UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

455903 - R8 SDMS
382044
SDMS# 455903

JUL 16 1996

Ref: 8EPR-ER

ACTION MEMORANDUM

SUBJECT: Documentation of a Removal Action at the County Line Mercury Site in Douglas County, CO. **Action Memorandum**

TO: Site File

FILE PLAN 2.01.01

FROM: Peter Stevenson, On-Scene Coordinator
Emergency Response Team

THROUGH: Steve D. Hawthorn, Team Leader
Emergency Response Team

Douglas M. Skie, Director
Preparedness, Assessment & Emergency Response Programs

Max H. Dodson, Assistant Regional Administrator
Office of Ecosystems Protection & Remediation

Site ID#: 5J

Category of Removal: Classic Emergency, Fund Lead

I. PURPOSE

The purpose of this Action Memorandum is to document approval of the Removal Action described herein for the County Line Mercury site (Site) located at 600 West County Line, Douglas County, Colorado. The response was initiated on May 5, 1996 under the On-Scene Coordinator's (OSC) $250,000 funding authority and addressed the release of nine vials of mercury into the area of an apartment complex and a storm drain.

Conditions existing at the Site presented an imminent and substantial endangerment to human health and the environment and met the criteria for initiating a Removal Action under 40 CFR, Section 300.415(b)(2) of the National Contingency Plan (NCP). The actions discussed in this memorandum are anticipated to require less than 12 months and two million dollars to complete.

Based on the nature of the Site conditions and response, there are no nationally significant or precedent-setting issues associated with this Removal Action.

Printed on Recycled Paper

II. SITE CONDITIONS AND BACKGROUND

A. SITE DESCRIPTION

The Removal Action at the Site was initiated within 24 hours of EPA notification as a Classic Emergency and the CERCLIS Number is CO0001410265. The Site consists of a storm drain and a nearby apartment complex which was impacted by contamination as a result of illegal dumping of nine vials of mercury and children playing with them.

1. Removal Site Evaluation

The Littleton Fire Department responded to the Site on May 4, 1996, and found several vials of mercury which had been illegally dumped near a storm drain and scattered throughout an apartment complex by children playing with it.

Mercury is a hazardous substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

2. Physical Location

The Site is located at 600 West County Line in a suburban residential area of Douglas County, Colorado. The storm sewer, which is the location of the initial dumping, leads to the Highline Canal, which transverses the Denver Metropolitan Area southwest to northeast. Two apartments from the "Bluffs" Apartment Complex (#16-103 and #19-203) had mercury spilled inside them, and there was spillage on the concrete walkways and landscaping around the areas of 5 of the apartments.

3. Site Characteristics

Nine vials (3"-4" diameter) were illegally dumped near the storm drain. The vials were found by children outside the apartment complex in a storm drain and carried inside the apartments. Two apartments had mercury spilled on the carpets, and the sidewalks and landscaping outside five of the apartments showed spillage.

4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

Elemental mercury had been released to the environment as a result of illegal dumping and children playing with it. The families in two apartments were living in

residences which had been contaminated with mercury, and several other apartment areas had mercury on their sidewalks or in the landscaping. Finally, the illegally dumped mercury had a potential to migrate into the Highline Canal, which transverses the Denver Metropolitan area and is a park and bike path.

5. NPL Status

This Site is not on the NPL and has not been referred to the Site Assessment Program for further assessment or investigation.

B. OTHER ACTIONS TO DATE

1. Previous Actions

No previous actions have been performed on this Site.

2. Current Actions

On May 5, 1996 EPA initiated a Removal Action at the Site under the OSC's emergency funding authority. EPA used its OSC, toxicologist, and cleanup contractors to provide technical assistance in identification of cleanup areas and assisted the Locals with blood sampling and in assessing potential migration of mercury to the water supply reservoir. The OSC authorized a Delivery Order ceiling of $20,000 in order to take immediate actions to limit exposure to the hazardous substances at the Site.

C. STATE AND LOCAL AUTHORITIES' ROLE

1. State and Local Actions to Date

The Littleton Fire Department (LFD) secured the 2 vials of mercury which were found at the apartments and evacuated families from two apartments. LFD also used a shop vacuum to retrieve mercury in the apartments. Seven vials/bottles of mercury were found outside the apartment on the deck and were also secured by LFD.

The Littleton Fire Department contacted the State of Colorado at midnight on 5/4/96 relative to a need for help in the cleanup of the mercury spill. The State contacted EPA for help at 1000 on 5/5/96.

2. Potential for Continued State/Local Response

Officials from the County and Local Agencies will continue to help in Site cleanup and disposal.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the Site present a threat to public health and the environment and meet the criteria for initiating a Removal Action under 40 CFR §300.415(b)(2) of the NCP.

A. Threats to Public Health or Welfare

The following factor from §300.415(b)(2) of the NCP forms the basis for EPA's determination of the threat present and the appropriate action to be taken:

> (i) Actual or potential exposure to hazardous substances by nearby populations.

Metallic mercury is a heavy metal which is a liquid at room temperature, but has a measurable vapor pressure. Mercury can evaporate to a significant extent under conditions tolerable to man. It can occur in the form of vapors, dusts, and aerosols. Its vapors are odorless and can occur in the air at concentrations as high as 19.5 milligrams (mg)/cubic meters (m^3). Metallic mercury reacts violently with acetylene, ammonia, and chlorine. There is no early warning sign for high exposure to mercury. Its occurrence, even in air, is widespread in nature, with approximately 20,000 tons entering the environment each year. Much of the mercury that reaches aquatic ecosystems is converted to methylmercury and other organic mercurial compounds.

Elemental mercury (metallic) is usually non-toxic when ingested unless a gastrointestinal fistula or other GI inflammatory disease is present, or the mercury is retained for a prolonged period in the GI tract. Inhalation of vapor from aerosolized mercury may cause severe pulmonary and renal injury. Aspiration of metallic mercury may cause hemoptysis, tachycardia, cyanosis, hypotension, hematuria and respiratory distress.

Metallic mercury vapor is an insidious poison that can produce permanent effects on the central and peripheral nervous system. There are no immediate warning signs for overexposure to mercury. The onset of symptoms can be immediate or delayed. Permanent symptoms can occur even from single high exposures. Mercury is not readily absorbed when taken in by mouth, but 80% of inhaled doses are rapidly and readily absorbed into the body.

Mercury is also absorbed through the skin and is a skin irritant. While not often discussed in reviews, the skin can

be a target for the effects of mercury. Once absorbed into the body, elemental mercury is converted into mercuric ion. Some forms of mercury may cross the blood-brain barrier and the placental barrier. It is deposited at the membranes of cells, thereby disrupting the structure of the blood-brain barrier and making it porous to other substances.

Mercury goes to the brain, peripheral nerves, kidney, liver, myocardium (heart muscle), intestinal mucosa, testis, skin, bone marrow, and placenta. Mercury tends to remain in the body for a long time in comparison with other chemicals. The half-life for mercury (time for half of the substance to be eliminated) is 64 days for the kidney, 54 days for the whole body, and approximately 1 year for the brain. The concentration of mercury in the brain thus may accumulate to high levels, which may still be present even 10 years after exposure has stopped.

The following is an example of a maximum tolerated exposure to elemental mercury. A 20-month-old, 11 kg female was found to have a whole blood mercury of 49 mcg/L when admitted for a 6 week illness (anorexia, irritability, insomnia, stomatitis, and red, painful hands and feet). The source of exposure was traced to a small vial containing approximately 5 mL of elemental mercury that was spilled on the rug 2 weeks prior to her onset of symptoms. No other family members had symptoms and the mother's whole blood mercury concentration was 5 mcg/L.

Metallic mercury should be regarded as a human reproductive hazard for effects on male and female reproductive systems, as well as possible teratogenic effects on the unborn. There may also be significant hazard to infants of nursing mothers who have been occupationally exposed to mercury, because mercury can pass to the breast milk and can be absorbed orally by infants.

<u>Summary:</u>

Exposure routes: Inhalation; skin absorption; skin and/or eye contact;

Exposure symptoms: irritation to the eyes, skin; cough, chest pain, dyspnea, bronchitis pneumonitis; tremor, insomnia, irritability, indecision, headache, fatigue, weakness; stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria.

Target organs: Eyes, skin, respiratory system, central nervous system, kidneys.

B. THREATS TO THE ENVIRONMENT

Two characteristics, volatility and biotransformation, make mercury a somewhat unique environmental toxicant. Its volatility accounts for high atmospheric concentration, 20 to 200 mg/m^3 near areas containing high soil levels (10 ppm) as compared to a normal atmospheric concentration of 5 mg/m^3. Mercury bioaccumulates and concentrates in the food chain. Bioconcentration factors of 63,000 for freshwater fish, 100,000 for marine and freshwater invertebrates, and 10,000 for salt water fish have been found.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the Removal Action described in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. PROPOSED ACTIONS

1. Proposed Action Description

The OSC, EPA toxicologist, and EPA Contractors have provided technical assistance in identification of cleanup areas and assisted the Locals with blood mercury samples and in assessing potential migration of mercury to the Highline Canal.

EPA has noted that there was spillage around the areas of 5 apartments on the concrete walkways and landscaping. These areas were cleaned up. Carpet was also removed in two apartments and the disposal/sink areas were tested for contamination and/or removed. Individuals who touched and/or played with the mercury were tested by their personal physicians.

EPA thoroughly investigated both apartments and removed contaminated clothing, vacuums, and other personal items. Some contaminated items were cleaned and returned to the owner. Building management provided temporary relocation for the tenants of #16-103. Building management removed uncontaminated carpet from the living room of #16-103 and replaced it with new carpet. EPA collected air samples from both apartments

after all cleanup activities had been completed, and is continuing to monitor mercury vapor levels in the two apartments.

EPA retrieved and will dispose of/recycle the LFD shop vacuum and vials of mercury. All contaminated carpet and personal items, as well as soil and sediment, will be sent to Mercury Refinery in Albany, New York.

EPA cleaned up the sewer and storm drain by removing all sediment and debris in the storm drain and by removing 1" of sediment from the storm sewer. Confirmatory samples were collected afterwards.

EPA will assist in the investigation of the origin of the mercury to determine if a source can be found.

2. Contribution to Remedial Performance

Remedial action has not been considered for this Site; however, this Removal Action will not affect any future remedial action.

3. Description of Alternate Technologies

None have been identified at this time.

4. Engineering Evaluation/Cost Analysis (EE/CA)

This Removal Action is a Classic Emergency and required immediate mobilization. An EE/CA is not required for removal actions where a planning period of less than six months exists.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

Because this action is a Classic Emergency all Federal and State ARARs have not been identified at this time. When identified, ARARs will be met to the extent practicable. Hazardous waste disposal will comply with all applicable DOT and RCRA requirements.

6. Project Schedule

This Removal Action was initiated on May 5, 1996. It is anticipated that the Removal Action will be complete by July 1, 1996.

B. ESTIMATED COSTS

Following is a table of the removal project ceiling estimate:

Extramural Regional Allowance Costs:	
TOTAL CLEANUP CONTRACTOR COSTS	$ 40,000
Other Extramural Costs Not Funded from the Regional Allowance:	
Total TAT, including multiplier costs	$ 26,000
SUBTOTAL, Extramural Costs	$ 66,000
Extramural Cost Contingency	$ 4,000
TOTAL, Extramural Costs	$ 70,000
Intramural Costs:	
Intramural Direct Costs	$ 3,000
Intramural Indirect Costs	$ 6,000
TOTAL, Intramural Costs	$ 9,000
TOTAL: REMOVAL PROJECT CEILING:	**$ 79,000**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action would have increased the potential for endangerment from the threats which were outlined in Section III, increased the chance for possible direct exposure to residents of the apartments, and allowed a potential migration of mercury into the water supply for the City of Littleton.

VII. OUTSTANDING POLICY ISSUES

None

VIII. ENFORCEMENT

See Attachment 1.

IX. RECOMMENDATIONS

This decision document represents the selected Removal Action for the County Line Mercury Site located in Douglas County, Colorado. The selected Removal Action was developed in accordance with CERCLA, as amended, and is consistent with NCP. This decision is based on the administrative record for the Site.

Conditions at the Site met the NCP §300.415 (b) (2) criteria for a removal and was authorized under the OSC's response authority. The total project ceiling will be $79,000. Of this amount, an estimated $70,000 comes from the Regional removal allowance.

for PS

On-Scene Coordinator

7/16/96

Date

Attachments:

Attachment 1- Confidential Enforcement Summary

Attachment 1

ENFORCEMENT CONFIDENTIAL

Enforcement Addendum
County Line Mercury Site (SSID #5J)

A. PRP Search

A PRP search was not initiated on this site. The mercury vials found on the site have an unknown source. EPA's Criminal Investigation team were involved with the investigation, attempting to locate the source for illegal disposal of the mercury vials and were unable to determine a source for the illegal dumping.

B. Notification of PRPs of Potential Liability and of the Required Removal Action

No notification was necessary due to no known potentially responsible party.

C. Decision Whether to Issue an Order

An order was not issued due to no known potentially responsible party.

D. Negotiations and Order Issuance Strategy

An order will not be issued for the County Line Mercury Site.