DoE & EPA agreement 7/17/86

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

UNITED STATES DEPARTMENT OF ENERGY AND UNITED STATES ENVIRONMENTAL PROTECTION AGENCY	)	FEDERAL FACILITY COMPLIANCE AGREEMENT Docket No. _____

The United States Environmental Protection Agency (U.S. EPA) and the United States Department of Energy (U.S. DOE) are the parties to this agreement which is entered into pursuant to Executive Order 12088, October 13, 1978 (43 F.R. 47707). This Agreement pertains to U.S. DOE's Feed Material Production Center (FMPC) in Fernald, Ohio. The Office of Management and Budget (OMB) and the United States Department of Justice (DOJ) will take cognizance of this agreement pursuant to their respective duties to ensure compliance with the environmental laws under Executive Order 12088 and the particular statutes addressed herein.

SCOPE

1. This agreement is entered into by the parties to ensure compliance by U.S. DOE, Oak Ridge Operations, Oak Ridge, Tennessee, with existing environmental statutes, and implementing regulations, including the Clean Air Act (CAA), as amended 42 U.S.C. 7401 et seq the Resource Conservation and Recovery Act (RCRA), as amended, 42

U.S.C. 6901 et seq, and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. 9601 et seq., at FMPC. The Agreement is further intended to ensure that the environmental impacts associated with past and present activities at the FMPC are thoroughly and adequately investigated, and appropriate remedial response action taken, as contemplated by the Comprehensive Environmental Response, Compensation & Liability Act, of 1980, and regulations promulgated thereunder. The Agreement does not address compliance, or the lack thereof, by U.S. DOE's FMPC with the Clean Water Act, 33 U.S.C. 1251 et seq.

2. This Agreement shall apply to U.S. DOE, its officers, successors in office, agents, employees, contractors, and subsequent owners and all operators of FMPC in Fernald, Ohio. U.S. DOE agrees to give notice of this compliance agreement to any subsequent owner and/or operator prior to the transfer of ownership or the obligation of a new contractor/operator and shall simultaneously notify U.S. EPA of any such change or transfer.

AUTHORITIES

The duties of U.S. DOE to operate its facilities in compliance with enacted environmental statutes are prescribed in Section 118 of the Clean Air Act, 42 U.S.C. 7417; Section 6001 of RCRA, 42 U.S.C. 6961, and Section 107(g) of CERCLA, 42 U.S.C. 9607(g). Executive Order 12088 was promulgated to ensure federal compliance

with applicable pollution control standards. This agreement contains a "plan" as described in Section 1-601 of Executive Order 12088 to enable U.S. DOE to achieve and maintain compliance with applicable environmental standards. This Agreement is further entered into pursuant to U.S. EPA's responsibilities under Executive Order 12316 and U.S. DOE's authority under the Atomic Energy Act, as amended, 42 U.S.C. 2011, et seq. The parties agree to meet their responsibilities under the authorities recited herein.

FINDINGS OF FACT

1. FMPC is an industrial facility owned by the U.S. Government and operated for the U.S. DOE under a management contract with Westinghouse Materials Co. of Ohio (WMCO). The facility commenced operations in 1952. Between the years 1952 and 1986, FMPC was operated by National Lead of Ohio, Inc. (NLO), under contract with U.S. DOE. The facility is located approximately twenty miles northwest of downtown Cincinnati, Ohio. FMPC operations cover approximately 136 acres in the center of a 1050 acres site. Several rural communities lie within a one to three mile radius of the plant.

2. The primary function of the FMPC is the production of metallic uranium fuel elements and target cores and other uranium products for use in production reactors operated for the U.S. DOE. In prior years, small amounts of thorium were also processed. As a result of these processes the plant has generated both

radionuclides present in waste materials handled at FMPC include Uranium-238 (U-238), U-235, and thorium-232 (Th-232) with their respective decay chains. Plutonium and fission products may also be present in the wastes. The principal non-radioactive hazardous wastes known to be generated at the FMPC are halogenated solvents, primarily 1,1,1-trichloroethane. The facility also stores radioactively contaminated polychlorinated biphenyls (PCBs). Detailed chemical and radiological analyses are necessary at the facility to determine the nature and extent of wastes generated, handled, treated, stored and disposed of at the FMPC.

3. Waste storage and disposal areas at FMPC include six on-site waste pits and lagoons containing both radioactive and nonradioactive hazardous substances; two silos containing approximately 1700 curies of radium and other radioactive waste ("K-65 silos"); metal structures and other containers containing a total of approximately 1,100 metric tons of thorium; and a 10,000 gallons hazardous waste container storage area. The 61 drums of radioactively contaminated PCBs in the container storage area presently satisfy the requirements of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 et seq.

4. Plants 1 through 6; 8, 9 and the Pilot Plant at FMPC contain emission points subject to Ohio Pollution Control Regulations AP-3-07 (recodified Ohio Administrative Code (OAC) 3745-17-07), AP-3-11 (recodified OAC 3745-17-10) and AP-3-12 (recodified OAC-3745-17-11) concerning the limitations of visible and particulate emissions. These provisions are part of the

applicable State Implementation Plan (SIP), approved by U.S. EPA on April 15, 1974. The regulations are enforceable by both the State of Ohio and the Federal government.

5. Airborne uranium, radon gas and radon decay product releases at FMPC have resulted from plant operations. Radioactive dust generated by manufacturing processes at FMPC are captured by bag-type dust collectors. Operations, including collector failures, have resulted in estimated releases of approximately 215,000 pounds of uranium to the air. Radium-bearing wastes are stored in two silos that are structurally unsound and are leaking radon and radon decay products to the environment. Up to 500 metric tons of thorium compounds are stored in a metal structure that is currently structurally unsound. Failure of the structure would release radioactive thorium compounds into the environment at levels that could be harmful to the surrounding communities.

6. Liquid effluent from the uranium metal production processe is generated and sent to the general sump for treatment prior to release to the Great Miami River. Untreated stormwater run-off from the process areas is routinely discharged to the Great Miami River and the overflow is periodically discharged to Paddy's Run Creek. Paddy's Run Creek is a small receiving stream upgradient to underground drinking water sources. Available evidence indicat that discharges to Paddy's Run Creek have contributed to the contamination of underground water supplies.

7. In December, 1981, elevated radioactivity was detected in three private wells located downgradient from FMPC. In February, 1982, following confirmation of preliminary sample results, the Ohio Department of Health and the landowners were notified of the elevated readings. This information was released to the general public in a FMPC Environmental Monitoring Annual Report in 1983.

8. As a result of the aforementioned releases, the Regional Administrator of U.S. EPA, Region V, has determined that releases and threatened releases of hazardous substances including radioactive materials, may present an imminent and substantial endangerment to the public health, welfare and the environment, requiring remedial response activities. U.S. DOE neither admits nor denies this determination; however, it does commit to undertaking the Work outlined in this Agreement without contest.

9. On March 9, 1985, U.S. EPA issued a Notice of Noncompliance letter to U.S. DOE identifying the Agency's major concerns over the environmental impacts associated with FMPC's past and present operations. U.S. DOE responded to this letter on June 14, 1985.

10. Between April, 1985, and July, 1986, conferences were held between the U.S. DOE and U.S. EPA representatives to discuss the violations and adverse environmental impacts and steps U.S. DOE proposed to take to achieve and maintain compliance.

COMMITMENT OF THE PARTIES

1. U.S. DOE and U.S. EPA hereby agree that U.S. DOE shall conduct a Remedial Investigation/ Feasibility Study and implement Initial Remedial Measures, in accordance with guidelines under CERCLA, to determine the nature and extent of contamination both on and off the FMPC site. The investigation shall be consistent with applicable EPA guidance documents.

2. It is further agreed that U.S. DOE shall undertake the activities described below, within the stated time frames, to bring FMPC into compliance with, and maintain compliance with, the Clean Air Act and RCRA.

COMPLIANCE PLAN

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY AC

1. Initial Remedial Measures

Pursuant to Section 106 of CERCLA, 42 U.S.C. 9606, and 40 CFR 300.68, U.S. DOE shall undertake the following initial remedial measures to limit the exposure or threat of exposure of radioactive emissions, including radon gas and radon decay products, to the public health and the environment:

A. U.S. DOE shall develop effective operation and maintenanc procedures and work practices to control radioactive emissions, including radon gas and radon decay products, from production

materials and onsite wastes to maintain all exposures As Low As Reasonably Achievable (ALARA). Within sixty (60) days of the effective date of this agreement, U.S. DOE shall implement effective operation and maintenance procedures and work practices for the control of radioactive emissions, including radon gas and radon decay product emissions. Progress reports shall be provided to U.S. EPA quarterly.

B. Within thirty (30) days of the effective date of this Compliance Agreement, U.S. DOE shall develop and provide U.S. EPA with a plan and implementation schedule for the following initial remedial measures: 1) interim control of radioactive emissions, including radon gas and radon decay product emissions from the K-65 silos and thorium compounds storage structures; 2) interim controls to ensure the structural integrity of the two K-65 silos, and the thorium compounds storage structures; 3) a radon and radon decay product monitoring program for the fence line and off-site environs; and 4) measures to be undertaken in the event of unplanned releases from the K-65 silos and thorium compounds storage structures to the environment.

C. U.S. DOE shall implement the plan for interim controls described in subparagraph B above, upon approval of the plan by U.S. EPA in accordance with the approved implementation schedule. The interim controls shall be maintained until such time as a long-term plan for the radium-bearing wastes and thorium compounds

is developed, approved and implemented pursuant to the Remedial Investigation/Feasibility Study process discussed below.

D. The State of Ohio shall be given an opportunity to review and comment upon reports developed by U.S. DOE under this subsection.

2. Remedial Investigation/ Feasibility Study

Pursuant to Section 106 of CERCLA, 42 U.S.C. 9606, which addresses imminent and substantial endangerment to public health or welfare or the environment, and the regulations promulgated thereunder, U.S. DOE shall conduct a Remedial Investigation and Feasibility Study (RI/FS).

A. All RI/FS work shall be conducted in conformance with U.S. EPA "Guidance on Remedial Investigations under CERCLA", dated May, 1985, and the U.S. EPA "Guidance on Feasibility Studies under CERCLA", dated April, 1985, and shall be consistent with the guidelines and criteria and considerations set forth in the National Contingency Plan, 40 CFR Part 300, as amended.

B. Attachment I to this Agreement provides a Scope of Work (SOW) for the completion of the RI and FS. The SOW is incorporated into and made a part of this Agreement.

C. Within forty-five (45) days of the effective date of this Compliance Agreement, U.S. DOE will provide analytical results for

laboratory certification as required by SOW Task 7b. In the event of any disapproval of certification by U.S. EPA, U.S. EPA may require that U.S. DOE either select another laboratory for laboratory certification, or allow the original test company to analyze a second round of blanks. Ten (10) days will be allowed for the analysis of a second round of test blanks by either the new or original laboratory.

D. Within ninety (90) calendar days of the effective date of this Agreement, U.S. DOE shall submit to U.S. EPA a work plan for a complete Remedial Investigation and Feasibility Study (RI/FS Work Plan) to determine the nature and extent of any release or threatened release of hazardous chemical and/or radiological substances pollutants or contaminants into the environment at or from FMPC. The RI/FS Work Plan shall be based upon the SOW provided in Attachment I and developed in accordance with the U.S. EPA RI/FS guidance documents which have been provided to U.S. DOE.

E. After receipt of the RI/FS Work Plan, U.S. EPA shall evaluate it and specify in writing to U.S. DOE both deficiencies and any U.S. EPA recommended modifications. Within forty-five (45) calendar days of the receipt of U.S. EPA notification of a RI/FS Work Plan disapproval, U.S. DOE shall amend and submit a revised plan to U.S. EPA. In the event subsequent disapproval

of the RI/FS Work Plan cannot be resolved by informal means, the dispute resolution process described in the Agreement shall be used.

F. U.S. DOE shall implement the tasks detailed in the RI/FS Work Plan as approved by U.S. EPA. The fully approved RI/FS Work Plan shall be incorporated into and made a part of this Compliance Agreement, and shall be included as Attachment II. The tasks in the RI/FS Work Plan shall be conducted in accordance with the standards, specifications, and schedules contained in the approved RI/FS Work Plan.

G. U.S. DOE shall prepare draft and final RI and FS reports as provided in the attached SOW in accordance with the approved time schedule.

H. The final RI and FS studies, including recommended remedial alternatives, shall be made available to the public for review and comment for a twenty-one (21) day public comment period. After public comment, U.S. EPA shall prepare a Record of Decision (ROD) incorporating comments received during the public comment period, and identifying the selected remedial alternative. U.S. DOE shall implement the remedial action alternatives identified in the ROD. This work shall be conducted in accordance with applicable U.S. EPA guidance documents and the standards, specifications and implementation schedules specified by U.S. EPA.

I. The State of Ohio shall be given an opportunity to review and comment upon reports developed by U.S. DOE pursuant to the Remedial Investigation/Feasibility Study process, and shall be consulted during the selection of remedial alternatives to be carried out at FMPC.

J. Upon completion of the work described in subparagraph H. above, U.S. DOE shall provide U.S. EPA with written notification of its completion. U.S. EPA shall evaluate the remedial action taken by U.S. DOE and notify U.S. DOE in writing of the adequacy of the required cleanup. If the actions taken are inadequate, U.S. EPA shall specify, in writing, both deficiencies and the steps necessary to complete the remedial action. Within forty-five (45) calendar days of receipt of U.S. EPA notification, U.S. DOE shall implement the necessary remedial action. Any disputes that cannot be resolved by informal process will be handled according to the dispute resolution process contained in this Agreement.

K. U.S. EPA and U.S. DOE agree that actions undertaken by U.S. DOE pursuant to this section of the Agreement, establish a course of action, which, based on present information, is reasonable and necessary and consistent with the National Contingency Plan.

L. To the extent the RI/FS is conducted consistent with the provisions of this Agreement, following the completion of the RI/FS and upon written request by U.S. DOE, U.S. EPA will respond

in writing within ninety (90) days of the request, that in the opinion of U.S. EPA, the Work was performed consistent with the National Contingency Plan and any cleanup remedy selected by U.S. EPA is the most appropriate remedy to protect the public health, safety and the environment consistent with the National Contingency Plan.

3. Reports and Recordkeeping

A. All submittals made to U.S. EPA and RI/FS work performed by U.S. DOE are subject to the review, modification and approval of U.S. EPA. U.S. EPA retains the right to amend reports, perform additional work, and to conduct the RI/FS if U.S. EPA decides any of the above are necessary.

B. U.S. DOE shall provide monthly written progress reports to U.S. EPA as described in Scope of Work (SOW) Task 7.

C. In addition to the monthly progress reports, U.S. DOE shall submit the plans and reports to U.S. EPA as required in the SOW, in accordance with the schedule contained in the approved RI/FS Work Plan.

D. Within thirty (30) days of receipt of any written notice of disapproval from U.S. EPA of such plans or reports, U.S. DOE shall submit a revised plan or report to U.S. EPA incorporating the required modifications or additions.

E. Documents and other notices required to be submitted pursuant to this Agreement, shall be sent by certified mail to the following addresses, or to such other addresses as U.S. DOE or U.S. EPA may hereafter designate in writing:

1. Documents to be submitted to U.S. EPA should be sent to:

   United States Environmental Protection Agency
   Region V
   Hazardous Waste Enforcement Branch, 5HE-12
   230 South Dearborn Street
   Chicago, Illinois 60604
   Attention: RCRA Enforcement Section

2. Documents to be submitted to U.S. DOE should be sent to:

   U.S. Department of Energy
   Oak Ridge Operations
   Environmental Protection Division
   P.O. Box E
   Oak Ridge, Tennessee 37830

4. Designated Project Coordinators

A. The designated Project Coordinators for CERCLA activities are:

James A. Reafsnyder U.S. DOE	Stephen Clough U.S. EPA

B. To the maximum extent possible, communications between U.S. DOE and U.S. EPA and all documents, including reports, agreements, and other correspondence, concerning the activities performed pursuant to the terms and conditions of this section of the Agreement, shall be directed through the Project Coordinators.

C. U.S. EPA and U.S. DOE have the right to change their respective Project Coordinators. Such a change shall be accomplished by notifying the other party in writing.

CLEAN AIR ACT (NESHAP only)

A. U.S. DOE shall comply with the [redacted] standard promulgated at 40 CFR 61.92. Airborne concentrations of radionuclides shall not exceed those amounts that cause a whole body dose equivalent of 25 millirem (mrem) per year and 75 mrem per year to the critical organ of any member of the public.

NESHAP

B. To ensure compliance with emission standards promulgated at 40 CFR Part 61, U.S. DOE shall establish monitors, install emission controls and develop administrative controls to ensure (1) their proper operation and (2) correct collection and analytical methodology. Within thirty (30) days of the effective date of this Agreement, the following work shall be completed with progress reports quarterly:

1. Install real-time alarm monitors to monitor radionuclides on all major emission points.

2. Establish and implement administrative controls for real-time alarm monitors to ensure that any unplanned release will be detected immediately and dealt with in 24 hours.

3. Establish and implement air sample collection and analysis procedures along with a quality assurance plan to monitor radionuclides on all emission points with a potential for release of radionuclides to the air.

4. Establish a schedule for installation of emission controls and annual progress reports on the replacement of control devices.

C. U.S. DOE shall comply with the reporting provisions contained at 40 CFR 61.94(c).

NESHAP

D. Commencing in 1986, and each year thereafter, U.S. DOE shall provide U.S. EPA with (1) a yearly particulate matter stack-testing schedule for that year of all air pollution control devices using U.S. EPA method 5 procedures and (2) the stack test results forty-five (45) days after testing is completed. Stack test results shall report the actual quantities of emissions. The results shall be included in the quarterly reports required by Subparagraph E. Particulate catch shall also be analyzed for radionuclides and isotopic concentrations reported. U.S. DOE shall provide U.S. EPA with twenty (20) days advance notice of any change in the stack-testing schedule.

E. U.S. DOE shall maintain records of monthly particulate matter emissions and shall provide U.S. EPA with quarterly reports of such emissions.

F. Within sixty (60) days of the effective date of this Compliance Agreement, U.S. DOE shall provide U.S. EPA with a list of all environmental air monitoring equipment, including their location, and the operation and maintenance (O&M) program designed to maintain the monitors at peak efficiency.

G. Within ninety (90) days of the effective date of this Compliance Agreement, U.S. DOE shall develop and provide U.S. EPA with an O&M program for air pollution control devices.

H. Reports required to be submitted to U.S. EPA as a requirement of NESHAPS shall be sent to U.S. EPA, Assistant Administrator for Air and Radiation (ANR-443), 401 M Street, S.W., Washington, D.C. 20460. Copies of the reports shall also be sent to U.S. EPA, Region V.

RESOURCE CONSERVATION AND RECOVERY ACT

A. Within thirty (30) days of the effective date of this Compliance Agreement, U.S. DOE shall achieve compliance with interim status regulations at all areas subject to control under RCRA. For purposes of this Agreement, the "mixed wastes" located at FMPC are subject to RCRA regulation. For purposes of this Agreement, at FMPC, the term "mixed wastes" shall apply to hazardous waste that is mixed with source, special nuclear and byproduct material. Pursuant to the RCRA interim status regulations U.S. DOE shall:

1. Conduct a hazardous waste determination on all

waste streams generated at the facility that were previously untested, pursuant to 40 CFR 262.11. Mar. 88- Waste Characterization Plan to USEPA

2. Commence a hazardous waste analysis program to determine the physical and chemical characteristics of the materials in the landfill and going to the incinerator at the FMPC in accordance with the RCRA regulations, 40 CFR 265.13. The radiological characteristics of the materials shall also be determined and results submitted to U.S. EPA.

3. Update the operating records to include: the description and quantity of waste stored onsite, a map showing the location and quantity of waste disposed of onsite, the EPA Hazardous Waste Code and physical state of all waste treated, stored or disposed of, and a description of the method(s) used to treat, store, or dispose of any hazardous waste pursuant to 40 CFR 265.73 and 265.309.

4. Include the printed full name and signature of the person receiving hazardous waste and the date it is received on the manifests pursuant to 40 CFR 265.71.

5. Update the facility closure plan to reflect the year the facility expects to begin closure pursuant to 40 CFR 265.112.

6. Collect run-off from the active portions of the landfill as required by 40 CFR 265.302(b);

7. Prepare and maintain onsite a written outline for a groundwater quality assessment program pursuant to 40 CFR 265.93(a).

B. Within ninety (90) days of the effective date of this Compliance Agreement, U.S. DOE shall submit to U.S. EPA for approval a detailed groundwater monitoring plan for the landfill (waste pit #4) pursuant to 40 CFR 265.90 and 265.91. This plan may be combined with the CERCLA groundwater monitoring plan described in the Remedial Investigation Study (CERCLA, Section 2). In addition to the requirements of CERCLA, Section 2., the RCRA groundwater monitoring plan should provide the following information:

1. A determination of groundwater flow at the RCRA regulated units, that specifies both horizontal and vertical components. A potentiometric map should display groundwater flow in this area.

2. A detailed map providing the location of all RCRA monitoring wells. This map should also designate the location of cross sections constructed from well information.

3. The specifications for the design and construction of all RCRA wells to be included in the monitoring system. This description should include well depth, screen length, casing materials, etc.

4. A list of the parameters to be monitored. If the waste inventory of all the pits and impoundments is not completed,

all Appendix VIII constituents should be monitored. U.S. DOE may petition U.S. EPA to delete a constituent if documentation can be provided to U.S. EPA indicating that a specific waste was not handl in the past. This list of parameters should include radionuclides.

5. A sampling and analysis plan that meets the requirements of 40 CFR § 265.92.

C. Within sixty (60) days of completion of the Waste Characterization Study at the waste pit area, DOE shall:

1. Develop a closure plan for the landfill pursuant to 40 CFR 265.112.

2. Develop a post-closure plan for the landfill pursuant to 40 CFR 265.118.

RADIATION DISCHARGE INFORMATION

A. Within thirty (30) days of the effective date of this Agreement, U.S. DOE shall provide U.S. EPA with its existing comprehensive offsite environmental monitoring program and an associated quality assurance plan for FMPC, and any revisions to the plan, for review and comment. At a minimum, the environmental monitoring program shall include the maintaining of liquid dischar monitors and administrative controls to ensure (1) their proper operation and (2) correct collection and analytical methodology. The following work shall be continued:

1. Maintain continuous liquid discharge sample collectc

at all discharge points, monitor and report results quarterly to U.S. EPA, Ohio EPA, and Ohio Department of Public Health.

2. Maintain administrative controls for liquid discharges sufficient to identify and deal with any unplanned release within 24 hours.

3. Maintain sample collection analysis procedures along with a quality assurance plan for liquid samples.

B. For the purposes of this Compliance Agreement, data reported to the U.S. EPA shall be radionuclide specific except for uranium which may be reported as total uranium.

FUNDING

U.S. DOE's performance of the commitments under this Agreement are subject to the availability of appropriated funds for such purposes. If appropriated funds are not available to fulfill requirements of the Agreement U.S. EPA reserves the right to initiate such action as it deems appropriate to the extent permitted by law.

REPORTING REQUIREMENTS

A. Unless otherwise specified, U.S. DOE shall submit required documents, notices and reports to the following address:

Chief, Environmental Review Branch
U.S. Environmental Protection Agency
John C. Kluczynski Federal Building, 5ME-16
230 South Dearborn Street
Chicago, Illinois 60604

B. Monthly progress reports identifying steps taken toward achieving compliance with the requirements contained herein shall be submitted to U.S. EPA. Monthly reports shall be submitted by the twentieth (20) day following the end of each month.

C. U.S. EPA may need varying amounts of time to comment on the various documents required to be submitted by U.S. DOE to U.S. EPA for review and comment or approval. U.S. EPA will respond within thirty (30) days of receipt of submittals unless more time is required.

DISPUTE RESOLUTION

Failure to comply with the terms of this Compliance Agreement shall be considered a violation and shall result in the initiation of the conflict resolution procedures of Section 1-602 of Executive Order No. 12088. Unless U.S. DOE demonstrates that such failure to comply was justified and a new schedule is agreed upon, the Regional Administrator will refer the matter to the U.S. EPA, Office of External Affairs (OEA) for resolution of the dispute with U.S. DOE's Headquarter Office. In the event that a resolution is not reached between OEA and the parent Agency of the non-complying facility, the Administrator of U.S. EPA will request the Director of the Office of Management and Budget to resolve the conflict pursuant to Section 1-602 of Executive Order 12088. As provided in Section 1-604 of Executive Order No. 12088, such conflict resolution procedures are in addition to, not in

lieu of, other procedures, including sanctions, for the enforcement of applicable pollution control standards.

OTHER APPLICABLE LAWS AND REGULATIONS

All actions required to be taken by U.S. DOE pursuant to this Agreement shall be undertaken in accordance with the requirements of all other applicable local, state, and Federal laws and regulatic unless an exception from such requirement is specifically provided in this Agreement.

RESERVATION OF RIGHTS

U.S. DOE neither admits nor denies any findings of fact or conclusions of law contained in this Compliance Agreement. Nothing herein is intended to affect the rights or liabilities of nonparties to this Agreement.

EFFECTIVE DATE AND SUBSEQUENT MODIFICATIONS

1. The effective date of this Agreement shall be the date on which it is signed by U.S. EPA.

2. Modifications to this Agreement may be requested by U.S. EPA or U.S. DOE. All such modifications shall be by mutual agreement of U.S. EPA and U.S. DOE. Such amendments shall be in writing and shall have as the effective date, that date on which such amendments are signed by U.S. EPA, and shall become an integral part of this Compliance Agreement.

3. Any reports, plans, specifications, schedules, and attachments required by this Agreement are, upon approval by U.S. EPA, incorporated into this Agreement.

4. No informal advice, guidance, suggestions, or comments by U.S. EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the U.S. DOE will be construed as relieving U.S. DOE of its obligation to obtain such formal approval as may be required by this Agreement.

5. Upon demonstration of compliance by U.S. DOE with this Agreement, there will be a continuing obligation to comply with applicable permit and other requirements under the relevant statutes.

IT IS SO AGREED:

By: _____ July 19, 1986
U.S. Department of Energy DATE:

By: _____ July 18, 19
U.S. Environmental Protection Agency DATE:

ATTACHMENT I

SCOPE OF WORK FOR A REMEDIAL INVESTIGATION 6/30/86

AT FEED MATERIALS PRODUCTION CENTER

PURPOSE

The purpose of this Remedial Investigation is to determine the nature and extent of any release, or threat thereof, of hazardous or radioactive substances, pollutants, or contaminants at or from the Feed Materials Production Center, and to gather all necessary data to support the Feasibility Study. The Contractor will furnish all personnel, materials, and services necessary for, or incidental to, performing the Remedial Investigation at Feed Materials Production Center.

DEFINITIONS

a. Facility - refers to the Feed Materials Production Center (FMPC).

b. Site - refers to FMPC and all areas where hazardous or radioactive substances, pollutants, or contaminants have been deposited, stored, disposed of, or placed or otherwise come to be located.

c. Waste Management Area - refers to any contingous land structures, other appurtenances and improvement on the land used for storage, treatment, disposal, collection, radioactive source separation, transfer, processing, resource recovery, incineration, or conservation of any chemical or radioactive material. It includes any unit at the FMPC facility from which contaminants might migrate, irrespective of whether the units were intended for the management of radioactive and/or hazardous waste.

d. Production Area - refers to any device that yields a radioactive or hazardous substance.

SCOPE

The Remedial Investigation shall consist of eight tasks:

Task 1 - Description of Current Situation
Task 2 - Work Plan Requirements
Task 3 - Site Investigation
Task 4 - Site Investigation Analysis
Task 5 - Laboratory and Bench-Scale Studies
Task 6 - Reports
Task 7 - Additional Requirements
Task 8 - Community Relations Support

TASK 1 - DESCRIPTION OF CURRENT SITUATION

The Contractor will outline the purpose for the Remedial Investigation and describe the background information pertinent to the Facility and its problems.

The data gathered during any previous investigations or inspections and other relevant data should be used.

a. Site Background

The Contractor will prepare a summary of the regional location, pertinent area boundary features, general site physiography, hydrogeology, and historical use of the Facility for the treatment, storage and disposal of both hazardous and radioactive materials.

This summary shall at a minimum include:

1. Maps depicting the following:

   A. The general geographic location;

   B. All existing and former Waste Management and Production Areas.

   C. Feed Materials Production Center property lines and any adjacent property lines with the owners of all adjacent property clearly indicated; and

   D. All known past and present product and waste underground tanks or lines.

2. Details on past product and waste spills including date, volume, nature, location, and cleanup activities.

3. A description of current operations at each Waste Management and Production Area including a history of the unit's function and all of the wastes processed or disposed at the unit. Include the waste constituents processed or disposed, the time frames of operation, and quantities handled during those time frames.

4. A description of each Waste Management and Production Unit including engineering drawings, foundation materials of construction, dimensions, capacity and ancillary systems: include location, design, construction, and descriptions of all groundwater monitoring systems. If the Waste Management or Production Area is not in use, describe the methods utilized to close the facility and all construction related to closure.

b. Nature and Extent of Problem.

Prepare a summary of the actual and potential off-facility and on-facility health and environmental effects. This summary shall include: the types, physical states, and amounts of hazardous wastes/hazardous substances and radioactive materials; the existence and condition of drums, tanks, landfills, surface ponding, and other containers; affected media and pathways of exposure; and contaminated releases such as air releases, leachate, and runoff. Include discussion of the population in the area potentially affected by release of contaminants from the Facility.

Describe any reports of human or animal illness that may be related to the Facility. Emphasis should be placed upon describing the threat or potential threat to public health and the environment.

c. History of Response Actions.

Prepare a summary of any previous response actions conducted by either local, State, Federal, or private parties, including inspections and other technical reports, and their results. A list of reference documents and their location should be included. The scope of the remedial investigation should be developed to address the problems and questions that have resulted from previous work at the site.

d. Site Visit.

Conduct an initial site visit to become familiar with site topography, access routes, and proximity of receptors to possible contamination and collect data for preparation of the site safety plan. The visit should be used to verify the site information developed in this Task.

e. Define Boundary Conditions.

Establish site boundary conditions to delineate the area of remedial investigation. The boundary conditions shall be set so that subsequent investigations will cover the contaminated media in sufficient detail to support the following activities, e.g. feasibility study. Boundary conditions will also be used to identify boundaries for site access control and site security. Site boundaries shall encompass all areas of contamination (i.e. groundwater, soil), both on and off FMPC.

TASK 2 - WORK PLAN REQUIREMENTS

The consultant shall conduct preliminary work necessary to scope and conduct the site remedial investigation and feasibility study. This shall include the development and submittal of a detailed work plan to U.S. EPA for review and approval outlining data needs for characterizing the site and for support of the feasibility study. The work plan shall include an outline of proposed investigation activities, a time schedule for accomplishing the tasks identified in the SOW, and personnel and equipment requirements. The work plan shall also include a sampling plan indicating rationales for sampling activities, location, quantity, and frequency of sampling, sampling and analysis methods, constituents for analysis, and quality assurance procedures. In addition to these general sampling plan elements, other requirements will be identified in the following subtasks as they apply:

a. Sampling Plans.

The Contractor will prepare detailed Sampling Plans to address each of the Site Investigation activities.

1. The objective of the Sampling Plan is to:

A. Provide specific guidance for all field work;

B. Provide a mechanism for planning and approving site activities;

C. Provide a basis for estimating costs of field efforts;

D. Ensure that sampling activities are limited to those that are necessary and sufficient; and

E. Provide a common point of reference for all parties to ensure comparability and compatibility between all activities performed at the site.

2. A Sampling Plan should discuss the following items:

A. Investigation objectives;

B. Parameters of interest;

C. Number of each sample type for each matrix;

D. Locations of samples;

E. Justification for sample type and location;

F. Collection methods;

G. Sample number and frequency;

H. Analytical procedures (refer to Quality Assurance Project Plan);

I. Operational plan and schedule;

J. Differentiation between samples that will be analyzed in the field (on-site) and those that will be sent to a laboratory;

K. Sampling Logistics Plan including:

(1) Identification of team members;

(2) Documentation procedures;

(3) Field equipment listing;

(4) Sampling order; and

(5) Decontamination procedures.

L. Monitor well and piezometer construction materials and techniques; and

M. Quality control to assure samples are not contaminated as specified in Subpart d below.

b. Health and Safety Plan.

The Contractor will prepare a site Health and Safety Plan.

1. Major elements of the Health and Safety Plan will include:

   A. Site description including availability of resources such as roads, water supply, electricity and telephone service;

   B. Hazard evaluation;

   C. Monitoring requirements;

   D. Levels of protection;

   E. Work limitations;

   F. Authorized personnel;

   G. Decontamination; and

   H. Emergency information.

2. The Site Health and Safety Plan must be consistent with:

   A. Interim Standard Operating Safety Procedures;

   B. Section III(C)(6) of CERCLA;

   C. EPA Order 1440.1 - Respiratory Protection;

   D. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;

   E. EPA Occupational Health and Safety Manual;

   F. EPA Interim Standard Operating Safety Guide (September, 1982);

   G. OSHA regulations in 29 CFR 1910 - 1926;

   H. Other EPA guidance as provided; and

   I. Site conditions.

c. Chain of Custody. Any field sampling collection and analyses conducted shall be documented in accordance with chain-of-custody procedures as provided by U.S. EPA. The Contractor shall prepare and submit as part of the work plan a description of the chain-of-custody procedures to be used.

d. Quality Assurance Project Plan. The Contractor will prepare a Quality Assurance Project Plan (QAPP). The QAPP will be prepared in accordance with "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAMS-005/80, U.S. EPA, December, 1980), and the requirements of U.S. EPA's Contract Laboratory Program. The QAPP should be prepared as soon as possible to allow adequate time for possible review and revision.

1. The goals of the QAPP are:

   A. To ensure that the procedures used will not detract from the quality of results; and

   B. To ensure that all activities, findings and results follow an approved plan and are documented.

2. Specifically, the QAPP must address the following items and issues:

   A. Title page with provision for approval signatures;

   B. Table of contents;

   C. Project description;

   D. Project organization and responsibility;

   E. QA objectives for measurement data in terms of precision, accuracy, completeness, representativeness, detection limits, and comparability;

   F. Sampling procedures;

   G. Sample custody;

   H. Calibration procedures and frequency;

   I. Analytical procedures;

   J. Data reduction, validation and reporting;

   K. Internal quality control checks and frequency;

   L. Performance and systems audits and frequency;

   M. Preventative maintenance procedures and schedules;

   N. Specific routine procedures to be used to assess data precision;

   O. Remedial action;

   P. Quality assurance reports; and

   Q. Turnaround time.

d. Permitting Requirements Plan.

The Contractor will prepare a plan addressing the procedures to be employed if tasks required in the RI will require permitting action by any governmental authority.

e. Pre-Investigation Evaluation.

Prior to starting any remedial investigations, the Contractor shall assess the site conditions to identify potential remedial technologies applicable to the site and associated data needed to evaluate alternatives based on these technologies for feasibility studies. A report shall be prepared for U.S. EPA review identifying broad categories of remedial technologies that may be applicable to the site and data needs.

TASK 3 - SITE INVESTIGATION

The Contractor will conduct those investigations necessary to characterize the site and its actual or potential hazard to human health and environment. The investigations should result in data of adequate technical content to support the development and evaluation of remedial alternatives during the Feasibility Study. Investigation activities will focus on problem definition and data to support the screening of remedial technologies, alternative development and screening, and detailed evaluation of alternatives.

The site investigation activities will follow the plans set forth in Task 2. All sample analyses will be conducted at laboratories following EPA protocols or their equivalents. Strict chain-of-custody procedures will be followed and all samples will be located on a site map.

a. Hazardous Analyses Program

A sampling and analysis program to characterize the radiological, physical, and chemical characteristics of all materials of interest at the Facility will be completed. The materials of interest will at a minimum include:

1. Materials (waste and product) stored above or below ground in tanks, containers, lagoons, piles or other structures;

2. Materials generated at the Facility and disposed of off-site;

3. Materials treated or disposed of on the facility; and

4. All materials emitted, discharged, released or potentially released into the environment.

b. Hydrogeologic Investigation

The Contractor shall conduct a program to evaluate hydrogeologic conditions at the site. This program shall provide the following information:

1. A description of the regional geologic and hydrogeologic characteristics in the vicinity, including:

   A. regional stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts, petrographic analysis;

   B. structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);

   C. depositional history;

   D. regional groundwater flow patterns; and

   E. identification and characterization of areas of recharge and discharge.

2. An analysis of any topographic features that might influence the groundwater flow system (Note that stereoscopic analysis of aerial photographs should aid in this analysis).

3. A classification and description of the hydrogeologic properties of all the hydrogeologic units found at the site based on continuous bore hole samples (i.e., the aquifers and any intervening saturated and unsaturated units), including:

   A. hydraulic conductivity and effective porosity based upon laboratory and field data;

   B. lithology, grain size, sorting, degree of cementation;

   C. an interpretation of hydraulic interconnections between saturated zones; and

   D. the soil's attenuation capacity and mechanisms.

4. Using a topographic map or aerial photograph as a base, submit maps of structural geology and at least four hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of all hydrogeologic units within the scope of the RI, identifying:

   A. sand and gravel deposits in unconsolidated deposits;

   B. zones of fracturing or channeling in consolidated or unconsolidated deposits;

   C. zones of higher permeability or lower permeability that might direct or restrict the flow of contaminants;

   D. perched aquifers;

E. the uppermost aquifer (includes all water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation); and

F. zones of contaminated leaching, accumulation, and unaffected horizons for those contaminants whose movement is controlled by mechanisms of adsorption and/or mechanical filtering. These profiles should be based on continuous bore hole sampling and representative analysis.

5. A description of water level or fluid pressure monitoring including:

   A. water-level contour and/or potentiometric maps;

   B. hydrologic cross sections showing vertical gradients;

   C. an interpretation of the flow system, including the vertical and horizontal components of flow; and

   D. an interpretation of any change in hydraulic gradients due, for instance, to tidal or seasonal influences.

6. An interpretation of man-made influences that may affect the hydrogeology of the site, identifying:

   A. local water-supply and production wells with an approximate schedule of pumping; and

   B. man-made hydraulic structures (pipelines, french drains, ditches).

7. Preparation of chemical and radiological concentration isopleth maps which extend off the FMPC as necessary to identify areas of contaminant transport. The map should reflect discrete depth intervals.

c. <u>Groundwater Quality Investigation</u>

The Contractor shall conduct a Groundwater Quality Investigation to characterize any plumes of contamination at the site utilizing monitor wells constructed of teflon or stainless steel 316. This investigation shall at a minimum provide the following information:

1. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility;

2. The horizontal and vertical direction of contamination movement;

3. The current speed of contaminant movement;

4. The maximum concentration of Contract Laboratory Program List (CLP) constituents and radiological contaminants in the plume(s);

5. An evaluation of factors influencing the plume movement;

6. An extrapolation of future contaminant movement; and

7. Identification of the source(s) of groundwater contamination.

d. Soils and Sediments Investigation

The Contractor shall conduct a program to determine the location and extent of contamination of surface and subsurface soils. This process may overlap with certain aspects of the hydrogeologic study (e.g., characteristics of soil strata are relevant to both the transport of contaminants by groundwater and to the location of contaminants in the soil; cores from groundwater monitoring wells may serve as soil samples). A survey of existing data on soils and sediments may be useful. The horizontal and vertical extent of contaminated soils and sediments should be determined. Information on local background levels, degree of hazard, location of samples, techniques utilized, and methods of analysis should be included. The investigation should identify the locations and probable quantities of subsurface wastes, such as buried drums, old spill areas, inactive surface impoundments or landfills. Geophysical methods may be used to supplement sampling results. This investigation should include a study of soil contamination off the FMPC from both airborne and surface water releases.

e. Surface Water Investigation

Conduct a program to determine the extent of contamination of surface water. This process may overlap with the soils and sediments investigation; data from river sediments sampled may be relevant to surface water quality. A survey of existing data on surface water flow quantity and quality may be a useful first step, particularly information on local background levels, location and frequency of samples, sampling techniques, and method of analysis. This program shall also evaluate the impacts of the contaminants on the floral and faunal communities in the surface water, sediments, and any adjacent wetlands. This investigation should include:

1. Retrospectively computing doses to the population along the Great Miami River and Paddy's Run Creek from discharges to surface water for each each year of plant operation. Report for each year, doses to maximally exposed individuals and, for the Great Miami River, to the nearest population center downstream, New Baltimore. Report the integral population dose from the Great Miami River discharge point to the nearest population center downstream for each year; and

2. Performance of radiological analyses on the sediments in the Great Miami River from each discharge point downstream 2 kilometers. Radiological analyses on soils from the banks shall be made. Radionuclides shall be identified isotropically and compared to measured background concentrations.

f. Air Investigation

Conduct a program to determine the extent of atmospheric contamination. The program should address the tendency of substances (identified through the Hazardous Analyses Program, Task 3.a) to enter the atmosphere, local wind patterns, and the degree of hazard. This investigation should include a detailed and comprehensive study of radiological impacts associated with past operations and should include:

1. Retropectively computing inhalation doses to the offsite population within 2, 5, 10, and 50 mile radii of the FMPC due to airborne releases for each year of plant operation. Report doses to the population in each ring and doses to maximally exposed individuals for each year.

2. Retrospectively computing the deposition of radioactive materials in areas within 2 and 5 mile radii of the FMPC due to airborne releases for each year of plant operation and give the integral deposition for each year. Report deposition and compute resulting whole body and organ doses. Verify the computations through direct measurement of soils and sediments performed in Subpart e.

g. Off-Facility Water Supply Investigation

Conduct a program consisting of regular sampling and analysis of off-facility downgradient private water supply wells and downwind cistern supplies for any contaminants having the potential for movement off of the FMPC. The program should identify the contaminants of concern and include proposed criteria for comparison of results.

TASK 4 - SITE INVESTIGATION ANALYSIS

The Contractor will prepare a thorough analysis and summary of all site investigations and their results. The objective of this task will be to ensure that the investigation data are sufficient in quality (e.g., QA/QC procedures have been followed) and quantity to support the Feasibility Study.

a. Data Analysis

The Contractor will analyze all site investigation data and develop a summary of the type and extent of contamination at the site. The summary will describe the extent of contamination (qualitative/quantative) in relation to background levels indicative for the area.

b. Exposure (Risk) Assessment

For the detailed listing of radionuclides, and inorganic and organic constituents determined to be present during the Site Investigation (Task 3), the Contractor shall evaluate the risk to life forms encountering these contaminants. The following items will be discussed for each contaminant:

1. Environmental Fate and Transport:

   A. physical, chemical, and radiological properties;

   B. chemical transformations; and

   C. fate and transport.

2. Toxicological Properties:

   A. metabolism;

   B. acute toxicity;

   C. subacute and chronic toxicity;

   D. carcinogenicity;

   E. mutagenicity;

   F. teratogenicity/reproductive effects;

   G. other health effects;

   H. epidemiological evidence; and

   I. aquatic species toxicity, environmental improvement.

3. Risk Assessment and Impact Evaluation:

   A. carcinogenic risk;

   B. probability of noncarcinogenic human health effects;

   C. nonhuman species risk assessment; and

   D. conclusions.

4. Demographic Profile of Population at Risk:

   The analysis should discuss the degree to which either on-facility control or off-facility measures are required to significantly mitigate the threat to public health, welfare or the environment. If the results of the investigation indicate that no threat or potential threat exists, a recommendation to stop the remedial response should be made.

c. Application to Preliminary Technologies

The Contractor will analyze the results of the site investigations in relation to the potential remedial technologies applicable to the site. Data supporting or rejecting types of corrective action technologies, compatibility of wastes and construction materials, and other conclusions should be presented.

d. Groundwater Protection Standards

The Contractor shall develop Groundwater Protection Standards for all of the CLP constituents found in the groundwater during the Site Investigation (Task 3).

1. The Groundwater Protection Standards shall consist of:

   A. for any constituents listed in Table 1 of 40 CFR 264.94, the respective value given in that table if the background level of that constituent is below the value given in Table 1; or

   B. the background level of that constituent in the groundwater; or

   C. a U.S. EPA aproved Alternate Concentration Limit.

2. Alternate Concentration Limits (ACL's) may be developed by the Contractor and submitted to the U.S. EPA for approval. For any proposed ACL's the Contractor shall include a justification based upon the criteria set forth in 40 CFR 264.94(b).

3. Within forty-five (45) days of receipt of any proposed ACL's, the U.S. EPA shall notify the United States Department of Energy (U.S. DOE) in writing of approval, disapproval or modifications. The U.S. EPA shall specify in writing the reason(s) for any disapproval or modification.

4. Within twenty (20) days of receipt of the U.S. EPA's notification of disapproval of any proposed ACL, the U.S. DOE shall amend and submit to the U.S. EPA revised ACL's.

TASK 5 - LABORATORY AND BENCH-SCALE STUDIES

The Contractor shall conduct laboratory and/or bench scale studies to determine the applicability of remedial technologies to site conditions and problems. Analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

A testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and data management and interpretation guidelines shall be developed and submitted to U.S. EPA for review and approval.

Upon completion of the testing, evaluate the testing results to assess the technologies with respect to the site-specific questions identified in the test plan. Scale up those technologies selected based on testing results.

Prepare a report summarizing the testing program and its results, both positive and negative.

TASK 6 - REPORTS

The Contractor shall prepare a Remedial Investigation Report to present Tasks 1-7. The Remedial Investigation Report will be developed in draft form for U.S. EPA review and approval. A public meeting may be held to discuss the Draft. The Remedial Investigation will be developed in final format incorporating all comments received on the Draft Remedial Investigation Report.

Five (5) copies of both the Draft and Final Remedial Investigation Reports` will be provided by the Contractor to U.S EPA.

TASK 7 - ADDITIONAL REQUIREMENTS

a. Reporting Requirements.

Monthly Technical Progress Reports developed by the Contractor should be submitted to U.S. EPA. For each on-going work assignment, the Contractor shall submit progress reports with the following elements:

1. Identification of site and activity.
2. Status of work at the site and progress toward achieving compliance with the Agreement.
3. Percentage of completion.
4. Difficulties encountered during the reporting period.
5. Actions being taken to rectify problems.
6. Changes in personnel.
7. All results of sampling tests and all other data received by U,S. DOE.
8. A summary of all plans and proceudres completed during the past month as well as any activities scheduled for the next month.

The monthly progress report will list target and actual completion dates for each activity including project completion and provide an explanation of any deviation from the milestones in the work plan schedule.

b. Laboratory Certification

In addition to QAPP development, the Contractor will be required to pass a laboratory performance audit prior to performing any task after Task 1 if a certified CLP laboratory is not used. The audit will include analysis of the following performance evaluation samples.

Sample Type	Performance Evaluation Sample	# of Samples	U.S. EPA Analysis Procedure
Organic	Base/Neutrals	2	625
Organic	Acids	1	625
Organic	PCB's	2	608 or 625
Organic	Aromatic Purgeables*	1	602
Organic	Halogenated Purgeables*	1	601
Organic	GC/MS Purgeables	1	624

*Methods 601 and 602 are not essential if Contractor proposed analyzing all purgeables by GC/MS (method 624).

Sample Type	Performance Evaluation Sample	# of Samples	U.S. EPA Analysis Procedure
Inorganic	Metals	1	
Inorganic	Minerals	1	
Inorganic	Nutrients	2	
Inorganic	CN	1	
Inorganic	COD/BOD	1	

The Contractor is expected to qualify as well as quantify the parameters of interest. The results shall include all supporting data as required for a QAPP as specified by U.S. EPA and described when samples are forwarded to the laboratory.

An on-site laboratory visit will be performed by an U.S. EPA Quality Assurance Officer to verify compliance with required analysis procedures.

TASK 8 - COMMUNITY RELATIONS SUPPORT

The U.S. DOE will act as lead agent for the implementation of community relations activities. The Contractor will provide support to U.S. DOE staff as required for community relations activities. Community relations activities performed by the U.S. DOE will be consistent with:

a. Superfund community relations policy, as stated in "Guidance for Implementing the Superfund Program", and

b. "Community Relations in Superfund-a-Handbook".

SCOPE OF WORK FOR A FEASIBILITY STUDY

FEED MATERIALS PRODUCTION CENTER

PURPOSE

The purpose of this Feasibility Study is to develop and evaluate remedial action alternatives and to recommend the remedial action(s) to be taken to protect the public health, or welfare, or the environment from releases, or threatened releases of hazardous or radioactive substances, pollutants or contaminants at or from the Feed Materials Production Center. The Contractor will furnish the necessary personnel, materials, and services necessary to prepare the remedial action feasibility study, except as otherwise specified.

DEFINITIONS

a. Facility - refers to the Feed Materials Production Center (FMPC).

b. Site - refers to FMPC and all areas where hazardous or radioactive substances, pollutants, or contaminants have been deposited, stored, disposed of, or placed or otherwise come to be located.

SCOPE

The Feasibility Study consists of nine tasks:

Task 9 - Description of Current Situation
Task 10 - Work Plan
Task 11 - Development of Alternatives
Task 12 - Initial Screening of Alternatives
Task 13 - Detailed Analysis of Alternatives
Task 14 - Evaluation and Selection of Preferred Alternative
Task 15 - Draft Feasibility Study Report
Task 16 Final Feasibility Study Report
Task 17 - Additional Requirements

TASK 9 - DESCRIPTION OF CURRENT SITUATION

Information on the site's background, the nature and extent of the problem, and the previous response activities presented in Task 1 of the Remedial Investigation may be incorporated by reference. Any changes to the original project scope described in the Task 1 description should be discussed and justified based on the results of the remedial investigation.

Following the summary of the current situation, a site-specific statement of the purpose for the response, based on the results of the Remedial Investigation, should be presented. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by remedial alternatives.

TASK 10 - WORK PLAN

A work plan that includes a technical approach, personnel requirements, and schedules shall be submitted to the U.S. EPA for review and approval for the proposed feasibility study.

TASK 11 - DEVELOPMENT OF ALTERNATIVES

Based on the results of the Remedial Investigation, the Contractor will develop a limited number of alternatives for source control, off-facility remedial action or on-facility remedial action, based on the objectives established for the remedial action and the scoping decision.

a. Establishment of Remedial Response Objectives.

The Contractor in conjunction with the U.S. EPA will establish site-specific objectives for the remedial action. These objectives shall be based on public health and environmental concerns, scoping decisions, information gathered during the Remedial Investigation, EPA interim guidance, and the requirements of any other applicable Federal statutes including 40 CFR 300.68. At a minimum, all remedial actions concerning groundwater must be consistent with, and as stringent as, those required under 40 CFR 264.100.

b. Identification of Remedial Technologies.

Based on the remedial response objectives established above and the statement of purpose identified in Task 9 identify appropriate remedial technologies as a basis for the development of remedial alternatives. These technologies shall be identified on a media-specific basis, although consideration should be given to the interrelationship of the media. The technologies should be able to meet the response objectives. The list of potential remedial technologies developed in Tasks 2e and Task 4c shall be considered a master list of applicable technologies and shall be screened based on site conditions, waste characteristics, and technical requirements, to eliminate or modify those technologies that may prove extremely difficult to implement, will require unreasonable time periods to implement, or will rely on insufficiently developed technology.

c. Identification of Remedial Alternatives.

The Contractor will develop appropriate remedial technologies, response objectives, and other appropriate considerations into a comprehensive, site-specific approach. Alternatives developed should include the following (as appropriate):

- Alternatives for treatment or disposal off the FMPC as appropriate
- Alternatives which attain applicable and/or relevant Federal public health or environmental standards

- Alternatives which exceed applicable and/or relevant public health or environmental standards.

- No action

There may be overlap among the alternatives developed. Further, alternatives outside of these categories may also be developed. The alternatives shall be developed in close consultation with the U.S. EPA. Document the rationale for excluding any technologies in Task 2e in the development of alternatives.

TASK 12: INITIAL SCREENING OF ALTERNATIVES

The alternatives developed in Task 11 will be screened by the Contractor and U.S. EPA to eliminate alternatives that are clearly not feasible or appropriate prior to undertaking detailed evaluations of the remaining alternatives.

a. Considerations to be Used in Initial Screening.

Three broad considerations must be used as a basis for the initial screening: cost, effects of the alternative, and acceptable engineering practices. More specifically, the following factors must be considered:

1. Cost. An alternative whose cost far exceeds that of other alternatives may be eliminated from recommendation. Total cost will include the cost of implementing the alternative and the cost of operation and manintenance.

   The cost screening will be conducted only after the environmental and public health screenings have been performed.

2. Environmental effects. Alternatives posing significant adverse environmental effects will be eliminated. Significant adverse environmental effects shall include but not limited to failure to meet the Groundwater Protection Standards both on and off the FMPC.

3. Environmental protection. Only those alternatives that satisfy the remedial action objectives and contribute substantially to the protection of public health, welfare, or the environment shall be considered further. Source control alternatives shall achieve adequate control of source materials. On and off-facility alternatives shall minimize or mitigate the threat of harm to public health, welfare, or the environment.

4. Implementability and reliability. Alternatives that may prove extremely difficult to implement, will not achieve the remedial action objectives in a reasonable time period, or rely on unproven technology, will be eliminated.

TASK 13 - DETAILED ANALYSIS OF ALTERNATIVES

The Contractor will evaluate the alternatives that pass through the Initial Screening in Task 12. Alternative evaluation will be preceded by detailed development of the remaining alternatives.

a. Technical Analysis

The Technical Analysis will at a minimum:

1. Describe appropriate treatment, storage, and disposal technologies;

2. Discuss how the alternative does (or does not) comply with specific requirements of other environmental programs. When an alternative does not comply, discuss how the alternative prevents or minimizes the migration of wastes and public health or environmental impacts and describe special design needs that could be implemented to achieve compliance;

3. Outline operation, maintenance, and monitoring requirements of the remedy;

4. Identify and review potential off the FMPC facilities to ensure compliance with applicable RCRA and other EPA environmental program requirements, both current and proposed. Potential disposal facilities should be evaluated to determine whether off the FMPC management of site wastes could result in a potential for a future release from the disposal facility;

5. Identify temporary storage requirements, off the FMPC disposal needs, and transportation plans;

6. Describe whether the alternative results in permanent treatment or destruction of the wastes, and, if not, the potential for future release to the environment;

7. Outline safety requirements for remedial implementation (including both on-facility and off-facility health and safety considerations);

8. Describe how the alternative could be phased into individual operable units. The description should include a discussion of how various operable units of the total remedy could be implemented individually or in groups, resulting in significant improvement to the environment or savings in cost;

9. Describe how the alternative could be segmented into areas to allow implementation in differing phases; and

10. Describe the special engineering requirements of the remedy or site preparation considerations.

b. Environmental Assessment

The Contractor will perform an Environmental Assessment (EA) for each alternative. The EA should focus on the site problems and pathways of contamination actually addressed by each alternative. The EA for each alternative will include, at a minimum, an evaluation of beneficial effects of the response, adverse effects of the response, and an analysis of measures to mitigate adverse effects. The no-action alternative will be fully evaluated to describe the current site situation and anticipated environmental conditions if no actions are taken. The no-action alternative will serve as the baseline for the analysis.

c. Public Health Analysis

Each alternative will be assessed in terms of the extent to which it mitigates long-term exposure to any residual contamination and protects public health both during and after completion of the remedial action. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected population. The effect of "no-action" should be described in terms of short-term effects (e.g., lagoon failure), long-term exposure to hazardous substances, and resulting public health impacts. Each remedial alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. The relative reduction in public health impacts for each alternative will be compared to the no-action level. For management of migration measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA. For source control measures or when the criteria, standards, or guidelines are not available, the comparison should be based on the relative effectiveness of technologies. The no-action alternative will serve as the baseline for the analysis.

d. Institutional Analysis

Each alternative will be evaluated based on relevant institutional needs. Specifically, regulatory requirements, permits, community relations, and participatory agency coordination will be assessed.

e. Cost Analysis

Evaluate the cost of each remedial action alternative (and for each phase or segment of the alternative). The cost will be presented as a present worth cost and will include the total cost of implementing the alternative and the annual operating and maintenance costs. Both monetary costs and associated non-monetary costs will be included. A distribution of costs over time will be provided.

TASK 14 - EVALUATION AND SELECTION OF PREFERRED ALTERNATIVE

The U.S. EPA shall review the results of the detailed analysis of alternatives prepared under Task 13 and select the preferred alternative. The lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment will be considered the preferred alternative.

The following considerations shall be used as the basis for selecting the cost-effective alternative:

a. Reliability. Alternatives that minimize or eliminate the potential for release of hazardous substances into the environment will be considered more reliable than other alternatives. For example, recycling of wastes and off-site incineration would be considered more reliable than land disposal. Institutional concerns such as management requirements can also be considered as reliability factors.

b. Implementability. The requirements for implementing the alternatives will be considered, including phasing alternatives into operable units and segmenting alternatives into project areas on the site. The requirements for permits, zoning restrictions, rights of way and public acceptance are also examples of factors to be considered.

c. Effects of the Alternative. The altenative posing the greatest improvement to (and least negative impact on) public health, welfare, and environment will be favored.

d. Safety Requirements. The alternatives with the lowest adverse safety impacts and associated costs will be favored.

e. Present Worth of Total Cost. The net present value of capital and operation and maintenance cost of the proposed alternative must be presented.

TASK 15 - DRAFT FEASIBILITY STUDY REPORT

The Contractor will prepare and submit to U.S. EPA, a Draft Feasibility Study Report presenting the results of Tasks 9 through 14 and recommending a remedial action alternative. Five (5) copies of the preliminary report will be provided by the Contractor.

TASK 16 - FINAL FEASIBILITY STUDY REPORT

The Contractor will prepare a Final Feasibility Study Report for submission to U.S. EPA, taking into account comments received from the Agency and the State of Ohio. Five (5) copies will be provided by the Contractor.

TASK 17 - ADDITIONAL REQUIREMENTS

Reporting and Community Relations Support requirements, as described in Task 8 of the Remedial Investigation scope of work, will be required for the Feasibility Study as well. The Feasibility Study Reports will address the need and the applicability of long term monitoring at the facility.