim is presented only for remediation costs incurred after notification to the State of California of its contamination problems. The researcher's cost principle would allocate these remediation expenses to G&A. However, FMC has allocated the expenses directly to eight contracts containing a clause that allows for performance and cost changes with respect to environmental requirements. After adding the remediation expenses to the contracts, FMC burdens that amount with the appropriate year G&A rate and then applies the original contract profit or fee percentage. These applications represent approximately $ 1.2 million of the total $ 5 million now claimed.

In the researcher's analysis, the remediation expenses should be included in G&A expenses, because the costs cannot be related to current contracts. The environmental clause on which the claim is based, allows for changes in environmental requirements during contract performance. However, the researcher does not believe that the cleanup requirement orders constitute a change during the performance period of the current contracts. The contamination began more than 40 years before the current contracts and cannot be related to current business activities. The California Regional Water Quality Control Board agreed with the researcher:

> ...it is clear that the environmental remediation required of FMC Corporation by this Board's orders was to comply with applicable state law and is not "new requirements" as anticipated by contract clause C.19.1. [Ref. 53:p. 2]

Removing the added burden decreases the claim to approximately $ 3.8 million, and depending on the interpretation of the environmental clause, could make all the expenses as presented as unallowable. The researcher believes that using the State of California's interpretation would make all environmental costs unallowable. However, in the researcher's analysis, a decision of total unallowability would represent poor leadership and motivation toward DOD's policy to promote environmental protection.

The cost principle addresses the expenses resulting from the liability statutes covering joint and several liability. FMC is still pursuing those determined by the State of California as responsible and the remaining PRPs to defray the costs and until such action is complete, this section of the cost principle would not be applicable. However, to ensure FMC continues this effort, the Government must track FMC's activities and audit the final amounts collected. The application of this section includes contamination created before the current owner's business activities. If the contractor is unable to collect all the remediation expenses, they can be included in the G&A expense pool. This allowance for bad debts is exclusive to environmental remediation due to the joint and several liability statutes. All expenses falling into this category are required to meet the remaining applicable sections of the cost principle.

The cost principle treats legal costs, fines and penalties in accordance with FAR 31.205-47 and 31.205-15, respectively. While FMC has been cited by the State of California for minor hazardous material violations, no fines or penalties have been imposed or included in the claim. In

the researcher's analysis, any future fines or penalties must be studied to determine the amount of contamination caused by the illegal activity. The costs related to this source of contamination should be classified as unallowable.

The cost principle then addresses the latitude given to contracting officers to exercise sound business judgment and leadership in protecting the rights of the Government. This gives the contracting officer the authority to disallow any environmental costs, using a contracting officer's final decision. The contracting officer must document the facts and circumstances of the situation and include a justification of the unallowability determination. The researcher did not uncover any specific information in the FMC claim that would lead to an unallowable determination under this section of the cost principle.

The final section of the cost principle provides for companies that have contractual relationships with the Government to provide environmental cleanup services. These contractors are working on behalf of the Government to cleanup Government property and are exempted from many of the remediation exceptions. This section does not apply to the current FMC claim.

The researcher's application of the alternative environmental cost principle yielded the following deductions from the total amount claimed by FMC:

1. Placing the remediation costs in the G&A expense pool, removes the application of G&A and profit to the base yielding a deduction of approximately $ 1.2 million.

2. FMC's cleanup delay from CERCLA's passage in 1980 to 1986 removes approximately 15 percent of the remaining charges. This causes a reduction of approximately $ 0.6 million.

In the researcher's analysis, application of the cost principle has reduced the claim to a maximum of $ 3.2 million.

In the researcher's analysis, the remaining amount must be scrutinized to ensure the Government's rights are protected. This application has applied only one of the five required criteria used to determine allocability. The remaining FAR criteria must be applied to the claim to determine an allowable range for negotiation.

C. AUDIT STEPS AND ANALYSIS QUESTIONS

The researcher suggests the following environmental audit steps and analysis questions for incorporation into the ASPM. A tailored list should be included during the cost and price analysis of all contractual arrangements containing environmental remediation expenses.

1. Initial Phase

Review any current environmental cost agreements between the contractor and the Government. Determine the affects of the agreement on the contractor's cost accumulation and allocation methods.

Review the contractor's incurred costs, estimating systems and forward pricing proposals to determine the types and amounts of environmental remediation costs that are claimed or proposed. Does the contractor have an estimate of total environmental cost liability?

Determine all contractor personnel who are responsible for environmental prevention and remediation management. Identify the contractor's systems and the methodology used to apply environmental costs to claims and proposals. Determine the contractor's past and present environmental protection policies and practices. How does the contractor address environmental risk management? Does the contractor actively promote environmental protection, recycling and the elimination of pollution causing materials and processes?

Depending on the materiality of the costs, obtain answers to the following questions:

1. Are environmental prevention and remediation costs separated in the contractor's books and records?

2. Are the costs identified by type and purpose? Are the cost accumulation methods identified?

3. Are the cost allocation methods identified?

4. Are there any other categories of costs relating to the environmental expenses included by the contractor?

5. Is the contractor conducting cleanup operations under consent decrees or other administrative orders? If so, obtain official copies to determine liability requirements, fines or penalties.

6. Has the contractor been named as a PRP at other contaminated sites? If so, obtain official copies of the regulatory decisions to determine possible liability.

7. Are any of the contractor's sites currently vacant or idle?

Determine the contractor's general corporate liability insurance coverage during the period of contamination. Has the contractor filed claims for cost recovery under these policies?

Has the contractor identified any PRPs to its contaminated sites? Was any portion of the contamination caused by the Government or previous owners? Does the contractor have any agreements with other corporations or organizations covering the costs associated with environmental cleanup?

2. Contractual Analysis

Determine the contract types used during the period of contamination. Review the overall business makeup of the contractor and determine the extent of Government involvement and oversight. Determine if the Government ever conducted independent operations or testing at the now contaminated sites. Depending on the materiality of the costs, obtain answers to the following questions:

1. What was the contractor's mix between fixed-price and cost reimbursement contracts?

2. Did any of the contracts include environmental change clauses?

3. Did any of the contracts include indemnification clauses?

4. Did any of the contracts include performance requirements requiring the contractor to violate existing environmental law?

5. Did the Government ever own the land or facilities? Was the site ever a GOCO? If the Government performed independent operations or testing, was the use of hazardous material required and could it have contributed to the contamination?

6. What was the level of Government participation in the contractor's business as a whole during the contamination period?

7. What is the current level of Government involvement with the contractor? Do any current or previous contracts contain specific environmental cost limitations or reopener clauses? Do any contracts contain specific property or maintenance clauses?

8. Is the contractor purchasing another firm or is it being purchased? Are any novation agreements pending?

3. Site Analysis

Determine all business activities that have taken place on the site. Review the history of ownership and all tenants or occupants. Depending on the materiality of the costs, obtain answers to the following questions:

1. Did the current owner or operator contaminate the site? Did the current owner or operator know of the contamination before purchase or lease?

2. Can all the manufacturing processes and periods be identified? Can you identify all the business permits issued? Can you identify all the emission (this includes all air, water and ground emissions) discharge permits?

3. Was the contractor ever cited for non-compliance to the then existing laws and regulations? Was the contractor ever warned or notified of improper behavior? Has the contractor been cited or warned about current non-compliant or illegal activities? (This could be an indication of undocumented past problems.)

4. Is the contractor voluntarily conducting the cleanup operations? Is the contractor working under a consent decree or administrative order? Were any of these requirements negotiated?

5. Have you requested assistance from DOD commands and agencies (e.g., DPRO, DCMC, COE, NAVFAC, or Systems Commands)? Have you requested assistance from the EPA or State Environmental agencies?

4. Funding Source Analysis

Determine all possible sources of funding for the contaminated sites. Review the contractor's actions to reduce the overall cost liability. As in the previous sections, tailor the following questions to the materiality of the situation:

1 Are there other PRPs? Has any regulatory agency determined responsible parties? What is the liability basis? Has the Government been named a PRP?

2. Has the contractor taken steps to pursue funding or assistance from confirmed responsible parties or PRPs? Are any of the parties connected to the consent decrees or administrative orders?

3. Did the contractor maintain liability insurance during the period of contamination? Did the Government contracts contain any mandatory levels of insurance?

4. Is the contractor pursuing insurance coverage to defray the costs? Are any court cases pending?

5. Cost Analysis

To analyze the specific costs proposed by the contractor, the researcher suggests a tailored list from the following questions used to assist in determining allowability:

1. What is the nature of the contamination? What is the extent of the problem?

2. Can specific chemicals be identified? Can the chemicals be traced to specific materials and processes?

3. Can these materials and processes be traced to a specific period of operation?

4. When were the specific chemicals and processes invented and used in industry?

5. Can individual chemical contaminates be connected to specific MILSPECS?

6. Did Government furnished equipment or material contribute to the contamination?

6. Cleanup Analysis

Determine all possible cleanup technologies available to restore the contaminated sites. Review the contractor's actions in designing the cleanup plan and the selection of materials, vendors and contractors. Verify that the contractor acted in a prudent business fashion to reduce the overall cost, schedule and performance liability of the cleanup activities. As in previous sections, tailor the following questions to the materiality of the situation:

1. Is the cleanup being conducted by consultants and independent contractors? Who developed and approved the plan?

2. Does the contractor have the necessary experience and skills in-house to perform the work or evaluate the required actions?

3. Who is evaluating the cleanup proposals? Do the proposals involve materials, highly skilled labor, training, specific equipment, specialized testing methods, or make-or-buy plans?

4. Are learning rates incorporated into cleanup and restoration contracts?

5. Is the contractor using state-of-the-art cleanup technologies? Does the cleanup involve the construction of any facilities?

6. Has your office completed any market research covering environmental cleanup technologies and contractors? If so, can this be used to assist the analysis or help the contractor to identify more efficient and effective solutions?

D. SUMMARY

This chapter has taken the researcher's cost principle and applied it to a current environmental claim pending before the ASBCA. The researcher examined the costs and rationale provided by FMC against the criteria listed in the cost principle. During the process, audit steps and questions for application to other environmental remediation situations were developed. The type and depth of analysis should be tailored to the amount and type of risk facing the Government. In addition, the contracting officer should exercise sound professional judgment during analysis, considering the vulnerability and materiality of each situation.

The researcher's analysis of FMC's claim decreased the allowable amount by over 35 percent of the total originally presented. The other allowability factors still must be applied to fully analyze the claim. This will allow the contracting officer to develop a cost or price range that can be used to negotiate a settlement of the claim. The researcher's cost principle and analysis questions will assist in the determination of an allowable cost and/or price range.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

The objective of this thesis was to determine the policies and contracting principles that DOD should establish to determine the cost allowability of defense contractor environmental cleanup costs. To explore the subject, the researcher reviewed environmental laws, regulations, judicial decisions, current cost allowability criteria, and DOD's initial environmental cost allowability guidance. The researcher presented the positions of key organizations trying to shape the environmental cost allowability policy. The researcher analyzed the various positions and presented an alternative environmental cost principle. This cost principle was then applied to a current environmental claim. Conclusions and recommendations that were derived through the development and application of the researcher's cost principle follow.

B. CONCLUSIONS

1. There is no current acquisition regulation or procurement policy covering defense contractor environmental cleanup costs.

DOD's current policies and practices do not ensure consistent treatment of contractor claims for adjustment of proposals containing environmental remediation expenses. During the next several decades, billions of dollars will be devoted to environmental remediation, compliance and pollution prevention programs by both DOD and defense contractors. This thesis has developed an alternative environmental cost principle, which explains the responsibilities of each party in determining environmental cost allowability.

2. Defense contractor environmental cleanup costs are generally allowable as ordinary and necessary costs of doing business.

Environmental remediation costs are currently being incurred by both Government agencies and defense contractors in response to past waste handling and disposal practices. Treating these costs as presumably unallowable would place defense contractors on a different playing field than commercial companies, who are free to include remediation expenses in their cost structure. However, the nature and amount of allowable environmental remediation costs are subject to the prudent business person concept and the latitude given to a contracting officer in rendering a final decision.

3. All contaminated sites should be judged by the liability standards contained in CERCLA. The provisions of CERCLA mandate joint and several liability on all participants in the waste stream.

The Act also includes a no-fault based liability. Compliance to the then existing environmental laws and regulations do not relieve any party from remediation expenses. All contaminated sites do not fall under the requirements of CERCLA. Placement into the EPA program is controlled by a measured level of health and environmental hazards. Just because a site is below the risk cutoff level, it should not be removed from the cleanup and liability requirements of CERCLA.

4. Environmental restoration costs that have resulted from intentional violations of law are unallowable.

All parties in the environmental restoration picture agree on this point. Costs from violations of law or regulations are never allowable on Government contracts. However, the issue could be further complicated by performance provisions listed in Government contracts. The very nature of

the requirements could involve a violation of law if the contractor does not follow all necessary steps to avoid emitting pollution. This issue is also complicated by accidents and equipment failures that cause pollution, which could be considered intentional if training or maintenance was delayed or inadequate.

5. Both DOD and defense contractors must diligently pursue all available legal and contributory sources to defray environmental remediation expenses.

DOD and defense contractors collectively face over $ 30 billion in environmental restoration expenses over the next several decades. Both sides of the issue agree. Every effort must be made to defray the remediation costs. The acquisition workforce must ensure the Government's rights are protected when spending public funds.

C. RECOMMENDATIONS

1. Incorporate the alternative cost principle presented in this thesis into the Federal Acquisition Regulation.

Adopting the researcher's cost principle would provide a single consistent policy covering environmental costs. In the researcher's analysis, the proposed cost principle provides for the equitable treatment of all environmental costs. Applying the cost principle and audit program would allow DOD to regain a "single face" to industry on environmental costs and become the Federal leader in environmental protection.

2. Incorporate the audit steps and analysis questions developed in this thesis into the Armed Services Pricing Manual.

The audit steps and questions developed by the researcher will assist the acquisition workforce in determining the allowability of both environmental protection and remediation costs. The researcher's suggested program also provides a flexible analysis program, allowing a tailored approach to

determine the length and depth of analysis required to match the materiality of the situation. In addition, each contracting activity should develop its own internal audit procedures and guidelines according to the products and services it buys.

3. Develop a DOD contractor incentive program to increase capital investment in environmental protection.

While adherence to current environmental laws and regulations is required, the researcher recommends that an incentive program be developed to encourage investment in the processes and equipment required to reduce the total amount of pollution generated. The program should also include the research, development, testing and evaluation necessary to develop environmental friendly materials and alternative products. This could be constructed as: (1) a weighted factor for use during proposal evaluation, (2) a weighting factor that would allow for additional profits, or (3) a cost sharing program to encourage private investment in environmental technologies that could benefit both DOD and the entire industrial base.

4. Development an environmental awareness training program for the acquisition workforce.

To correctly implement an environmental cost principle and audit program for consistent application across DOD acquisition and contracting activities, environmental awareness must be elevated to a daily work ethic. The acquisition and contracting workforce must be trained in the following areas: (1) environmental regulations and the effects to both the Government and contractor business activities, (2) the legal responsibilities and liability requirements imposed by the environmental regulations, (3) an understanding of the environmental cost principle, (4) how to apply the environmental cleanup cost audit program, (5) the need to review requirements and specifications for possible

environmentally friendly alternatives, and (6) how and where to request expert help in case of problems.

D. ANSWERS TO RESEARCH QUESTIONS

The following are a reiteration of the primary and subsidiary research questions. Their answers are based on the analysis and applications drawn from this thesis.

1. Primary Question

What policies and contracting principles should DOD establish to determine the cost allowability covering defense contractor environmental cleanup costs?

The researcher believes DOD must develop a single consistent policy addressing environmental costs. In the researcher's analysis, the creation of an environmental cost principle would be the proper method to address and determine cost allowability.

2. Subsidiary Questions

What are the factors affecting the cost allowability of defense contractor environmental cleanup costs?

The researcher determined that the following factors affect defense contractor environmental cleanup cost allowability: (1) performance on Government contracts during the period when the contamination was generated, (2) violations of the then existing laws and regulations, (3) failure to conduct business in a prudent manner, (4) failure to address the contamination problems promptly after the health risks became known, (5) failure to begin cleanup operations promptly after the enactment of CERCLA, (6) failure to diligently pursue or exhaust all available legal and contributory sources, (7) the costs should be allocated to G&A expenses, unless the contractor can prove a more causal and beneficial relationship, and (8) the final factor remains with the contracting officer's determination of a fair and reasonable price.

What order of liability precedence should be established in addressing environmental cleanup costs?

The researcher believes that the proposed environmental cost principle addresses the liability precedence issue. The contractor must first diligently pursue or exhaust all available legal and contributory sources (e.g., insurance, responsible parties, or indemnification) prior to any contribution from DOD.

What types of contracting methods and proposal analysis would prove the most advantageous to DOD, in carrying out environmental cleanup at defense contractor facilities?

In the researcher's analysis, environmental cleanup costs only represent one element of a proposal or REA and should be treated in the same manner as any other proposed cost element. Therefore, the researcher believes the contract type and method should match the risks and goals of the acquisition plan and individual procurement situation. The contracting officer must determine the required amount of cost and price analysis necessary to validate the proposals. To assist in the cost and price analysis, the researcher has proposed an audit procedure that includes suggested questions.

E. AREAS FOR FURTHER RESEARCH

During the course of this thesis, other areas which appeared to merit additional study were identified. Addressing these were beyond the scope of this thesis; they are presented for consideration and potential future research.

1. Environmental Cost Analysis

After DOD develops and implements an official environmental cost principle or allowability policy, the effects on the acquisition workforce and industrial base should be determined. The research should explore one agency or industry to gain a complete picture of the effects on workload, training and financial conditions.

2. Indemnification of Contractors

During the development of this thesis, the researcher reviewed DOD's use of Public Law 85-804 to indemnify contractors. During settlements of environmental restoration claims, research should determine the amount and reasons behind the Government indemnification of contractors.

3. Environmental Awareness

The researcher believes that further work should be conducted to determine the following: (1) the extent of cultural changes occurring within DOD associated with environmental protection, (2) the extent that environmentally friendly alternatives are introduced into DOD, (3) the increase or decrease in DOD operating costs as a result of environmental protection, and (4) any problems in completing military roles and missions caused by environmental protection regulations.

4. Ten Years into the Future

The largest changes to United States environmental policies have occurred within the past ten to fifteen years. The researcher believes that if the environmental protection movement continues, regulations will continue to become more stringent and complex. At the same time, a new sector of the economy must develop to produce the technology required to achieve and maintain the increased environmental protection requirements. Ten years from now, a thesis could evaluate the affect of environmental costs on DOD's ability to complete its national security mission, the industries hurt by the regulations and the industries created to maintain the regulated level of compliance.

APPENDIX A. LIST OF ACRONYMS

ABA	American Bar Association
ACO	Administrative Contracting Officer
AIA	Aerospace Industries Association
ASBCA	Armed Services Board of Contract Appeals
ASPM	Armed Services Pricing Manual
BRAC	Base Realignment and Closure
C^3P^2	Environmental Cleanup, Compliance, Conservation and Pollution Prevention
CAA	Clean Air Act
CAAC	Civilian Agency Acquisition Council
CACO	Corporate Administrative Contracting Officer
CAS	Cost Accounting Standards
CAL/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CO	Commanding Officer
COE	United States Army Corps of Engineers
CWA	Clean Water Act
DAB	Defense Acquisition Board
DAR Council	Defense Acquisition Regulatory Council
DCAA	Defense Contract Audit Agency
DCMC	Defense Contract Management Command
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DESC	Defense Environmental Security Council
DLA	Defense Logistics Agency
DLSIE	Defense Logistics Studies Information Exchange
DOD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
DPRO	Defense Plant Representative Office
DRMS	Defense Reutilization and Marketing Service
DTIC	Defense Technical Information Center
DTSC	California Department of Toxic Substances
ECAP	Environmental Cost Allowability Pilot Program
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
EPCRA	Energy Planning & Community Right-to-Know Act
ETIF	Emerging Issues Task Force
FAR	Federal Acquisition Regulation
FEI	Financial Executives Institute
FFP	Firm-Fixed-Price
FPRA	Forward Pricing Rate Agreement
FS	Feasibility Study
FY	Fiscal Year

FWPCA	Federal Water Pollution Control Act
G&A	General and Administrative
GAO	General Accounting Office
GAAP	Generally Accepted Accounting Principles
GOCO	Government-Owned/Contractor-Operated
GSD	FMC Corporation's Ground Systems Division
HMPP	Hazardous Material Pollution Prevention
IA	Interagency Agreements
IRP	Installation Restoration Program
LTM	Long Term Monitoring
MILSPECS	Military Specifications
MTCA	Model Toxics Control Act
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NRC	National Response Center
NAVFAC	Naval Facilities Engineering Command
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NPDESP	National Pollution Discharge Elimination Standards Program
NPL	National Priorities List
NSIA	National Security Industrial Association
OMB	Office of Management and Budget
PA	Preliminary Assessment
PCBs	Polyclorinated Biphenlys
PCE	Perchloroethylene
PPA	Pollution Prevention Act
PRP	Potentially Responsible Party
RCRA	Resource Conversation and Recovery Act
REA	Request for Equitable Adjustment
RI	Remedial Investigation
ROD	Record of Decision
RRA	Resource Recovery Act
SACVTC	Sacramento Valley Toxics Campaign
SCR	Site Cleanup Requirements
SDWA	Safe Drinking Water Act
SI	Site Inspection
SUPERFUND	Hazardous Substance Response Trust Fund
SVTC	Silicon Valley Toxics Coalition
SWDA	Solid Waste Disposal Act
SWRCB	State Water Resources Control Board
TCE	Trichloroethylene
TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
WDOE	Washington State, Department of Ecology

APPENDIX B. GLOSSARY

Cleanup - As classified by DOD, the correction of past environmental practices or remedial actions now necessary to remove the contamination or pollution.

Compliance - As classified by DOD, all actions necessary to ensure that all environmental laws, regulations and permits are followed.

Conservation - The wise management, consumption, use and recycling natural resources to provide for the best public interest and increased productivity for both present and future generations.

Corrosivity - Wastes that are acidic and those that are capable of corroding metal containers, such as tanks, drums and barrels.

Environmental Impact Statement - A detailed statement, required by NEPA, which identifies and analyzes in detail the environmental impacts of a proposed action.

Exposure - Actual subjection to a hazardous chemical.

Groundwater - A body of water which exists in porous geological formations (aquifer) and which flows in response to gravity.

Ignitability - Wastes that can create fires under certain conditions. Examples include liquids, such as solvents that readily catch fire and friction-sensitive substances.

National Priorities List - CERCLA of 1980 required the EPA to identify at least 400 sites for inclusion in the Superfund program. The hazardous ranking system is used to evaluate all proposed sites for inclusion of the National Priorities List.

Non-point Source Pollution - Pollution that cannot be readily identified to a specific source or generator.

PCBs - A group of organic compounds used in the manufacture of plastics, they are extremely toxic to aquatic life and are biologically cumulative.

PCE - A solvent used in the cleaning and degreasing of metal parts, it also has a relatively high ignition point.

Point Source Pollution - Pollution that can be readily identified to a specific source or generator.

Radioactive Material - Any material that spontaneously emits ionizing radiation and having a specific activity greater than 0.002 microcurie per gram.

Reactivity - Wastes that are unstable under normal conditions. They can create explosions and/or toxic fumes, gases and vapors when mixed with water.

Recycled Material - The use of discarded materials and objects in original or a changed form instead of their disposal as waste. Returning materials back to the process by which they were originally produced.

Reproductive Toxin - Substances that affect either male or female reproductive systems and may impair the ability to have children.

Risk - The probability of exposure, coupled with the nature of the consequences. In environmental terms, it is the potential for financial loss, property damage and personal injury.

Site - The property on which a facility was or is located.

Source Reduction - A process that reduces the amount of pollution entering the waste recycling and disposal system.

TCE - A solvent used in the cleaning and degreasing of metal parts, it also has a relatively high ignition point.

Toxic - Capable of producing injury, illness or damage to humans or other organisms through contact to any body surface.

Toxicity - Wastes containing one or more of 39 specific compounds at levels that exceed established safety limits. This can cause detrimental human health effects, especially when these wastes contaminate ground water.

APPENDIX C. TOP 20 DOD NPL SITES

[Ref. 15:p. 240]

Site Name	Location
Milan Army Ammunition Plant	Milan, TN.
Rocky Mountain Arsenal	Adams, CO.
McClellan Air Force Base	Sacramento, CA.
Weldon Sprig Quarry (DOE/Army)	St. Charles, MO.
Robins Air Force Base	Houston, GA.
Cornhusker Army Ammunition Plant	Hall, NE.
Naval Air Engineering Center	Lakehurst, NJ.
Hill Air Force Base	Ogden, UT.
Ogden Defense Depot	Ogden, UT.
Sacramento Army Depot	Sacramento, CA.
Brunswick Naval Air Station	Brunswick, ME.
Sharpe Army Depot	Lathrop, CA.
Norton Air Force Base	San Bernardino, CA.
Castle Air Force Base	Merced, CA.
Fort Dix	Pemberton, NJ.
Alabama Army Ammunition Plant	Childersburg, VA.
Letterkenny Army Depot	Chambersburg, PA.
Griffiss Air Force Base	Rome, NY.
Defense General Supply Center	Richmond, VA.
Fort Lewis	Tacoma, WA.

APPENDIX D. ENVIRONMENTAL LAWS

[Ref. 99:pp. 299-301]

Acid Precipitation Act
Act to Prevent Pollution from Ships
Archeological and Historical Preservation Act
Archeological Resources Protection Act
Asbestos Hazard Emergency Response Act
Atomic Energy Act
Bald Eagle Protection Act
Coastal Barrier Resources Act
Coastal Zone Management Act
Consumer Products Safety Act
Dangerous Cargo Act
Deep Seabed Hard Mineral Resources Act
Deepwater Ports Act
Endangered Species Act
Environmental Quality Improvement Act
Federal Disaster Relief Act
Federal Environmental Pesticide Control Act
Federal Facilities Compliance Act
Federal Food, Drug and Cosmetic Act
Federal Hazardous Substance Act
Federal Insecticide, Fungicide and Rodenticide Act
Federal Land Planning and Management Act
Federal Mine Safety and Health Act
Federal Power Act
Federal Railroad Safety Act
Federal Water Pollution Control Act
Forest and Rangeland Renewable Resources Planning Act
Fish and Wildlife Coordination Act
Fishery Conservation and Management Act
Global Climate Protection Act
Lead-Based Paint Poisoning Prevention Act
Low Level Radioactive Waste Policy
Marine Mammal Protection Act
Marine Protection, Research and Sanctuaries Act
Medical Waste Tracking Act
Migratory Bird Conservation Act
Mineral Lands Leasing Act
Mineral Leasing Act for Acquired Lands
Multiple Use-Sustained Yield Act (Forest)
National Forest Management Act
Nuclear Waste Policy Act
National Forest Management Act
National Parks and Recreation Act
National Wildlife Refuge System Administration Act
Noise Control Act
Occupational Safety and Health Act

Oil Pollution Act
Outer Continental Shelf Lands Act
Pipeline Safety Act
Poison Prevention Packaging Act
Ports and Waterways Safety Act
Power Plant Industrial Fuel Use Act
Public Vessel Medical Waste Anti-Dumping Act
Refuse Act
Radon Gas and Indoor Air Quality research Act
Rivers and Harbors Act
Soil and Water Conservation Act
Soil Conservation and Domestic Allotment Act
Submerged Lands Act
Surface Mining Control and Reclamation Act
Taylor Grazing Act
Trans-Alaska Pipeline Act
Uranium Mill Tailings Radiation Control Act
Water Quality Act
Wild and Scenic Act
Wild Free-Roaming Horses and Burro Act
Wilderness Act

APPENDIX E. TOP 50 NON-FEDERAL NPL SITES

[Ref. 15:pp. 222-224]

Rank	Site Name	Location
1	Lipari Landfill	Pitman, NJ.
2	Tybouts Corner Landfill	New Castle, DE.
3	Bruin Lagoon	Bruin, PA.
4	Helen Kramer Landfill	Mantua, NJ.
5	Industria-Plex	Woburn, MA.
6	Price Landfill	Pleasantville, NJ.
7	Pollution Abatement Services	Oswego, NY.
8	Labounty Site	Charles City, IA.
9	Army Creek Landfill	New Castle, DE.
10	CPS/Madison Industries	Old Bridge, NJ.
11	Nyanza Chemical Waste Dump	Ashland, MA.
12	GEMS Landfill	Gloucester, NJ.
13	Berlin & Farro	Swartz Creek, MI.
14	Baird & McGuire	Holbrook, MA.
15	Lone Pine Landfill	Freehold, NJ.
16	Somersworth Sanitary	Somersworth, NH.
17	FMC Corporation	Fridley, MN.
18	Vertac Incorporated	Jacksonville, AR.
19	Keefe Environmental Svcs	Epping, NH.
20	Silver Bow Creek	Silver Bow Creek, MT.
21	Whitewood Creek	Whitewood, SD.
22	French Limited	Crosby, TX.
23	Sylvester	Nashua, NH.
24	Liquid Disposal	Utica, MI.
25	Tysons Dump	Upper Merion, PA.
26	McAdoo Associated	McAdoo, PA.
27	Motco Incorporated	La Marque, PA.
28	Arcanum Iron & Metal	Darke, OH.
29	East Helena Site	East Helena, MT.
30	Sikes Disposal Pits	Crosby, TX.
31	Trina/Tennessee River	Morgan, AL.
32	Stringfellow	Glen Avon Heights, CA.
33	McKin Company	Gray, ME.
34	Crystal Chemical Company	Houston, TX.
35	Bridgeport Rental & Oil	Bridgeport, NJ.
36	Sand Creek Industrial	Commerce, CO.
37	Geneva Ind./Fuhrmann Energy	Houston, TX.
38	W. R. Grace & Company	Acton, MA.
39	New Brighton/Arden Hills	New Brighton, MN.
40	Skhuylkill Metals	Plant City, FL.

Rank	Site Name	Location
41	Vineland Chemical Company	Vineland, NJ.
42	Burnt Fly Bog	Marlboro, NJ.
43	Reilly Tar	St. Louis Park, MN.
44	Old Bethpage Landfill	Oyster Bay, NY.
45	Reeves SE Galvanizing	Tampa, FL.
46	Shieldsalloy	Newfield, NJ.
47	Aanconda Company	Anaconda, MT.
48	Western Processing	Kent, WA.
49	Omega Hills North	Germantown, WI.
50	American Creosote	Pensacola, FL.

APPENDIX F. TEXT OF ENVIRONMENTAL COST PRINCIPLE

DAR CASE 91-056

31.205-9 Environmental Costs

(a) Environmental Costs

(1) Are those costs incurred by a contractor for:

(i) The primary purpose of preventing environmental damage; properly disposing of waste generated by business operations; complying with environmental laws and regulations imposed by Federal, State, or Local authorities; or

(ii) Correcting environmental damage.

(2) Do not include any costs resulting from a liability to a third party.

(b) Environmental Costs in paragraph (a)(1)(i) of this subsection, generated by current operations, are allowable, except those resulting from violation of law, regulation, or compliance agreements.

(c) Environmental costs in paragraph (a)(1)(ii) of this subsection, incurred by the contractor to correct damage caused by its activity or inactivity, or for which it has been administratively or judicially determined to be liable (including where a settlement or consent decree has been issued), are unallowable, except when the contractor demonstrates that it:

(1) Was performing a Government contract at the time the conditions requiring correction were created and performance of that contract contributed to the creation of the conditions requiring correction;

(2) Was conducting its business prudently at the time the conditions requiring correction were created, in accordance with then-accepted relevant standard industry practices, and in compliance with all then-existing

environmental laws, regulations, permits, and compliance agreements;

(3) Acted promptly to minimize the damage and costs associated with correcting it; and

(4) Has exhausted or is diligently pursuing all available legal and contributory (e.g., insurance or indemnification) sources to defray the environmental costs.

(d) In cases where the current contractor is required to correct environmental damage which was caused by the activity or inactivity of a previous owner, user, or other lawful occupant of an affected property, the resulting environmental costs are unallowable, except when the current contractor demonstrates that:

(1) The previous owner, user, or other lawful occupant's actions satisfy the criteria in paragraphs (c)(1) through (3) of this subsection, and

(2) The current contractor has complied with paragraphs (c)(3) and (c)(4) of this subsection during the period that it has owned, used, or occupied the property.

(e) Paragraphs (c) and (d) of this subsection do not apply to costs incurred in satisfying specific contractual requirements to correct environmental damage (e.g., where the Government contracts directly for the correction of environmental damage at a facility which it owns).

(f) Increased environmental costs resulting from the contractor's failure to obtain all insurance coverage specified in Government contracts are unallowable.

(g) Costs incurred in legal and other proceedings, and fines and penalties resulting from such proceedings, are governed by 31.205-47 and 31.205-15, respectively.

APPENDIX G. TRACE CONCENTRATIONS

[Ref. 99:p. 133]

1 Part per Million	1 Part per Billion
Length:	
1 inch/16 miles	1 inch/16 thousand miles
Weight:	
1 ounce/31 tons of french fries	1 pinch of salt/10 tons of french fires
Volume:	
1 drop vermouth/ 80 firths of gin	1 drop vermouth/ 500 barrels of gin
Area:	
1 square foot/23 acres	1 square foot/35 square miles
Rate:	
1 accident/10 car lifetimes	1 accident/10,000 car lifetimes
Time:	
1 minute/2 years	1 second/32 years

APPENDIX H. ENVIRONMENTAL, HEALTH, AND SAFETY CLAUSE

[Ref. 74]

C.19.1 Except as may be otherwise provided in this Contract, the Contract price includes an amount for Contractor compliance with all applicable Federal, State, and Local Environmental, Health, and Safety laws, rules, regulations, guidelines, standards, limitations, conditions, orders, controls, prohibitions, or other requirements (all of which are hereinafter referred to as requirements) at the facility or facilities wherein this Contract is performed that, as of the Contract award date, are in effect. The Contract price does not include any amount for requirements scheduled to become effective during the term of the Contract.

C.19.2 In the event any of the following foregoing requirements are changed (i.e., altered, rescinded, or postponed) subsequent to the Contract award date, and such change(s) cause(s) an increase or decrease in the cost of, or time required to perform the Contract, Contractor compliance therewith shall be subject to equitable adjustment pursuant to the "Changes" Clause of this contract.

C.19.3 In the event the foregoing requirements are changed as aforesaid, but compliance therewith is optional on the part of the Contractor, the Contractor shall promptly notify the Government in writing and the Contracting Officer shall have the right to elect whether or not to require Contractor compliance therewith. After receipt of this written notice, the Contracting Officer shall provide timely written advice to the Contractor of the Government's

election and, if applicable, the effective date of such change(s). If the Contracting Officer's election hereunder constitutes a change which causes an increases or decreases in the cost of, or time required to perform the Contract, the Contractor compliance therewith shall be subject to equitable adjustment pursuant to the "Changes" Clause of this Contract.

C.19.4 Regulatory changes governing the use of finish coating (paints) enacted by the Bay Area Air Quality Management District (BAAQMD) became effective in January 1, 1986. The impact of those changes is currently being evaluated and the Contract price does not include any amount for compliance therewith. Upon completion of the evaluation of the impact of the changes, including the possibility of obtaining an exemption or other relief therefrom, the Contract is subject to equitable adjustment for any increases or decreased cost required for Contractor compliance.

APPENDIX I. FEI ENVIRONMENTAL SURVEY PARTICIPANTS

1. Aerojet
2. Alliant Techsystems
3. Bechtel
4. Boeing
5. CH2M Hill
6. Computer Sciences Corporation
7. Cubic Defense Systems
8. Eaton
9. EG&G
10. Flour Daniel
11. FMC
12. General Dynamics
13. General Electric
14. Honeywell
15. Hughes Aircraft
16. IBM Federal Systems
17. Martin Marietta
18. McDonnell Douglas
19. Motorola
20. Newport News Shipbuilding
21. Northrop
22. Opto Mechanick
23. Rockwell International
24. Smiths Industries
25. Texas Instruments
26. Textron Lycoming
27. Thiokol
28. TRW

LIST OF REFERENCES

1. Lewis, Jack, "Superfund, RCRA, and UST: The Cleanup Threesome," *EPA Journal*, pp. 7-14, April/June 1991.

2. Chess, Caron, "Attacking a problem with the Facts," *EPA Journal*, pp. 15-18, May/June 1992.

3. Huber, Peter, "Environmental Hazards and Liability Law," Liability Perspectives and Policy, The Brookings Institute, Washington, DC, 1991.

4. Recer, Paul, "Ozone layer falls to record low levels," *The Monterey County Herald*, April 23, 1994.

5. Beamish, Rita, "EPA concerned about soot causing 60,000 deaths a year," *The Monterey County Herald*, July 20, 1993.

6. Manaster, Kenneth A., Professor of Law, Santa Clara University, telephone interview with LT Murdock on June 9, 1994.

7. Secretary of Defense, Annual Report to Congress 1993, January 1994.

8. Wood, Charlie, Program Analyst, "DOD Environmental Security Programs FY 1990 - FY 1994," Office of the Deputy Under Secretary of the Defense for Environmental Security.

9. Department of Defense, Defense Logistics Agency Management of Hazardous Waste Disposal Contracts, Office of Inspector General, Report 89-111, September 1991.

10. "Presidential Earth Day Address," *EPA Journal*, pp. 2-3, April/June 1993.

11. General Accounting Office, Defense Environmental Cleanup, GAO/NSIAD-92-253FS, June 1992.

12. Defense Contract Management Command, DCMC Environmental Initiatives Task Force Pilot Cost Allowance Program, Alexandria, VA, March 25, 1993.

13. General Accounting Office, Defense Hazardous Waste Disposal, GAO/NSIAD-91-131, August 1991.

14. Wasserman-Goodman, Sherri, Deputy Under Secretary of Defense (Environmental Security), prepared remarks to the Defense Sub Committee of the House Appropriations Committee, March 23, 1994.

15. Schumacher, Aileen, A Guide to Hazardous Materials Management, Quorum Brooks, New York, NY, 1988.

16. Manaster, Kenneth A., Presentation of Environmental Regulations for the Monterey Peninsula, National Contract Management Association, May 19, 1994.

17. Sacarello, Hildegarde L. A., The Comprehensive Handbook of Hazardous Materials; Regulations, Handling, Monitoring and Safety, Lewis Publishers, Boca Raton, FL, 1994.

18. Lee, Martin R., Summaries of Environmental Laws Administered by the Environmental Protection Agency, CRS Report for Congress, 93-53 ENR, Congressional Research Service, The Library of Congress, January 14, 1993.

19. Shulman, Seth, The Threat at Home: Confronting the Toxic Legacy of the U. S. Military, Beacon Press, Boston, MA, 1992.

20. Latham, Peter S., Government Contract Disputes, Federal Publications, Washington, DC, 1986.

21. Gilleece, Mary Ann, Deputy Under Secretary of Defense for Acquisition Management, Office of the Under Secretary of Defense (Research and Engineering), prepared statement for the United States Senate Committee of the Judiciary, June 11, 1985.

22. Kunkel, Kurt, Fiscal Oversight of Department of defense Cleanup and Compliance Activity, Fiscal Years 1984-1993, Thesis, Naval Postgraduate School, Monterey, CA, December 1992.

23. *The Government Contractor*, "President Extends Right-to-Know and Pollution Prevention Laws to Federal Facilities," pp. 16-17, August 11, 1993.

24. *The Government Contractor*, "President Clinton Issues Order Governing Federal Acquisition and Recycling," p. 12, October 27, 1993.

25. Goerth, C. R., "Hazards Warnings Mandated by California's Proposition 65," *Occupational Safety and Health Magazine*, March 1988.

26. Alston, F., Contracting with the Federal Government, Pricewater House, New York, NY, 1992.

27. FAR 31.201-3(a).

28. FAR 31.201-3(b)(3).

29. O'Keefe, Sean, Secretary of the Navy, Memorandum of Decision under Public Law 85-804, September 30, 1992.

30. Spector, Eleanor R., Director of Defense Procurement, Letter to the Honorable John Conyers, Jr., Chairman, Committee of Government Operations, United States House of Representatives, September 1, 1992.

31. *Federal Contracts Report*, "Environmental Cost Principle Cleared for Issuance as Proposed Rule," p. 184, August 17, 1992.

32. *Federal Contracts Report*, "ABA Section Urges Revision of Cost Principle," p. 184, August 17, 1992.

33. DAR Case 91-056, 31205-9 Environmental Costs, test of revised proposed rule.

34. Siler, Ken, Chairman DCMC Environmental Initiatives Task Force Pilot Cost Allowance Program, DCMC, Alexandria, VA., phone interviews with LT Murdock, June to Aug, 1994.

35. Defense Contract Audit Agency, Memorandum 92-PAD-163(R), Audit Guidance on the Allowability of Environmental Costs, Alexandria, VA, October 14, 1992.

36. *The Government Contractor*, "DOD/DCAA Issue Joint Policy Guidance on Environmental Cost Allowability," pp. 16-17, October 21, 1992.

37. Defense Contract Management Command, DCMC-AF Policy Letter No. 92-31, Audit Guidance on the Allowability of Environmental Costs, Alexandria, VA, November 17, 1992.

38. Defense Contract Management Command, DCMC-AC Policy Letter No. 93-04, Allowability of Environmental Costs, Alexandria, VA, February 2, 1993.

39. *The Government Contractor*, "DCAA/DCMC Clarify October 1992 Guidance on Environmental Costs," pp. 9-11, May 18, 1994.

40. Chiang, Harriet, "Setback for Insurers in Environmental Cases," The San Francisco Chronicle, November 23, 1993.

41. *The Government Contractor*, "D.C. Circuit Vacated EPA Rule Limiting Lender Liability Under CERCLA," pp. 3-6, February 23, 1994.

42. Schmitt, R. B.,"Appeals Court Invalidates EPA Rules Shielding Lenders from Superfund Law," *The Wall Street Journal*, February 10, 1994.

43. *The Government Contractor*, "Supreme Court Rules Litigation-Related Attorney Fees Are Not Necessary Costs Of Response Under CERCLA," pp. 3-6, June 15, 1994.

44. Barrett, Paul M., "Decision Blocks Recovery of Fees For Polluters," *The Wall Street Journal*, June 7, 1994.

45. Heivilin, Donna M., Director of Defense Management and NASA Issues, General Accounting Office, prepared statement and testimony to the Legislation and National Security Subcommittee, Committee of Government Operations, United States House of Representatives, May 20, 1993.

46. General Accounting Office, Environmental Cleanup: Unsolved Issues in Reimbursement to DOD Contractors, GAO/T-NSIAD-93-12, May 20, 1993.

47. General Accounting Office, Environmental Cleanup: Observations on Consistency of Reimbursements to DOD Contractors, GAO/NSIAD-93-77, October 1992.

48. Committee on Government Operations, United States House of Representatives, Reimbursement of Defense Contractors' Environmental Cleanup Costs: Comprehensive Oversight Needed to Protect Taxpayers, November 22, 1993.

49. Spector, Eleanor R., Director of Defense Procurement, Letter to Mr. Brad Hathaway, Associate Director for Air Force Issues and National Security and International Affairs, United States General Accounting Office, January 3, 1993.

50. Cann, Gerald A., Assistant Secretary of the Navy (Research, Development and Acquisition) memorandum for the Commander, Naval Sea Systems Command, Claims Under Indemnification Clauses For Remediation at Maxey Flats, August 3, 1992.

51. California Environmental Protection Agency, Organization of the California Environmental Protection Agency, Sacramento, CA, January 1994.

52. Bealch, John, San Francisco Regional Water Quality Control Board, Manager Cleanup Operations, interview with LT Murdock, June 10, 1994.

53. Ritchie, Steven R., Executive Office, San Francisco Bay Regional Water Quality Control Board, Environmental Cost letter to DPRO United Defense, April 19, 1993.

54. Central Valley Regional Water Quality Control Board, Waste Discharge Permit No. 127, May 1952.

55. Central Valley Regional Water Quality Control Board, Cleanup Order No. 79-202, August 1979.

56. Washington State, Department of Ecology, Toxics Cleanup Program, Publication No. 94-06, December 1993.

57. Kmet, Peter, Director of Cleanup Standards, Washington State, Department of Ecology, phone interview with LT Murdock, July 13, 1994.

58. McCarthy, David, Administrative Contracting Officer, DPRO FMC, San Jose, CA, interviews and telephone conversations with LT Murdock, February - August 1994.

59. San Francisco Bay Regional Water Quality Control Board, Site Cleanup Requirements Order Number 93-018, Oakland, CA, February 1993.

60. Defense Contract Management Command, Memorandum For Environmental Pilot Project Teams, AQCP/PAD, Alexandria, VA, April 1994.

61. Defense Contract Audit Agency, Pilot Audit Program for Environmental Cleanup Costs, 93-PAD-077, Alexandria, VA, April 1993.

62. Department of Defense, Report on Environmental Requirements and Priorities, Office of Deputy Secretary of Defense (Environment), May 14, 1992.

63. Smith, Charles S., Contracting For Environmental and Design Services In The Environmental Restoration Field, Thesis, Naval Postgraduate School, Monterey, CA, December 1991.

64. Whitson, Mark E., An Investigation Into Improving Non-NPL Cleanup Process, Thesis, Naval Postgraduate School, Monterey, CA, June 1992.

65. Naval Energy and Environmental Support Activity, Navy Commanding Officer's Guide to Environmental Compliance, January 1991.

66. Naval Facilities Engineering Command, Acquisition Plan No. FAC 90-05, May 1990.

67. Hart, Neil, Senior Contract Administrator, Ensearch Corporation, presentation to Naval Postgraduate School and interview with LT Murdock, May 6, 1994.

68. Department of Defense, Environmental Compliance Assessment Programs, Office of the Inspector General, Report 92-011, November 1991.

69. General Accounting Office, Defense Hazardous Waste Disposal, GAO/NSIAD-91-131, August 1991.

70. Department of Defense, Hazardous Material Pollution Prevention Directive 4210.15, July 27, 1989.

71. Phinney, Suzanne, Vice President, Environmental, Aerojet-General Corporation, prepared statement and testimony to the Legislation and National Security Subcommittee, Committee of Government Operations, United States House of Representatives, May 20, 1993.

72. Babione, Dale, Vice President of Contracts, Defense and Space Group, Boeing Corporation, prepared statement and testimony to the Legislation and National Security Subcommittee, Committee of Government Operations, United States House of Representatives, May 20, 1993.

73. Phillips, Linda, Legal Administrator, FCM Corporation, San Jose, CA, letter to LT Murdock, August 1, 1994.

74. FMC Corporation, Ground Systems Division, Claim for Equitable Adjustment under Environmental, Health and Safety Clauses, San Jose, CA, June 30, 1993.

75. Conant, Donald, Counsel, FMC Corporation, San Jose, CA, telephone interview with LT Murdock, July 27, 1994.

76. Grusonik, Bill, M113 Program Manager, FMC Corporation, "M113 Could Find Brand New Uses Outside Defense Industry," *Inside Track*, June 1994.

77. Finkbiner, Vice President of Contracts and Pricing, Lockheed Corporation, prepared statement and testimony to the Legislation and National Security Subcommittee, Committee of Government Operations, United States House of Representatives, May 20, 1993.

78. Roundtree, Glynn, "AIA Guiding Principles," *AIA Newsletter*, Jan/Feb 1993.

79. Fuqua, Don, President Aerospace Industries Association, "Environmental Cleanup: Government Should Share the Costs," *AIA Newsletter*, Jan/Feb 1993.

80. Wagner, Jennifer, Government Relations Specialist, Financial Executive Institute, Washington, DC, telephone interview with LT Murdock, July 26, 1994.

81. Berry, William, Senior Counsel, Aerojet General Corporation, "After the Flood: Superfund Cost Issues For Contractors," Committee on Government Business, Financial Executives Institute, Washington, DC, September 1993.

82. Financial Executives Institute, Committee on Government Business, Survey of Environmental Issues, Washington, DC, March 4, 1994.

83. National Security Industrial Association, Environment Committee Interagency Subcommittee, White Paper: Barriers and Disincentives to Environmental Contracting, December 1991.

84. Hastie-Williams, Karen, Chair, American Bar Association, Section of Public Contract Law, letter to Direct of Defense Procurement, Washington, DC, August 24, 1992.

85. Hastie-Williams, Karen, Chair, American Bar Association, Section of Public Contract Law, letter to the DAR Council and CAAC, Washington, DC, August 24, 1992.

86. Hinchman, James F., General Counsel, General Accounting Office, letter to Honorable John Conyers Jr., February 3, 1992.

87. Smith, Ted, Silicon Valley Toxics Coalition, letter to Congressman John Conyers, Government Operations Committee, May 7, 1993.

88. Cole, Henry S., PH.D., Silicon Valley Toxics Coalition, prepared statement and testimony to the Legislation and National Security Subcommittee, Committee of Government Operations, United States House of Representatives, May 20, 1993.

89. Peterson, Duane, Vice President, Sacramento Valley Toxics Campaign, prepared statement and testimony to the Legislation and National Security Subcommittee, Committee of Government Operations, United States House of Representatives, May 20, 1993.

90. FAR 31.201-5.

91. FAR 9904.404-40(d).

92. FAR 9904.410-30(a)(6).

93. FAR 9904.418-40(c).

94. FAR 9904.418-40(c)(2).

95. FAR 31.205-3.

96. Department of Defense, Audit of DOD use of Public Law 85-805, Office of the Inspector General, Report 84-109, July 1984.

97. FAR 31.205-47(b)(4).

98. Environmental Business Council of The United States, A Strategy to Promote and Provide Leadership for the US Environmental Industry in the Domestic and Global Marketplace, Waltham, MA, July 20, 1993.

99. Hourcie, L. R., Environmental Law for the Air Force, March 1988.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center 2
   Cameron Station
   Alexandria, Virginia 22304-6145

2. Library, Code 52 2
   Naval Postgraduate School
   Monterey, California 93943-5101

3. David V. Lamm, Code SM/LT 5
   Department of Systems Management
   Naval Postgraduate School
   Monterey, California 93943-5000

4. CDR Louis G. Kalmar, SC, USN, Code SM/KL 1
   Department of Systems Management
   Naval Postgraduate School
   Monterey, California 93943-5000

5. Ken Siler 1
   Defense Logistics Agency
   Defense Contract Management Command
   AQCP/Environment
   Alexandria, Virginia 22304-6190

6. Defense Logistics Studies Information Exchange . . . 1
   U.S. Army Logistics Management College
   Fort Lee, Virginia 23801-6043

7. LT John Murdock, SC, USN, Code GUT 2
   Defense Contract Management Area Operations, Hartford
   130 Darlin Street
   East Hartford, Connecticut 06108-3234