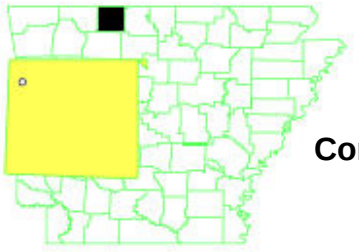
ARKWOOD, INC.
ARKANSAS



EPA Region 6
Congressional District 03
Boone County

EPA ID# ARD084930148
Site ID: 0600124

Contact: Shawn Ghose M.S., P.E., 214-665-6782

Updated: December 2008

No changes in the site status are anticipated until December 2008.

Current Status

♦ Injection through injection well in the sink hole is continuing. 5 more injection wells were added in October 2007. As of January 2008 only one injector takes water. The injection has lowered the PCP content in the New Cricket Spring.

♦ The Soils Remedy was completed on December 1, 1995. Phase I activities resulted in about 8,700 cubic yards of affected soils excavated and processed, 5,200 cubic yards of coarse material generated, and 3,500 cubic yards of fines stored. The final truckload of affected material (fines) was transported off-site in October 1995 for incineration at the ChemWaste commercial incinerator, located in Port Arthur, Texas. Final grading, decontamination, and removal of process equipment were completed by December 1, 1995 to end Phase II activities.

♦ Monitoring of area springs has continued on a quarterly basis since initiation of the Soils Remedy. Although levels of PCP in New Cricket Spring increased after opening the Sink Hole area on-site during the RA, levels have since decreased following completion of the Soils Remedy. Monitoring continued through December 1997 to evaluate the effectiveness of the Soils Remedy and the need of the Ground Water Contingency Remedy. Since December 1997, the monitoring has been conducted monthly to build sufficient data to scale up the pilot treatment plant, which will destroy PCP in New Cricket Spring. The Responsible Party's (RP's) contractors (R2P5 Environmental Remediation, Inc.) have operated a pilot plant, which destroys PCP by UV- ozone processor. By 1997, the RP determined that the destruction of the dissolved PCP could be achieved by the use of Ozone alone. PCP concentration in the spring is high only when the flow rate is low, i.e., 25 to 35 gallons/minute (gpm). The RP has shown that PCP can be destroyed at the low rate, has increased the capacity of the Ozone process, to handle 100+ gallons/minute (gpm). This magnitude of flow (100+ gpm) occurs only during peak flow season, which occurs 30 days, or less per year. The ADEQ, formerly ADPCE, set maximum daily allowable value of 18.7 micro grams per liter for PCP (January 1998). The Ozone Oxidation system has operated since 1998 and is currently able to meet ADEQ standards at both high and low flow rates.

♦ A Site Preliminary Closeout Report was finalized on June 28, 1996 to officially complete the Soils Remedy. EPA and ADEQ considered a partial NPL deletion for the main Site area. However, they determined that unrestricted use of the main Site could not occur until the RP has completed cleanup of the New Cricket Spring, as this might re-contaminate New Cricket Spring due to the fractured hydrogeology at the site.

♦ The **First Five Year Review** was completed in March 2001 as the remedy (soils remedy+ continuing cleanup of New Cricket Spring by ozone injection) was found to be protective of the human health and the environment.

♦. Responsible Party (R.P), McKesson started a pilot study, injecting Ozonated water near the sinkhole to speed up reduction of PCP in the formation upstream from the New Cricket Spring. The pilot project started by the summer of 2005. This process will ensure that the PCP will be destroyed in the subsurface fractures near the New Cricket Spring and the site can be deleted from the National Priorities List (NPL). The injection of ozonated water continues as of February 2007. Injection was stopped by August 2007 and

resumed in September 2007. Immediately after resumption of injection of ozonated water PCP at the mouth of New Cricket Spring was 200+ ppb. To expedite cleaning up residual PCP in fractures McKesson started 5 additional injection wells around the sinkhole in mid September 2007. McKesson will wait and see if the PCP concentration will diminish at the New Cricket Spring.

♦ **The Second Five Year Review** was completed in March 2006 with the on-going injection of ozonated water through two injectors near the sinkhole. The main site is fenced and the area is zoned industrial. However in order to enhance the Institutional Control (IC) EPA recommended that McKesson record a deed restriction to maintain industrial zoning for the main site. McKeesson is in the process of preparing a deed restriction as of February 2008.

Benefits

♦Process tanks and structures were removed from the site, thereby eliminating the potential for exposure for workers and trespassers.
♦ Fencing the site and installing warning signs provided limited access to the site, thereby reducing the potential of exposure to hazardous substances at the Arkwood, Inc. site and making the area safer while final cleanup activities were implemented.
♦ Supplying city water to area residents reduced the risk of possible exposure to shallow groundwater during the Remedial Action activities.
♦ Implementation of Phase I provided early action at the site to pretreat and store affected soils, while clean coarse material was backfilled. This early action also helped determine that the volume of affected fines would be much less than that estimated in the ROD (3,500 cubic yards as opposed to 7,000 cubic yards). This information was used to plan an ESD and save resources in completing the Phase II RD/RA.
♦ Implementation of Phase II was initiated immediately upon completion of Phase I activities and was completed on December 1, 1995. A final walk-through inspection was conducted on December 13, 1995 to verify and document that the Soils Remedy implementation and site closure were complete.
♦ Implementation of the Soils Remedy reduced potential risk at the site to 1 in 10,000 (industrial land use). In addition, required monitoring of New Cricket Spring through December 1997 has demonstrated that the source removal has dropped PCP levels in the New Cricket Spring by 66 % during low flow rate, when PCP concentration is the highest. At medium flow, rate (100 gpm) PCP concentration has dropped by 90 % following source removal.
♦ In 1998 McKesson was monitoring New Cricket Springs and trying to expand the treatment capacity of the Ozone system (to destroy PCP)] to beyond 50 gpm. The current system, in 1998, could handle 25 to 50 gpm throughput. The State has set 18.7 ppb daily maximum value, as the cleanup criteria at the compliance point.
♦ By the end of 1999, McKesson had expanded the capacity of the Ozone treatment system to 100+ gpm. The expanded capacity system continues to operate.

Location:	West of US Highway 65 and l/2 mile southwest of Omaha, in Boone County, Arkansas, the site is bordered on the south and southwest by Cricket Road and on the north by Missouri-Pacific Railroad tracks.
Population:	Estimated at 650 people within 3 miles of the site.
Setting:	Nearest residence: 2 residences within 500 feet of the site; 174 homes within a One-mile radius. Nearest drinking water well is less than 1/4 mile from the site; 12 residences immediately down Cricket Valley have been hooked up to the city water supply. Encompassing approximately 15 acres, the site was utilized as a Pentachlorophenol (PCP) and creosote wood preserving facility from the early 1960s to 1984. Onsite structures removed in 1994 included process equipment for the Remedial Action (i.e., sieve system, storage bins, office and lab facility, drainage ditch and roads, air monitoring equipment).

Hydrology: Located in the Springfield Plateau province of the Ozark Highlands region of Northwestern Arkansas, the Arkwood site is located in a karst terrain formed by the solution of limestone and dolomite by ground water. The near surface formations at the site are the Sylamore sandstone, and the St. Joe and Boone limestones.
54 springs have been identified within a 1.5-mile radius of the site. These springs discharge from hillsides or in valley bottoms. Only one spring, New Cricket Spring, has been demonstrated to be hydraulically connected to the site in a down gradient direction. There are no known users of the water from New Cricket Spring.

Wastes and Volumes

The major areas of contamination included the process and drip tracks areas; the wood storage area; railroad drainage ditch (contaminated with process wastes); the treated wood storage area; a sinkhole used to dispose of waste from approximately 1962-1970; and an area of wood chips. The Remedial Action has now addressed these areas.

Principal Pollutants at the Arkwood Industries Superfund site included soils that were contaminated with Polycyclic Aromatic Hydrocarbons (PAHs), Pentachlorophenol (PCP), and trace dioxins. New Cricket Spring, approximately 1/4 mile northwest of the site, contains low (I part per million) levels of PCP. However, this level exceeds Arkansas Water Quality Standards for the stream.

The volume of pollutants addressed by the Soils Remedy was approximately 10,600 cubic yards of contaminated soils, 600 gallons of pumpable liquids (removed from sinkhole area), and some 250 55-gallon metal drums which were either empty or contained miscellaneous debris, personal protective equipment, or fluids from past investigative activities. Approximately 5 tons of non-affected debris was transported off-site for municipal disposal.

Site Assessment and Ranking

NPL LISTING HISTORY
Site HRS Score: 28.95
Proposed Date: 9/04/85
Final Date: 3/31/89
NPL Update: No. 4

The Potentially Responsible Parties (PRPs) sent comments to Headquarters and the Region contesting the site ranking. Mass Merchandisers, Inc. (MMI) contended that the HRS package contained two errors, which significantly affected the ultimate scores. The questions concerned calculations of waste volume and the calculation of ground water targets.

Site Map and Diagram

The Remediation Process

Site History:

♦ The Arkwood Site was originally excavated by the railroad between 1954 and 1962, to obtain material for the construction of railroad embankments.
♦ In 1962, Arkwood, Inc. opened a single cylinder PCP and creosote wood treatment facility and operated the site until 1973. From 1973 to 1984, Mass Merchandiser, Inc. (MMI) operated the plant under a lease agreement with the owner.
♦ MMI ceased operations in 1984, at which time MMI sold or removed its remaining inventory and materials prior to the expiration of its lease in 1985. The owner subsequently dismantled the plant in 1986.
♦ On May 15, 1986, EPA and MMI entered into an Administrative Order on Consent (AOC) to perform the Remedial Investigation and Feasibility Study (RI/FS).
♦ In November 1986, the site owner denied EPA site access to conduct the RI/FS. On July 12, 1988, the Department of Justice and the site owner signed a Consent Decree allowing EPA access to the site for conducting the RI/FS and any response action.
♦ EPA issued an Administrative Order (AO) to the PRPs to fence the site and post warning signs in August of 1987; the site owner responded by erecting a fence and posting the signs.
♦The RI/FS was completed in May 1990; a ground water tracer study investigation was completed in September 1992.
♦ On May 30, 1991, EPA and MMI signed a Consent Decree for conducting the Remedial Design and Remedial Action (RD/RA). The Court entered the Consent Decree for the RD/RA on September 24, 1992.
♦ The RD/RA work plans were approved by EPA on September 25, 1992 and mobilization to the site immediately followed for initiating RD activities.
♦ The pilot scale studies conducted as part of the RD activities demonstrated that the sieve process, preceded by an in situ drying step, was effective for separating affected fine particles (soil) from the unaffected coarse material (rocks) at the site. Therefore, a wash step did not appear necessary as part of the pretreatment process. Due to the results of this study, EPA agreed to phase the RD/RA project on August 24, 1993 in order to expedite the remedial action at the site:

Phase I, Interim Action (Pretreatment & Storage Stage).

♦ For definition purposes, Phase I was considered an "Interim Action" for the Arkwood Site consisting of the pretreatment and storage stage of the remedy specified in the Record of Decision and Consent Decree. In addition, Phase I included those backfill activities which needed to be completed to minimize adverse environmental impacts while the Phase II, Final Action RD was being completed (i.e., backfill of material meeting clean up objectives).

Phase II, Final Action (Incineration & Site Closure).

♦ For definition purposes, Phase II was considered the "Final Action" for the Arkwood Site consisting of the incineration and site closure stage of the remedy specified in the Record of Decision and Consent Decree. An Explanation of Significant Differences (ESD) was completed in June 1995 to change the remedy from onsite incineration to off-site incineration due to a substantial decrease in the volume of material to be incinerated (original ROD estimate at 7,000 cubic yards; ESD estimated at 3,500 cubic yards). Phase II included those backfill activities necessary to complete final grading at the site.

♦ The Phase I 100% Remedial Design was conditionally approved by EPA and Arkansas Department of Pollution Control and Ecology (ADPC&E) in June 1994. Mobilization for this Interim Action was initiated in February 1994 and was mostly completed in October 1994; however, due to weather impediments, this action was restarted in May 1995 and completed in July 1995.

♦ An Explanation of Significant Differences for the approved ROD was finalized on June 14, 1995 in order to further expedite the remedial action. Since volumes actually excavated during the Interim Action were much less than anticipated during the FS, off-site incineration at a commercial facility (for affected fines stored at the site) could be accomplished much sooner than design and implementation of on-site incineration. No ash would be generated since material would be shipped off-site for incineration. This change in the remedial action was favorable for the local community since the originally planned on-site incineration would have to have been carried out in close proximity to the local school.
♦ The Phase II 100% Remedial Design was conditionally approved on June 23, 1995 and implementation of this Final Action immediately followed Phase I completion. This Final Action was completed on December 1, 1995 and the walk-through inspection, which closed Phase II and the Soils Remedy, was conducted on December 13, 1995.

Health Considerations:

The baseline risk assessment (assumes no remedial action is taken) for the Arkwood site estimated four in one thousand excess carcinogenic risk in consideration of future residential land use on the main site area; two in ten thousand excess risk was estimated for railroad workers in the railroad ditch area.

Other Environmental Risks:

No endangered species are known to inhabit the area on or near the site; no environmental impacts were identified for off-site areas.

Record of Decision

Signed: September 28, 1990
ESD Signed: June 14, 1995

The 1990 selected remedy called for decontamination and removal of existing structures and foundations, on-site treatment of contaminated soils and sludge (from the railroad ditch), and ground water monitoring in New Cricket Spring.

Soils Remedy:
The pretreatment of excavated affected material included separation of coarse material (rock) from fines (soil) via a sieve technology; final treatment of soil and sludge included destruction of contaminants via an on-site incinerator; ash and coarse material meeting cleanup levels backfilled on-site.

Ground Water Contingency Remedy:
The ground water via New Cricket Spring has been monitored for the last 9 years to determine if source control (Soils Remedy) is attenuating contaminants. When two years of monitoring did not show any attenuation in PCP values, McKesson installed a water treatment system to change New Cricket Spring effluent to meet Arkansas Water Quality Standards for PCP. The treatment is an Ozone Oxidation System to destroy PCP. The system has been in operation since 1997. By the end of 2000, the ozone oxidation system was able to meet the ADEQ standard of (a) daily maximum of 18.7 microgram per liter (b) monthly average of 9.3 microgram per liter. The six springs near New Cricket Springs have been non detect for PCP for the past 9 years. EPA is waiting for DOJ to evaluate if monitoring of the six springs can be discontinued due to non detect PCP for nearly ten years. Deletion is not contemplated until the ground water remedy is complete. RP, McKeeson has proposed a pilot study for injecting Ozonated water near the sinkhole to speed up reduction of PCP in the formation upstream from the New Cricket Spring. The pilot project started by the summer of 2005. New Cricket Spring has been sampled every summer except summer 2007 when the spring was dry due to drought conditions.

Other Remedies Considered	Reason Not Chosen
1. No Action	Not Protective of Human Health & Environment
2. Limited Action	Access Restrictions not Effective; Not Protective of Human Health & Environment
3. Consolidate Soils & Cap in Place	Continued threat to ground water; does not meet ARARs.
4. Sieve & Wash Soils, Consolidate & Cap in Place	Continued threat to ground water; Uncertainty in Achieving Cleanup Objectives.
5. Sieve & Wash Soils, Biologically Treat Fines, Consolidate & Cap in Place	Continued threat to ground water; Uncertainty in Achieving Cleanup Objectives Biological Treatment of Dioxin not effective
6. Landfill Affected Soils Onsite	Continued threat to groundwater; Implementation Difficulty.

The Explanation of Significant Difference (ESD) finalized on June 15, 1995 only changed one component of the Soils Remedy. Based upon a significant reduction in volume of fines slated for incineration, estimated at 3,500 cubic yards, off-site incineration was selected to save time and resources in completing the Soils Remedy. This reduction in volume resulted mainly from the pretreatment step effectiveness, but also pre-design sampling to refine the affected soil boundaries across the Site.

Community Involvement

♦ Community Involvement Plan: Developed 02/87.
♦ Open houses and workshops: Public meeting 2/87; Sample results fact sheet 9/87; Update 1/88; Water results fact sheet 7/88; Open house 10/88; Update 2/89; Phase I results fact sheet 6/89; Phase II fact sheet 9/89; Workshop held 2/12/90; Open House 12/92; meeting on 5/94.
♦ Original Proposed Plan Fact Sheet and Public Meeting: 07/90.
♦ Original ROD Fact Sheet: 10/90; RD Fact Sheet 12/92.
♦ ESD Public Notice:
♦ RD/RA Activities: Community interviews 11/90-12/90. Incineration workshop 2/91; Open House for opening of Satellite Office at Omaha Public School 12/92. Open House to discuss the phased approach and upcoming Interim Remedial Action, 05/19/93.
♦ Citizens on site mailing list: 310
♦ Constituency Interest: Low level organized interest; high individual interest of several residents. Congressional interest. Media coverage in Missouri because of nearby Table Rock Lake and resort. Nearby residents concerned about incineration safety and air emissions for nearby school.
♦ Site Repository: Omaha Public School, College Street, Omaha, AR 72662.

Technical Assistance Grant

♦ Availability Notice: 01/89
♦ Letters of Intent Received: None
♦ Grant Award: None

Contacts

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♦ State Coordinator:	Kathy Gibson (EPA) 214-665-3139, Mail Code: 6SF-AP
♦ Prime Contractor:	PRPs – McKeeson HBOC

EPA Public Liaison	Donn R. Walters, 214-665-6483, or 1-800-533-3508, EPA Toll Free No.