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# FINDINGS OF NO SIGNIFICANT IMPACT PROPOSED INTERIM REMEDIAL ACTION FOR OPERABLE UNIT 3 AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, FERNALD, OHIO

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# FINDING OF NO SIGNIFICANT IMPACT
# PROPOSED INTERIM REMEDIAL ACTION FOR OPERABLE UNIT 3 AT THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
# FERNALD, OHIO

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) proposes an interim remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, for the decontamination and dismantlement of structures and improvements in Operable Unit 3 at the Fernald Environmental Management Project (FEMP). A Proposed Plan/Environmental Assessment (PP/EA) for this remedial action has been prepared in accordance with DOE policy to integrate the procedural and documentation requirements of CERCLA and the National Environmental Policy Act of 1969 (NEPA).

The action proposed in the PP/EA is to (1) decontaminate some 200 structures and other improvements in Operable Unit 3 by removing loose radiological contamination, (2) remove equipment and stored material from the structures, (3) dismantle the structures and other improvements, including underground utilities, (4) construct and operate interim storage facilities adjacent to the former Production Area, (5) ship a limited quantity of the waste and debris accumulated by dismantlement to licensed, off-site disposal or recycling sites, and (6) transport the balance of the waste and debris to the interim storage facilities or existing available structures, until a final decision is reached concerning treatment and disposal of the material. Based on the analyses in the PP/EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of NEPA. Therefore, the preparation of an Environmental Impact Statement is not required, and DOE is issuing this Finding of No Significant Impact (FONSI).

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COPIES OF THE PP/EA ARE AVAILABLE FROM:

Mr. W. J. Quaider,
Acting Assistant Manager, Technical Support
DOE Field Office, Fernald
U. S. Department of Energy
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6660

FOR FURTHER INFORMATION REGARDING THE NEPA PROCESS CONTACT:

Ms. Carol Borgstrom,
Director, Office of NEPA Oversight (EH-25)
U. S. Department of Energy
1000 Independence Avenue, SW
Washington, D. C. 20585
(202) 586-4600 or (800) 472-2756

BACKGROUND: The Fernald Environmental Management Project (FEMP) is a government-owned, contractor-operated Federal facility that produced high-purity uranium metal products for DOE and its predecessor agencies during the period 1952-1989. Thorium also was processed, but on a smaller scale, and still is stored on the site. Production activities were stopped in 1989, and the production mission of the facility was formally ended in 1991. The FEMP, which was formerly known as the Feed Materials Production Center, was included on the National Priorities List in 1989. The current mission of the facility is environmental restoration of the site. Response actions at the FEMP are being conducted in accordance with the requirements of CERCLA, as amended. The facility is located on a 1,050-acre site in a rural agricultural area about 17 miles northwest of downtown Cincinnati, Ohio.

The FEMP is divided into five separate operable units. Operable Unit 3 (OU3) consists of the former Production Area and production-associated facilities and equipment, and incorporates all above- and below-grade improvements at the site, not specified in the definitions of the other operable units. The former Production Area occupies an area of about 136 acres near the center of the FEMP site. No future use has been identified for the site's former Production Area and its associated improvements. Consistent with its environmental restoration mission, it is anticipated that remaining buildings in Operable Unit 3 will be dismantled. Most structures date from the early 1950s and have already exceeded their intended design life; others are approaching their design life, which will be exceeded by the time restoration is complete using the CERCLA process through remedial and/or removal actions.



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PROPOSED ACTION: DOE proposes to decontaminate, remove equipment and stored materials from, and dismantle over 200 contaminated structures and other improvements in Operable Unit 3 at the Fernald Environmental Management Project. The major contaminants are uranium and, in some areas, thorium, and associated decay products. Until a final CERCLA Record of Decision (ROD) is issued on how the resulting waste and debris will be managed, most of the accumulated waste and debris would be placed in either interim storage facilities that would be located adjacent to and northeast of the former Production Area and/or existing structures with available space whose demolition has been scheduled to assist in the implementation of the action. The construction and management of these interim storage facilities is also included in the scope of the proposed action.

DOE is currently preparing a Remedial Investigation/Feasibility Study (RI/FS) for remediation of OU3 and treatment and disposal of wastes, which DOE plans to issue in draft in 1996. This document will also be prepared to integrate NEPA and CERCLA, however the level of NEPA review required has not been determined. The proposed action to accelerate decontamination and dismantlement of contaminated structures and other improvements is being treated as an interim action in accordance with 40 CFR 1506.1. The proposed action will not limit the choice of reasonable alternatives or prejudice the ultimate decision for which the RI/FS-NEPA document is being prepared and, on the basis of the determination presented in this FONSI, will have no significant environmental impact.

Structures and other improvements associated with the proposed action range from support facilities with low levels of contamination (such as small buildings, roads, and concrete pads) to large process buildings that are heavily contaminated and large administrative buildings that are relatively non-contaminated or clean.

The methods to be used for decontaminating and dismantling structures and other improvements would depend on the contamination expected and the type of construction (e.g., concrete block, transite, steel, etc.). The order in which a component would be decontaminated and dismantled would be based on the need for the component to support remediation activities.

Surface decontamination measures would be used to remove contamination from floors, walls, ceilings, structural members, and various equipment and materials. Decontamination technologies would be selected during remedial design. Potential decontamination technologies include wiping, vacuuming, manual or mechanical scrubbing, low or high pressure washing, grit-blasting or pelletized $CO_2$ blasting.

New or innovative technologies might be incorporated, as appropriate. Structures would be exhausted through High Efficiency Particulate Air (HEPA) filters in order to minimize the airborne releases of contaminants during dust-generating activities.

After removing equipment and stored materials from the structures and decontaminating the various surfaces, the structures would be dismantled using standard engineering procedures and equipment. Maximum use would be made of heavy equipment to minimize the likelihood of occupational injuries during dismantlement activities. The buildings would be brought to the ground as expeditiously as possible; additional dismantlement activities would be performed (e.g., cutting) to allow for movement of material to storage.

Above-grade portions of components or components that are entirely above grade would generally be dismantled before below-grade components or portions of components that are below grade. The activities required for above-grade components would include removal of equipment and stored materials, surface decontamination, dismantlement of structures, and interim storage of the resultant materials. After above-grade decontamination and dismantlement, foundations, slabs, pads, and subsurface utilities would be addressed in parallel with remediation of adjacent environmental media that are a part of a separate action. The proposed action would result in approximately 35,000 $yd^3$ of waste and debris prior to the final ROD, with potentially 18,000 $yd^3$ of waste and debris being shipped off site for recycling or disposal during the interim period before the final ROD. Total volume of material generated as a result of this action is estimated based on results in the OU3 RI/FS Work Plan Addendum to be approximately 425,000 $yd^3$ of waste and debris.

Potentially as many as 6 interim storage facilities would be constructed to hold the debris and waste accumulated until a final OU3 CERCLA ROD is issued and implemented. Also, it is envisioned that these structures would be used throughout the decontamination and dismantlement process as staging areas for the waste and debris accumulated. The facilities would be tension support structures constructed with metallic frames covered by synthetic fabric. These structures would shelter debris, control run on and run off, and minimize release of dust. The structures individually would have a nominal 30,000 $ft^2$ of usable floor space for a nominal 11,000 $yd^3$ (300,000 $ft^3$) of materials storage each. The structures would be located on an area of about 12 acres of ungrazed, managed field located adjacent to the northeast corner of the former Production Area.



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The interim storage structures would be designed for temporary storage, and as such cannot be used for long-term storage. The intent of building these facilities is twofold: for use as an interim or temporary storage area for wastes accumulated from the action if existing storage space is not available and for use as a staging area to support segregation, packaging, and transportation of materials for disposition. To minimize constructing additional temporary storage facilities, available storage space within buildings or on the Plant 1 Pad would be utilized for interim storage or staging to the maximum extent possible. If storage and staging space is obtained within existing facilities it would not be necessary to construct all of the planned interim storage structures.

The final decision for material disposal, whether on-site or off-site, to be decided as part of the OU3 final remedial action ROD in 1997, would determine the location for disposition of OU3 wastes including materials in interim storage and the storage structures. A decision for on-site disposition of materials would preclude the use of the interim storage structures for permanent storage and would require construction of structure(s) specifically to meet the stringent requirements of permanent disposal. Whether the decision should be for on-site or off-site disposal, the interim storage structures would be used only long enough to support staging operations for materials resulting from dismantlement activities. Therefore, the time frame for use of the structures is connected to the final decision for disposition of the OU3 remediation wastes, which is anticipated in April 1997. Once staging is no longer necessary to support material dispositioning, the structures removed as part of the OU3 interim remedial action and the resulting wastes would be dispositioned as part of the OU3 final remedial action.

ENVIRONMENTAL IMPACTS: The proposed action was analyzed for potential health effects on the general public and on workers and for general environmental effects. The results of the analyses are summarized below.

Potential Health Effects on the General Public: The structures and other improvements would be decontaminated and dismantled in a manner that would minimize the likelihood of airborne releases. Loose radioactive contamination and most material and equipment currently located within the structures would be removed prior to dismantlement in order to minimize airborne releases of contaminated material. Waste resulting from the decontamination and dismantlement activities would be containerized as appropriate. Stringent engineering controls would be implemented during each of these activities such that no significant increase in airborne contaminant concentrations is expected to be measured at the site perimeter.



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Radioactive particulates, radon, and external gamma exposure rates are currently measured at the site perimeter as part of the FEMP's ongoing environmental monitoring program. Specific measurements would be taken for contaminants at the site perimeter during activities that could potentially result in releases. If levels of contaminants were significantly increased above the range of current levels at the site perimeter during implementation of the proposed action, more stringent engineering measures would be implemented so that off-site releases would be effectively controlled. Therefore, no member of the general public is expected to receive a significant incremental radiation dose or chemical exposure via the air pathway as a result of the proposed action. Calculations performed using conservative assumptions indicate that the maximally exposed off-site resident would receive a dose of approximately $6 \times 10^{-2}$ mrem/yr due to the action, which includes decontamination and dismantling activities plus operation of the interim storage facilities. By comparison, an average individual in the United States receives a dose of approximately 300 mrem/yr from natural background radiation. The maximally exposed member of the public is estimated to receive a radiation dose of about 0.9 mrem for the entire action. The corresponding incremental lifetime risk of cancer incidence is about $6 \times 10^{-7}$. The population residing within 5 miles of the site and the general public located near the off-site transportation route would receive doses corresponding to a collective incremental lifetime risk of about $8 \times 10^{-4}$.

No exposures of the general public are expected via the surface water pathway because potentially contaminated surface water would be retained on-site and monitored consistent with the site's existing NPDES permit. Contaminated water would be treated in the water treatment plant at the site, as appropriate, prior to release. All surface water released from the site would be discharged through permitted outfalls in compliance with the permit.

Potential Health Effects on Workers: Exposures of workers conducting the action would be kept as low as reasonably achievable (ALARA) by following standard health physics and industrial hygiene practices and maintaining strict compliance with worker-protection requirements, including DOE limits for occupational exposure. Dust-control measures -- such as vacuuming and directing the exhaust through HEPA filters, wet wiping contaminated surfaces, and using localized ventilation -- would be employed to minimize particulate emissions during implementation of the proposed action. Respiratory protective equipment (e.g., full-face respirators and self-contained breathing units) would be used if such dust-control measures did not maintain airborne contaminant concentrations at acceptably low levels. Both the general work area and the breathing zone would be monitored for radioactive and chemical contaminants as part of a comprehensive monitoring program.

The level of contamination in the structures is highly variable, ranging from minimal (if any) contamination in auxiliary structures to considerable contamination in the process buildings. The potential for worker exposure to radioactive and chemical contaminants would be highest while the structure and other improvements were being decontaminated. Monitors would be used to determine airborne contaminant concentrations in the work areas to evaluate compliance with requirements for protecting worker health and safety.

The annual radiation exposure to a decontamination worker is conservatively estimated to be about 210 mrem effective dose equivalent from external gamma exposure and inhalation of contaminated dust. This value is well below the DOE administrative control limit of 2,000 mrem/yr given in the DOE Radiological Control Manual and the 5,000 mrem/yr limit for occupational workers given in DOE Order 5480.11. This radiation exposure would result in an annual incremental lifetime radiological risk (i.e., the risk of cancer over the remainder of the worker's lifetime from this one year of radiation exposure) of about $1 \times 10^{-4}$. Planned use of the ALARA principle during decontamination activities would reduce these exposures to lower levels. Exposure to natural sources of radiation -- i.e., radon, terrestrial radiation, and cosmic rays -- results in an effective dose equivalent of about 300 mrem/yr.

The maximally exposed individual worker will receive a dose of about 3.4 rem for the entire proposed action with a corresponding individual incremental lifetime risk of cancer incidence of $2 \times 10^{-3}$. The collective incremental lifetime risk for all remediation workers is about 0.3 on the basis of about 2560 person-years of effort.

The major occupational safety concern for workers would be the physical hazard associated with dismantlement activities. The total number of occupational fatalities associated with the proposed action is estimated to be about 0.7, and the estimated total number of injuries is about 420 over the duration of the project which is approximately 16 years. These estimates are based on U.S. Department of Labor (DOL) statistics for construction workers applied to the total estimated 2,560 person-years of effort for the proposed action. Fewer accidents are expected with the implementation of the proposed action because more stringent safety standards will be applied than is usually the case within the construction industry.

Other workers at the site not directly involved in the proposed action could be exposed to airborne contaminants released during project activities. The actual exposures of these workers would depend on

their proximity to the release points. The major exposure pathway would be inhalation of airborne contaminants. The dose to an individual worker not directly involved in this action would not be expected to exceed about 0.4 mrem for the action. The incremental lifetime radiological risk to such a worker for the action is estimated to be about $2 \times 10^{-7}$. The collective incremental lifetime radiological risk for all such on-site workers is about $5 \times 10^{-5}$ for the action, assuming 1600 exposed workers.

Potential Environmental Effects: Implementation of the proposed action would, during the short term, disturb small areas of soil in the vicinity of the various structures being dismantled. Because these areas were previously disturbed during construction and operation activities at the site, no long-term adverse environmental impacts are expected. The construction of the interim storage facilities, which would disturb approximately 12 acres of ungrazed managed field, with minimal habitat, would also have minimal impact on the environment. Decontamination and dismantlement activities would also potentially remove about 1.2 acres of wetlands that consist of man-made drainageways with minimal quality habitat, based on a wetlands assessment prepared in accordance with 10 CFR 1022. Mitigation for wetland impacts would be determined using the 404 (b)(1) guidelines of the Clean Water Act in consultation with the U.S. Army Corps of Engineers, USEPA, and OEPA.

Local surface waters would not be adversely impacted by the proposed action because only small areas would be affected by surface alterations and activities would be located outside the 100-year and 500-year floodplains. A surface water management program (e.g., use of runoff controls) would be implemented as a part of the proposed action to ensure minimal impacts to off-site surface water. Appropriate erosion control measures such as silt fences, straw bales, and sediment traps would be used during all construction. As noted above, all potentially contaminated water would be retained and treated as necessary before release.

Removal of below-grade structures has the potential to impact perched ground water and the Great Miami Aquifer. However, efforts would be made to minimize impacts to ground water during remedial activities. Monitoring wells would be used to detect any release to the perched ground water and the aquifer. If releases are detected, appropriate response actions would be implemented. Overall, removal of contaminant sources associated with the structures and other components would minimize the potential for impacts to surface water and groundwater.

Dust released during decontamination, dismantlement, or temporary storage activities could impact air quality in the immediate vicinity of the work area during the short term. The potential for dust generation would be minimized by limiting on-site vehicular traffic and by implementing good engineering practices, such as wetting or covering exposed surfaces. Activities would be sequenced to minimize the generation of contaminated dust (e.g., wall openings would be sealed prior to decontamination activities such that the structure itself would serve as a release control). In addition, equipment used for decontamination activities would contain appropriate emission control devices (e.g., air would be exhausted through HEPA filters). Airborne concentrations of radioactive and chemical contaminants are not expected to increase at the site perimeter as a result of this action. Contingency plans and engineering controls would be implemented to ensure that air quality off-site is not adversely impacted during the action period.

Adverse impacts to vegetation and wildlife related to noise or dust resulting from the proposed action would be minimal. The affected area is primarily composed of buildings and does not provide unique wildlife habitat. Plant species in the area are restricted in distribution. Flora and fauna are not likely to be exposed to significant airborne contaminants during the action period because such releases would be controlled. The construction of the interim storage facilities would result in the disturbance of about 12 acres of ungrazed, managed field, which currently provides minimal habitat or food source for terrestrial wildlife.

The implementation of the proposed action would have little or no impact on the socioeconomic structure at or around the site. Most workers would come from the existing labor pool in the vicinity of the site.

There are no cultural resources within the former Production Area. Therefore, no effect on cultural resources would occur within that area. The affected areas outside the fenced Production Area would be investigated to determine the presence of any such resources, and if any are found, appropriate action would be taken, in consultation with the Ohio State Historical Preservation Office, to either preserve the resources or to relocate them.

POTENTIAL CUMULATIVE IMPACTS: Potential cumulative impacts associated with the proposed action and a separate connected action were analyzed in the PP/EA. The results of these analyses are summarized below in terms of potential cumulative health effects and potential environmental effects.

The connected action is the Safe Shutdown removal action, which will ensure the proper shutdown of all process facilities prior to final remediation.

Potential Cumulative Health Effects: Potential cumulative health impacts were analyzed for three types of receptors: workers involved in the proposed action and the Safe Shutdown action (action workers), other on-site workers not involved in either of the actions, and off-site residents. Based on the analyses performed, no worker is expected to receive a radiation dose above 210 mrem in any one year, well below the 2,000 mrem/yr DOE administrative control limit. The maximum incremental risk of a cancer incidence to a single worker due to the 16 years of exposure would be about $2 \times 10^{-3}$. The cumulative collective risk to workers from all exposures over the duration of the two actions would be about 0.3. The total number of workers involved in the two actions is expected to be about 300 in any one year and the actions are expected to last a total of 16 years.

It is very unlikely that the same individual would be the most exposed worker every year during the duration of both connected actions. However, in the unlikely event that a single worker would be exposed at the maximum every year, his cumulative dose would be about 3.4 rem. The incremental lifetime risk to this hypothetical worker would be about $2 \times 10^{-3}$ from all years of exposure. The cumulative collective cancer risk to the other on-site workers would be about $7 \times 10^{-5}$. The total number of on-site workers would be approximately 1,600; about 1,000 of these would be office workers.

The cumulative dose to the maximally exposed off-site resident would be about $6.3 \times 10^{-2}$ mrem/yr or 1.0 mrem over the duration of the two connected actions. The individual's incremental lifetime cancer risk would be about $4 \times 10^{-8}$ from one year of exposure and $6 \times 10^{-7}$ from all years of exposure. The cumulative incremental cancer risk to residents within five miles of the site (approximately 23,000 people) over the duration of the actions would be approximately $9 \times 10^{-4}$ from exposure over the duration of the actions. By comparison, the maximally exposed member of the public would receive approximately 5,000 times more radiation, and incur 5,000 times more risk, from natural background (not related to FEMP actions) in the same period. The cumulative incremental cancer risk to the general public located along the off-site transportation route would be about $3 \times 10^{-4}$.

Potential Cumulative Environmental Effects: Potential adverse environmental impacts associated with the proposed action and Safe Shutdown are expected to be minor. Construction and dismantlement activities for the proposed action would be primarily focused on the central areas of the site, but will

include some structures near the east boundary and an effluent pipeline which traverses the site boundary to the east. Safe Shutdown would involve no construction. No areas off site would be affected by either action. A surface water management program would be enacted during the proposed action to minimize potential impacts to off-site surface water. No effects to surface water are expected for Safe Shutdown. Air quality impacts that might result from either action would be minimized by controlling emissions with engineering measures and using monitoring systems and contingency plans to ensure environmental protection. Any cumulative environmental impacts of the proposed action and Safe Shutdown would be temporary and would be limited to the short term.

ALTERNATIVES CONSIDERED: In the PP/EA, DOE considered the following alternatives to the proposed action of accelerated decontamination and dismantlement of structures and other improvements: (1) no action , (2) no interim action, and (3) accelerated decontamination only.

The no-action alternative was determined to be unacceptable because the risks posed by the contaminated components would remain unmitigated under this alternative. The existing threat of environmental releases would continue, as would safety hazards posed to on-site personnel. In addition, the no-action alternative is inconsistent with current plans for comprehensive remediation of the site. Impacts similar to those for the no-action alternative would be associated with the no interim action alternative during the period before remediation begins.

The structures and other improvements in the operable unit would be decontaminated and dismantled under the proposed action, the no interim action, or the accelerated decontamination alternatives (the latter two within the scope of the final ROD for the operable unit). Therefore, the evaluation of the three action alternatives focused on their ability to facilitate completion of site cleanup activities.

The accelerated decontamination and dismantlement alternative would reduce the threat of environmental releases and current safety hazards associated with the contaminated structures and other improvements and would support future cleanup actions. The contaminated material would be placed in controlled storage, thus greatly reducing the likelihood of future releases to the environment. Further, subsurface areas of the site could be more easily characterized if the structures were removed. This alternative is consistent with and would contribute to the efficient performance of overall remedial action being planned for the site. In contrast, the no interim action alternative would not facilitate site cleanup because the actions needed to address the structures and other improvements would not be accelerated. Similarly,

the accelerated decontamination alternative would allow structures and other components to remain in place and no safety hazards would be eliminated. Based on these considerations, the accelerated decontamination and dismantlement alternative was identified as the preferred alternative.

The accelerated decontamination and dismantlement alternative would minimize potential risks to human health and the environment associated with contaminant releases from the structures and other components and would reduce the potential for adverse impacts to worker safety. This alternative can be implemented using standard engineering practices and equipment, and it is cost-effective.

**DETERMINATION:** The proposed management of the structures and other improvements in OU3 at the FEMP, involving decontamination and dismantlement with interim storage of most resultant wastes on-site until a final decision (ROD) concerning waste disposition is made, does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act. This finding is based on the analyses in the PP/EA. Therefore, preparation of an environmental impact statement is not required. Nothing herein is intended to represent a statement on the legal applicability of NEPA to remedial actions under CERCLA.

Issued at Fernald, Ohio, this 25th day of May 1994.

Ray Hamric for

J. Phil Hamric
Manager



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**Department of Energy**
**Fernald Environmental Management Project**
P.O. Box 398705
Cincinnati, Ohio 45239-8705

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MAY 26 1994
DOE-1802-94

Mr. Ken Alkema
Fernald Environmental Restoration
Management Corporation
P.O. Box 398704
Cincinnati, Ohio 45239-8704

Dear Mr. Alkema:

**APPROVED FINDING OF NO SIGNIFICANT IMPACT FOR THE OPERABLE UNIT 3 INTERIM REMEDIAL ACTION**

The purpose of this letter is notify you of the approval of the Finding of No Significant Impact (FONSI) for the Operable Unit 3 Interim Remedial Action to decontaminate and dismantle all of the above, and below-grade components and structures in Operable Unit 3. The signed FONSI is enclosed.

If you have any questions on this subject, please direct them to Ed Skintik at 648-3151.

Sincerely

Walter J. Quaider

FN:RJ Janke

Walter J. Quaider
Assistant Manager
Technical Support

Enclosure: As Stated

cc w/enc:

K. Chaney, EM-423, TREV
D. Kozlowski, EM-423, TREV
R. Scott, EM-20, FORS
AR Coordinator, FERMCO