ADEM

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

POST OFFICE BOX 301463 ♦ 1751 CONG. W. L. DICKINSON DRIVE 36109-2608
MONTGOMERY, ALABAMA 36130-1463
(334) 271-7700

JAMES W. WARR
DIRECTOR

FOB JAMES, JR.
GOVERNOR

Facsimiles: (334)
Administration: 271-7950
Air: 279-3044
Land: 279-3050
Water: 279-3051
Groundwater: 270-5631
Field Operations: 272-8131
Laboratory: 277-6718
Education/Outreach: 213-4399

MEMORANDUM

September 21, 1998

TO: Wm. Gerald Hardy, Chief 9/28/98
Hazardous Waste Branch
Land Division

THROUGH: Stephen A. Cobb, Chief SAC 9/28/98
Industrial Facilities Section
Hazardous Waste Branch
Land Division

FROM: Jim Grassiano
Industrial Facilities Section
Hazardous Waste Branch
Land Division

SUBJECT: Evaluation of American Cast Iron Pipe Company's (ACIPCO's) status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: ALD 003 397 569

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of ACIPCO's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

1) Human Exposures Controlled Determination (CA725)

2) Groundwater Releases Controlled Determination (CA750)

Concurrence by the Hazardous Waste Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above. See Memo Attachment 1 for more specific information of the RCRIS definitions for CA725 and CA750.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the first evaluation performed by ADEM for ACIPCO. The evaluation, and associated interpretations and conclusions on contamination, exposures and contaminant migration at the facility, is based on information obtained from the following documents:

- Revised RCRA Part B Permit Renewal Application, Volumes 1 and 2, submitted to ADEM in January 1998 (Revisions and responses to Notice of Deficiency and also removal of treatment information pending completion of Treatment Demonstration Workplan)
- RCRA Part B Permit Renewal Application, Volumes 1 and 2, submitted to ADEM in November 1996
- Historical Groundwater Data, Volumes 1 and 2, submitted to ADEM in January 1998
- Draft Resource Conservation and Recovery Act Facility Assessment (RFA) Report, prepared by Tetra Tech EM, Inc., July 17, 1998
- September 4, 1998 Letter to EPA regarding ADEM Review of July 17, 1998 Draft RFA Report
- June 11, 1998 Second Notice of Deficiency/Review of January 1998 Revised Part B Permit Application
- September 24, 1997 First Notice of Deficiency regarding Part B Renewal Application
- Revised Treatment Demonstration Workplan, February 11, 1998
- Annual Groundwater Monitoring and Groundwater Flow Characteristics, February 16, 1998, prepared by Gallet & Associates, Inc.

III. FACILITY SUMMARY

A. General Facility Information

ACIPCO manufactures ductile iron pipe, as well as seamless steel pipe, steel castings and tubes. The manufacturing facility is located at 2939 North 16th Street in Birmingham, Jefferson County, Alabama. ACIPCO began as an iron casting operation in 1909. Although Birmingham is now a very urban area, the contiguous property of the manufacturing facility covers roughly 1750 acres, and its size and particular location within the city limits of Birmingham cause it to border industrial, urban, residential, and agricultural areas. Land uses in the vicinity include industrial land to the south, forested land to the northwest, crops and pasture land to the north, and a mix of industrial and residential land use to the east. ACIPCO also owns and operates nearby support facilities that are distant from the manufacturing center yet still contiguous with the main property. In particular, there are two non-hazardous solid waste landfills (one 60-acre and one 128 acre) located on the east side of Coalburg Road approximately ¾ mile north of ACIPCO's automobile shredder unit. The land use in the vicinity of the landfills is considered to be rural.

B. Regulated Wastes

Three regulated hazardous waste streams and one PCB waste stream are generated by ACIPCO.

Cupola Air Emissions Sludge: The first regulated waste is generated during the melting of scrap iron to produce ductile iron pipe. Scrap iron is melted in a 150 inch coke-fired cupola. During cupola melting, ferrous metals are combined with limestone, flux, and other additives to provide ductile characteristics. After melting, the iron is transferred to a holding ladle where it remains in a molten state for desulfurization.

Calcium carbide is dipped into the molten iron to remove the sulfur by forming a slag, which is skimmed from the molten iron and quenched. The waste slag generated from the desulfurization process is disposed in one of ACIPCO's two landfills. Following desulfurization, the molten iron is sent to the induction furnaces for further melting. From the induction furnaces, the molten iron is sent either to the fittings foundry for casting or to one of the three monocast core making and casting areas where it is formed into iron pipe.

The air emissions from the cupola are treated through a wet scrubber and routed to the wastewater treatment system. The sludge is routed to an impoundment designated the "dust pond". The dust pond is part of a flow-through wastewater treatment system permitted for surface water discharge via an NPDES permit. The RCRA issue associated with the cupola and dust pond is the storage and treatment of the cupola air emissions sludge, which exceeds the TCLP limit for lead. Historical characterization data in Section B of the 1996 RCRA Permit Renewal Application indicate TCLP values for lead of 10.8 mg/l, exceeding the 5 mg/l limit. Data have also indicated that cadmium is present at values as high as 0.98 mg/l; however, the TCLP limit for calcium of 1.0 mg/l has not been proven to be exceeded in the sludge. Thus, the sludge is considered hazardous only in accordance with TCLP characteristic D008 (lead). ADEM notes that the characterization and treatment of this dust pond sludge is the subject of an ongoing study at this time. This study is the Treatment Demonstration imposed by ADEM upon review of the first submittal of the Part B Permit Application, whereupon ADEM identified additional data needs. Upon completion, the Treatment Demonstration Report will evaluate the effectiveness of the current treatment system and also present additional characterization data on cupola air emission sludge. The permitted treatment technology is described further in paragraph D below.

AOD-ARC Furnace Baghouse Dust: Steel products are manufactured at the steel foundry and two steel mills. At the steel foundry, four electric arc (ARC) furnaces and one argon-oxygen decarberation (AOD) furnace are used for melting steel scrap. Air emissions from the AOD furnace and ARC furnaces are routed to separate baghouses. The dust is then conveyed in a closed screw conveyor to a common storage hopper. The resultant dust is a non-listed waste that exhibits the TCLP characteristic for chromium (D007). The waste is removed from the hopper at less than 90-day intervals and is managed under contract with Chemical Waste Management (CWM), Inc., at Emelle, Alabama. Prior to 1980, the dust was placed in the old landfill (the present location of the dewatering pond) along with foundry sand.

Waste Paint and Solvent: Paint related wastes are generated during the routine coating of various manufactured items as spent solvents or mixed paint and solvents from cleanup operations. The wastes are collected and temporarily stored at Satellite Accumulation Points and the 90-day Storage Facility (SWMU 15) prior to being shipped off site to be recycled or used as a fuel in a fuel blending program by Allworth, Inc, located in Birmingham, Alabama.

PCB Capacitors Waste: Spent capacitors containing PCBs are disposed off-site at CWM in Emelle, Alabama. About 5 capacitors were disposed in 1997 and about 75 capacitors are still in use at the facility at this time.

C. Non-Regulated Wastes

The following additional wastes and materials are managed by ACIPCO. While the following wastes/materials are not presently characterized as hazardous, they have been identified as potential concerns in the Draft RFA Report.

Automobile Shredder Fluff: Shredder fluff mainly consists of plastic and foam portions of an automobile generated as a by-product of the scrap steel recovery process. Analytical results indicate that the waste is nonhazardous. Thus, the waste is presently disposed in Landfill number 2 (SWMU 11). However, the waste contains relatively significant levels of total PCBs and possibly heavy metals.

As a result of the PCB content in the fluff, the potential exists for the fluff to impact two surface impoundments that collect runoff from the shredder area and also from a surface impoundment formed by stormwater drainage (and possibly leachate) from Landfill No. 2. All three of these impoundments have no outlet and as a result, percolation to groundwater is believed to exist. Potential exists for impoundment sediments to be impacted, as well as the potential for groundwater contamination. The Draft RFA recommends additional investigation to evaluate the potential for PCB and heavy metals contamination.

Forming Oil: At the 20-inch and 24-inch steel pipe mills, forming oil is used to lubricate and cool the steel pipe and machinery during the shaping (cold forming) of the pipe. The oil is managed in a concrete channel underlying the manufacturing line and in the integral floor drain leading to a concrete catch basin adjacent to the building. The integrity of the channels and basins are unknown at this time and the potential exists for leakage to subsurface soil and groundwater. The RFA Report recommends further study to determine if there has been a release to groundwater and subsurface soil.

D. Regulatory Status & Permitted Treatment System

ACIPCO holds a RCRA permit for the operation of a hazardous waste treatment system to treat cupola air emissions sludge. The sludge is routed to one of the two concrete receiving basins for removal of readily settleable sludge and cement. A gravity overflow discharges to the Dust Pond, where nearly all of the sludge settles out in the serpentine shaped pond composed of three cells. Disharge from this pond is considered sludge-free and continues to a polishing impoundment and final reservoir, eventually leading to a permitted NPDES discharge to Village Creek (via outfall DSN-001).

Every several months, the sludge from the dust pond is dredged and pumped to the dewatering pond. Prior to entering the dewatering pond, the sludge is treated "in-line" (i.e., in the discharge side of the dredge line) to render the lead immobile via cement-fixation. The sludge to be treated is roughly 15 to 20 percent solids by weight at a flow of approximately 1500 gpm. During the treatment process, roughly 25 percent by weight of Portland cement is injected into the slurry pipeline prior to the introduction of the mixture (treated waste) into the unregulated dewatering basin.

E. Regulated Unit, Impermeable Clay Aquaclude and Preservation of Groundwater Quality

The regulated unit is the Dust Pond. The Dust Pond receives process wastewater from the receiving basins (SWMU 1) and process water and storm water from the Lower Settling Pond (SWMU 5). The Dust Pond has a total capacity of approximately 8.5 million gallons and covers approximately 4.6 acres. The depth in the first two compartments is about 15 feet while in the third compartment, the depth is about three feet.

Prior to 1972, the pond served as a Dust Pond for iron grindings. The Dust Pond was originally installed as a single cell, but was modified in 1977 to form three cells. Two of the cells were reportedly dredged to bedrock, while the third cell was not dredged as deeply. However, boring logs reportedly indicate that the pond is underlain by a low-permeability clay. Indeed, there is visual evidence of a clay layer based on a slope of exposed soil cutback during construction of an adjacent road. But the vertical/horizontal extent, integrity, and impermeability of the clay liner cannot be visually determined.

The Dust Pond was installed without an engineered liner system. Thus, there has historically been concern on ADEM's part that contaminants have the potential to leach to the underlying aquifer(s). A series of seven monitoring wells have been installed, maintained, and monitored according to ACIPCO's AHWMMA Operating permit. This includes MW-1 and MW-7, the upgradient shallow and deep wells; MW-2, and MW-3 (shallow downgradient wells); and MW-4 through MW-6 (deep downgradient wells). Shallow wells were installed in the shallow, unconsolidated aquifer while the deep wells were installed into the deep (bedrock) aquifer underlying the regulated unit. Analytical results were historically inconclusive in determining whether the two aquifers are hydraulically connected. But in the most recent Annual Groundwater Flow Characteristics report (February 1998, prepared by Gallet & Associates), it was noted that well pairs MW-2/MW-5 and MW-4/MW-6 appear to be in a groundwater discharge area, indicating a likelihood of hydraulic interconnection. However, ADEM notes that to date, analytical results in both shallow and deep monitoring wells have not indicated contamination by constituents of concern. As a result, it is inferred that groundwater is not presently impacted by the hazardous waste maintained in the Dust Pond.

ACIPCO has developed a theory as to how the aquifer quality is being preserved. ACIPCO maintains that water from the Dust Pond percolates to a confining layer, hence transversing along the top of the clay layer (liner) in a downgradient (south) direction, outcropping as a leachate source from the side of the impoundment. The leachate then drips into an adjacent drainage ditch, which eventually leads to the on-site reservoir. The on-site reservoir has an NPDES discharge through outfall DSN-001.

In 1988, ACIPCO conducted a study of 200 linear feet of the ditch adjacent to the dust pond. This study was conducted as part of the 1988 RFI, as a result of observations of the aforementioned leachate source. Soil samples were collected at 50 ft intervals whereupon grab samples were collected at depths of 6 inches, 1 foot, and two feet. Lead, chromium, and cadmium were not detected in any of the samples. The leachate itself was tested after filtration through a 0.45 micron filter. No detectable EP toxicity metals were reported in the filtered leachate sample.

Also, the same ditch was tested in 1985 in accordance with a RCRA 3012 Inspection Report. At that time, there existed a leachate pipe emanating from the old landfill (now the location of the Dewatering Pond) leading to the same ditch. Total and EP Toxicity lead, cadmium, and chromium were analyzed. Although total metals were evident, the results were not atypical for an industrial background soil sample. In addition, EP toxicity metals were not detectable. Similarly, there were not detectable metals in the leachate source itself.

At this time (based on absence of contaminants in monitoring wells and as the above evaluations have shown in the studies of the adjacent drainage ditch), ADEM acknowledges that there is anecdotal and artifactual evidence of the presence of the clay aquaclude. And it is clear that the integrity of the aquifer appears to be sufficiently protected at this time. However, ACIPCO remains in a detection monitoring program according to its AHWMMA permit so that the potential for groundwater contamination from the Dust Pond will continue to be routinely monitored and evaluated.

IV. CONCLUSION FOR CA725:

As more fully explained in Attachment 2, because there is not enough relevant information available to make a determination as to whether human exposures are controlled, it is recommended that CA725 IN be entered into RCRIS.

V. CONCLUSION FOR CA750:

Based on the data contained in the documents referenced in Section II and summarized in the groundwater portion of Attachment 2, no release to groundwater is evident from the dust pond (regulated unit). However, releases from other SWMUs and/or AOCs may have contaminated groundwater at concentrations above relevant action levels. For these areas of potential groundwater contamination, there is presently not enough monitoring or investigative data available to allow for vigorous interpretations to be made regarding the extent of contamination (if any) and any corrective action that may be needed to address the contamination. Presently, an RFA Report is being finalized (i.e., ADEM provided review of the Draft Report and the contractor is now in the process of preparing the final version) for this facility. The RFA recommends that confirmatory sampling be conducted to adequately investigate the presence or absence of contamination in these questionable areas.

Because of the insufficient information on the subject SWMUs and AOCs, it is recommended that CA750 IN be entered into RCRIS.

VI. SUMMARY OF FOLLOW-UP ACTIONS

The following actions are presently underway to obtain information necessary to complete the Human Exposures Controlled and Groundwater Releases Controlled determinations:

Treatment Demonstration Workplan to evaluate short and long-term effectiveness of ACIPCO's cement slurry stabilization process.

Confirmatory sampling to investigate the presence or absence of groundwater, soil, and surface water contamination in the vicinity of several SWMUs and AOCs.

The above actions are described further in Attachment 2 and are more fully described in the reference documents listed in Section II of this memorandum.

ATTACHMENT 1

A. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date [i.e., human exposures are controlled as of this date].

2) NA Previous determination no longer applicable as of this date.

3) NC No control measures necessary.

4) NO Facility does not meet definition [i.e., human exposures are not controlled as of this date].

5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

Note that CA725 is designed to measure human exposures over the entire facility (i.e., the code does not track SWMU specific actions or success). Every area at the facility must meet the definition before a YE or NC status code can be entered for CA725. The NO status code should be entered if there are current unacceptable risks to humans due to releases of hazardous wastes or hazardous constituents from any SWMU(s) or AOC(s). The IN status code is designed to cover those cases where insufficient information is available to make an informed decision on whether or not human exposures are controlled. If an evaluation determines that there are both unacceptable and uncontrolled current risks to humans at the facility (NO) along with insufficient information on contamination or exposures at the facility (IN), then the priority for the EI recommendation is the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes. In other words, YE, NC, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, it is Region 4's opinion that only YE, NC, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

B. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are five (5) status codes listed under CA750:

1) YE Yes, applicable as of this date [i.e., groundwater releases are controlled as of this date].

2) NA Previous determination no longer applicable as of this date.

3) NR No releases to groundwater.

4) NO Facility does not meet definition [i.e., groundwater releases are not controlled as of this date].

5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

The status codes for CA750 are designed to measure the adequacy of actively (e.g., pump and treat) or passively (e.g., natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. **Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered.**

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered. If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NR status codes. In other words, YE, NR, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA750. Therefore, it is Region 4's opinion that only YE, NR, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

ATTACHMENT 2

MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

Based on the data contained in the reference documents in Section II, the following media by media discussion is warranted.

GROUNDWATER

A decision on human exposures to contamination cannot be made because there is insufficient information on groundwater quality at the entire facility.

Information on the presence or absence of groundwater contamination is insufficient or lacking in certain areas of the facility. These areas of the facility correspond to locations where groundwater contamination could be present given near-by SWMUs, AOCs, or questionable facility operations.

As described above in Section III.E, groundwater in the vicinity of the Dust Pond and Dewatering Pond is not contaminated and thus there are no plausible exposures which must be controlled in this area. However, there is reasonable potential for groundwater contamination resulting from three other sources at this time. This includes the potential for PCB and heavy metals contamination from the automobile shredder impoundments; the potential for PCB and heavy metal contamination at the impoundment formed by Landfill No. 2; and the potential for contamination by forming oil near the 20 inch and 24 inch steel mills. Confirmatory sampling has been recommended for these areas per the recently completed Draft RFA Report. Thus, under the 1998 RFA, it appears that confirmatory sediment sampling is required to evaluate the potential for groundwater and subsurface soil to be impacted.

Because of the uncertainty regarding the presence of absence of groundwater contamination at questionable areas of the facility, an opinion on plausible human exposures to groundwater contamination is not possible at this time.

SURFACE WATER

A decision on human exposures to contamination cannot be made because there is insufficient information on surface water quality at the entire facility.

The water quality of the surface impoundments related to the regulated unit is well monitored through the facility's NPDES permit. This includes the polishing pond (SWMU 4) and the 7.25 acre reservoir. Several facility impoundments (e.g., lower settling pond, dust pond) have the sole purpose of managing wastewater and are not waters of the state. Thus, surface water quality issues do not apply. It appears that this is also the situation with the automobile shredder impoundments and the landfill impoundments.

The recent RFA Report identifies a drainage pipe of unknown origin traversing a fill area near the L.B. Foster site (a steel coating operation located on ACIPCO property leased to L.B. Foster). Further investigation is warranted and recommended in the RFA to determine the source and disposition of this potential leachate stream.

Because of the uncertainty regarding the presence or absence of surface water quality at the facility, an opinion on plausible human exposures to surface water contamination is not possible at this time.

SOIL

A decision on human exposures to contaminated soil cannot be made because there is insufficient information on soil quality at the entire facility.

Information on the presence or absence of soil contamination is insufficient or lacking in certain areas of the facility. These areas of the facility correspond to locations where soil contamination could be present given near-by SWMUs, questionable facility operations, etc. At the present time, ACIPCO is implementing a Treatment Demonstration Workplan to evaluate the long-term treatment and stability of the dredged material placed in the Dewatering Pond and eventually placed in Landfill No. 2. Also, the recently completed Draft RFA Report indicates that confirmatory sampling is required at other SWMUs and AOCs. Such confirmatory soil sampling is pending at the area of compressor lubricant discharge; the diesel above ground storage tank; the forming oil basins at the two steel mills; and near the leachate source at the L.B. Foster tenant facility.

Because of the uncertainty regarding the presence or absence of soil contamination at questionable areas of the facility, an opinion on plausible human exposures to soil contamination is not possible at this time.

AIR

Air is not contaminated.

Releases to air from soil, groundwater, and/or surface water contaminated by SWMUs and/or AOCs at the facility is not known to be occurring at concentrations above relevant action levels. **Therefore, there is no human exposure to contamination via an air route.**

JG/sem:L:EIMemo9-98.doc

File, American Cast Iron Pipe Co / TSD