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April 17, 1998

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VIA FEDERAL EXPRESS

John Kemmerer  
Chief, Superfund Site  
Cleanup Branch  
U.S. Environmental Protection Agency  
Region IX  
75 Hawthorne Street  
San Francisco, CA. 94105-3901

Dear Mr. Kemmerer:

This letter responds to your request of March 11, 1998, to Patrick Corbett of Kerr-McGee Chemical LLC (KMCLLC), successor via merger to Kerr-McGee Chemical Corporation, seeking information pursuant to Section 104(e) of CERCLA and Section 3007 of RCRA regarding production and use of perchlorate-containing chemicals. KMCLLC has endeavored to answer each of your questions to the best of its ability, based upon information that could be obtained in the time allowed for KMCLLC to respond.

We are continuing research on the historical ownership and operations of KMCLLC's Henderson, Nevada facility, including the role of the federal government in the period 1945-62. For instance, it appears that during this period the United States Navy played a significant role in ownership and operation of a plant for production of ammonium perchlorate and that a senior naval officer was assigned to this facility until 1962. KMCLLC reserves the right to amend or supplement its answers based upon the fruits of ongoing research.

**1. What year did production of perchlorate-containing chemicals begin?**

At Henderson, Nevada, production of potassium perchlorate began in 1945, and production of ammonium perchlorate began on a pilot scale basis in 1948, with full commercial scale production beginning in 1951. Also, production of sodium perchlorate began in 1945 for use as a precursor in production of potassium perchlorate.

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2. What entities have owned/operated the plant? Please provide the dates when ownership or operating control changed.

KMCLLC's Henderson facility was originally owned and constructed by the Defense Plant Corporation (DPC) acting for the U.S. government in 1941. From August 1942 until November 1944, the plant was operated by Basic Magnesium Incorporated on behalf of the U.S. government to manufacture magnesium that was used in aircraft production. The magnesium plant closed in November 1944, and the federal Reconstruction Finance Corporation (RFC) assumed control of the plant from the DPC. The RFC relinquished custody of the plant to the federal War Assets Administration in October 1946. In June 1949, most of this overall industrial complex was transferred to the Colorado River Commission (CRC), an instrumentality of the State of Nevada. As noted below, the CRC conveyed a portion of the site to Western Electro Chemical Company (WECCO) in 1952. The United States apparently retained or regained ownership of a substantial portion (290.33 acres) for which it did not relinquish ownership finally until March 1962, when this acreage was conveyed to the American Potash and Chemical Corporation (AP&CC).

WECCO was the first privately owned company to operate on the site that was to become the KMCLLC facility. It operated at the site from approximately 1945 through 1955. In May 1945, WECCO contracted with the DPC for the production of perchlorates for the U.S. Department of the Navy. Operations began by June or July 1945, but ceased right after the war's end in August 1945. Subsequently, WECCO resumed operations under a lease from the RFC in February 1946. WECCO acquired portions of the site from the CRC in May 1952.

As previously noted, the U.S. Navy remained active at the site until 1962. Apparently, the Navy spent \$8 million to construct an ammonium perchlorate plant at the site in an area separate from the WECCO-owned chlorate and perchlorate units that were converted from the WW II plant, and it was this plant that was used by KMCLLC to produce ammonium perchlorate. WECCO, and then AP&CC, operated this plant under contract for the Navy, which apparently retained ownership and a supervisory role through a Navy Captain assigned to the site. It is likely that this plant occupied the 290.33 acres for which the United States finally relinquished ownership in 1962.

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In 1955, WECCO was merged with AP&CC, and the merged entity continued the production of chlorates and perchlorates. KMCLLC acquired the present facility from AP&CC in 1967 by means of a merger.

**3. Which specific perchlorate-containing compounds were manufactured?**

Sodium perchlorate, potassium perchlorate, ammonium perchlorate, and magnesium perchlorate.

**4. What was the total annual production of perchlorate-containing compounds at the plant in Henderson, Nevada? What was the annual production of each specific perchlorate-containing compound?**

See Attachment 1. Figures are not readily available for potassium perchlorate production or ammonium perchlorate production between 1945-1951. Also, as previously noted, sodium perchlorate manufacture began in 1945 as a precursor to the production of potassium perchlorate. No separate production figures exist for such precursor sodium perchlorate. KMCLLC began manufacture of sodium perchlorate for end uses in 1968.

**5 & 6. What were the end uses of the perchlorate-containing compounds and what was the approximate percentage of production sold for each of the end uses?**

- a. Sodium perchlorate -- precursor to potassium and ammonium perchlorate, and explosives.
- b. Potassium perchlorate -- solid rocket fuel oxidizer, flares, and pyrotechnics.
- c. Ammonium perchlorate -- solid rocket fuel oxidizer, explosives, chemicals and pyrotechnics.
- d. Magnesium-perchlorate -- military batteries.

End-use information for 1997 is deemed to be reasonably reflective of historical uses. In 1997, 87% of production went for use as rocket fuel; 8% for

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use in explosives, and 5% as a chemical feedstock. Historic use in flares and pyrotechnics would have been relatively small.

**7. Please provide the name and address of each entity to whom perchlorate-containing compounds were shipped each year from the Kerr-McGee facility (more than 500 pounds in any year)?**

See Attachment 2. The customer names and addresses furnished reflect KMCLLC shipments from 1978 through the present. Customer records antedating 1978 are not readily available. Normal retention of such sales data by KMCLLC is 10 years.

**8. Please identify the locations of other perchlorate-containing chemical production facilities owned, operated or previously owned or operated by Kerr-McGee in the United States?**

There have been none.

**9. Please provide answers to the above questions (1-7) for any other Kerr-McGee facilities producing or previously producing perchlorate-containing compounds.**

There are none.

**10. EPA has been informed that production of perchlorate-containing compounds in the U.S. is limited to Kerr-McGee and WECCO in Cedar City, Utah (formerly the PEPCON facility in Henderson, Nevada). Please confirm to the best of your knowledge, whether this information is accurate. If you do have knowledge of perchlorate-containing compound production plants in the United States, other than those owned or operated by Kerr-McGee or WECCO, please provide the names, locations and years of operation, if known.**

EPA is correct that production of perchlorate-containing compounds in the U.S. is currently limited to the Henderson facility and the Cedar City, Utah facility operated by American Pacific. In addition to the former PEPCON facility in Henderson, which operated from 1958 to 1988, Kerr McGee knows of four

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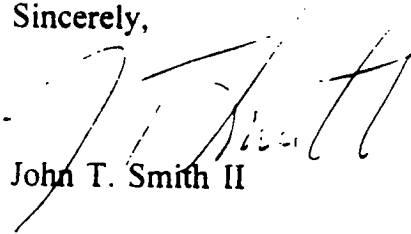
other facilities that have produced perchlorate compounds. (The dates for production at these facilities are estimates.). They are:

1. Western Electro Chemical Company. 1941-48. Los Angeles, California.
2. Hooker Chemicals (now Oxychem). approximately 1940-75. Niagara Falls, New York.
3. HEF, Inc. -- Hooker Chemical & Foote Mineral (now Eka Nobel). 1958-65, Columbus, Mississippi.
4. Pennsalt (Pennwalt), now Elf Atochem, 1958-65, Portland, Oregon.

\* \* \* \*

Again, KMCLLC intends to supplement this response with any additional information that its ongoing research may reveal. Please let me know if EPA has any questions about the information furnished in this response.

Sincerely,



John T. Smith II

Attachments (2)

cc: Douglas Zimmerman, NDEP -- By Federal Express

## Perchlorate Chemical Production - Henderson, NV 1951-1997

4033

YEAR	PRODUCT			
	SODIUM PERCHLORATE	AMMONIUM PERCHLORATE	MAGNESIUM PERCHLORATE	POTASSIUM PERCHLORATE
1951	-	379	-	3 077
1952	-	1,218	-	3,605
1953	-	1,571	-	3,562
1954	-	3,974	-	158
1955	-	3,239	-	651
1956	-	3,738	-	490
1957	-	3,427	-	336
1958	-	6,746	-	309
1959	-	10,888	-	378
1960	-	5,600	-	150
1961	-	10,279	-	122
1962	-	8,511	-	206
1963	-	11,220	-	117
1964	-	9,240	-	222
1965	-	3,841	-	-
1966	-	6,511	-	161
1967	-	8,456	-	304
1968	113	5,893	-	465
1969	71	6,001	12	535
1970	375	7,692	6	516
1971	142	3,835	-	344
1972	61	7,576	180	463
1973	75	6,781	247	526
1974	62	6,163	249	768
1975	41	4,443	42	266
1976	142	5,152	(8)	763
1977	416	5,857	-	949
1978	333	5,151	-	762
1979	804	6,542	-	830
1980	1,383	6,282	-	524
1981	1,567	6,174	-	386
1982	942	7,075	-	359
1983	841	8,531	-	(2)
1984	1,366	12,366	-	-
1985	1,878	14,116	-	-
1986	1,259	14,758	-	-
1987	1,061	14,053	-	-
1988	1,346	15,368	-	-
1989	262	18,033	-	-
1990	279	19,478	-	-
1991	356	10,803	-	-
1992	472	7,179	-	-
1993	734	8,920	-	-
1994	829	10,919	-	-
1995	681	6,010	-	-
1996	684	4,214	-	-
1997	735	6,303	-	-

## Perchlorate Company Names/Addresses

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<u>State</u>	<u>Name/Address</u>
<b>Alabama</b>	
Huntsville	Tatokol Corporation Plant closed. Current address of related Division--PO Box 707, Brigham City, UT 84302-0707
Parrish	Boren Ireco (formerly Gulf & Thermex), 5425 Hwy 269, Parrish, Ala 35560
Redstone	U. S. Army, Redstone Arsenal, Al 35898-5330
Bessemer	Hercules, Inc. Now Alliant Tech --see Utah Division address
<b>Arkansas</b>	
E. Camden	Atlantic Research Corp., PO Box 1036, Camden, AR 71701
E. Camden	Mining Services International, address not available
Woodbury	Hitech Inc., PO Box 3112, East Camden, AR 71701
Midland	SECO Inc., Austin Powder, 25800 Science Park Dr., Cleveland, O 44122
<b>Arizona</b>	
Goodyear	Unidynamics, 102 S. Litchfield Rd., Goodyear, AZ 85338
Mesa	Talley Defense Systems, Inc., PO Box 849, Mesa, AZ 85211
Tempe	Aerodyne Corp., PO Box 725, Tempe, AZ 85281
Chandler	Aerodyne Corp., PO Box 725, Tempe, AZ 85281
Phoenix	Universal Propulsion, 25401 N. Central Ave., Phoenix, AZ 85027
<b>California</b>	
Aliso Viejo	G. G Industries, PO Box 8065, Laguna Hills, CA 92654
Auburn	Mason Holodyne, 90 Pinecrest Dr., Applegate, CA 95703
Barstow	Roy's Gun and Lock, address not available
Barstow	Mojave Pyrotechnic, address not available
China Lake	Naval Air Warfare Center, 671 Nimitz, China Lake, CA 93555
Edwards AFB	Edwards AFB, CA 93523
Gardena	T.O.P.T.H., 2848 E. 208th St., Long Beach CA 90810

<b>Colorado</b>	
Englewood	Gateway Safety Products, address n/a
Penrose	Estes Industries, PO Box 227, Penrose, CO 81240
Whitewater	KSI Inc., 1471 Blair Rd. Whitewater, CO 81527
Colo. Springs	Vuican Systems, PO Box 6099, Colorado Springs, CO 80934
<b>Florida</b>	
Brooksville	Thermex Energy, 13601 Preston Rd., Suite 900 West, Dallas, Tx 75240
Hollywood	CCT, address n/a
Eglin	Eglin AFB, Eglin, FL 32542
<b>Georgia</b>	
Byron	ICI Americas (formerly Pyrotechnic Specialties), PO Box 819, Valley Forge, PA 19482
<b>Idaho</b>	
Pocatello	Firefox Enterprises, 11612 North Nelson Lane, Pocatello, Idaho 83202
<b>Illinois</b>	
Marion	Olin Corp., PO Box 278, Marion IL 62959
Chicago	Harold Dunbar Paper Co., address n/a
South Beloit	Lakeside Fusee, address n/a
Danville	World Fireworks, address n/a
Danville	Star Fireworks, address n/a
Edwardsville	Propellex, PO Box 387, Edwardsville, IL 62025
Joliet	Talley Defence Systems, PO Box 849, Mesa, AZ 85211
<b>Indiana</b>	
Peru	Olin Corp., RR 6 Box 542, Peru, IN 46970
Kingsbury	Melrose Fireworks, PO Box 302, Kingsbury, In 46345
Kingsbury	Aenal Dynamics, PO Box 304, Kingsbury, IND 46345
Kingsbury	Kingsbury Industries, address n/a
<b>Kansas</b>	
Hallowell	Thermex (formerly Gulf Oil), 13601 Preston Rd., Suite 900 W., Dallas TX 75240
Hallowell	Slurry Explosives (formerly El Dorado), PO Box 348, Columbus, KS 66725



<b>Kansas cont.</b>	
Herington	Hodgdon Powder, Pyrex Corp. address n/a
<b>Louisiana</b>	
New Orleans	Bartlett Chemicals, address n/a
<b>Michigan</b>	
Isipeming	Ireco Inc., 11th Floor Crossroads Tower, Salt Lake City, U 84144
<b>Mississippi</b>	
Foxsworth	Rebel Fireworks, Inc., address not available
<b>Maryland</b>	
Indian Head	Naval Surface Warfare Center, 202 Strauss Ave., Indian Head, MD 20640
Elkton	Thiokol Corp., PO Box 241, Elkton, MD 21922
Elkton	New Jersey Fireworks, Mfg., address n/a
Cumberland	Alliant Tech (formerly Hercules, Inc.), current address W. Va.
Easton	Samuel Jackson Fusee Co., address n/a
Silver Springs	Naval Surface Warfare Center, 10901 New Hampshire Ave., Silver Springs, MD 20903
<b>Minnesota</b>	
Biwabik	Thermex Energy, 13601 Preston Rd., Suite 900 W., Dallas, TX 75240
Biwabik	Nitrochem Energy Corp., PO Box B, Biwabik, Minn 55708
Gilbert	Cook Slurry, Cook Associates, 2026 Beneficial Life Tower, 3650 State St., SLC, Utah 84111
Foley	Aerial Arts, 18355 165th St. NE, Foley, Minn 56329
<b>Missouri</b>	
Joplin	Atlas Powder, PO Box 87, Joplin, MO 64801
Joplin	ICI, PO Box 819, Valley Forge, PA 19482
Atlas	Atlas Powder, PO Box 87, Joplin, MO 64801
<b>New Jersey</b>	
Newfield	Shieldalloy Corp., 12 West Blvd., PO Box 768, Newfield, NJ 08344-0768
South Plainfield	Hummel Croton, Inc., PO Box 250, So. Plainfield, NJ 07080
Boonton	Standard RWY Fusee Co., address n/a

**New Jersey cont.**

Orange H. Reisman Corp., 377 Crane St., Orange, NY 07651

Newark Farmount Chemical, address n/a

**Nevada**

Sparks Hi Shear Industries, 2830 W. Lomita Blvd., Torrance CA 90505

Las Vegas Aerotech/ISP, 1955 S. Palm, Suite 5, Las Vegas, NV 89104

Lockwood Largo Marsino, Defense Supply, 204 Edison Way, Reno, NV 89502

Fernley BOKMA Resources, PO Box 590, Fernley, NV 89408

**New Mexico**

Roswell Longhorn Mfg. Co., address not available

**New York**

Brooklyn Witco Chemical Corp., 700 Court St., Brooklyn, NY 11231

Delanson Fireworks by Grucci, One Grucci Lane, Brookhaven, NY 11719

**North Carolina**

McCleansville Gulf Oil, Po Box 183, McCleansville, NC 27301

Riegelwood Wright Chemical, Atlas Powder, PO Box 271, Tamaqua, PA 18252

**North Dakota**

Fargo Starr Display Fireworks, PO Box 9574, Fargo, ND 58106

Kindred Dakota Pyrotechnic, 16250 57th S. E., Kindred, ND 58051

Harwood Starr Display Fireworks, PO Box 9574, Fargo, ND 58106

**Ohio**

Columbus G. F. Smith Chemicals, PO Box 245, Powell, Ohio 43065

Cincinnati Fanaco Inc., address n/a

Steubenville Barium & Chemicals, address n/a

Fostoria Standard RWY Fusee Co., address n/a

Marietta Servo Dynamics, see Corpus Christi address

Lisbon Hilltop Energy Inc., An/Gel International, 33 C. St., Salt Lake City, U 84103

**Pennsylvania**  
 Hatfield Aerial Arts, 18355 163rd NE, Foley, Minn. 56329  
 Telford Service Chemical Inc., address n/a  
 Tamaqua Atlas Powder Co., PO Box 271, Tamaqua, PA 18252  
 Mt. Carmel Explo-Tech, Inc., An/Gel Inc., 33 C. St., SLC, U 84103  
 Kittanning KESCO Inc., PO Box 95, Adrian, Pa 16210-0095

**South Carolina**  
 Columbia Phillips Components, 6071 St. Andrews Rd., Columbia, SC 29212

**Tennessee**  
 Toone Kilgore Corp., Kilgore Drive, Toone, TN 38381  
 Louisville Southwestern Energy, An/Gel International, 33 C. St., SLC, U 84103

**Texas**  
 Karnack Thiokol Corp.  
 Plant closed—see address for Utah division  
 Corpus Christi Servo Dynamics, Inc., Rt. 1, Box 132 E. Roddfield, Corpus Christi, TX 78414  
 McGregor Alliant Tech (formerly Hercules, Inc.)  
 Plant closed—see address for Utah division  
 Kennedale Harrison Jet Guns, 6915 Hudson Village Creek Rd., Kennedale, TX 76060  
 Mansfield Shaped Charge Specialties, address not available  
 Marshall RTF Enterprises, address n/a  
 Rosharon Slumberger, PO Box 1590, Rosharon, TX 77583  
 Houston Thermex (formerly Gulf), 13601 Preston Rd., Suite 900 West, Dallas, TX 75240  
 Waco M & M Chemical, 103 Stovall, Waco TX 76706

**Utah**  
 Magna Alliant Tech, PO Box 98, Magna UT 84044  
 Brigham City Thiokol Corporation, PO Box 707, Brigham City, UT 84302  
 Logan Fireworks West, address n/a  
 Lehi Dyno Nobel (formerly Ireco), 11th Floor, Crossroads Tower, Salt Lake City, UT 84144  
 Lehi Western States Energy, Atlas Powder, 15301 Dallas Parkway, Suite 1200, Dallas, TX 75244

**Utah cont.**

Ogden Defense General Supply, 8000 Jefferson Davis Hwy, Richmond, VA 23297

Ogden A & B Chemical Co., 2931 Second Ave., Suite 100, Richmond, VA 23222

Utah County Dyno Nobel, formerly Cook Associates, 2026 Beneficial Life Tower, Salt Lake City, UT 84111

Salt Lake City Hanex Products, 466 W. 200 South, Salt Lake City, UT 84101

**Virginia**

Richmond 2931 Second Ave., Richmond VA 23222

Gainesville Atlantic Research, 5945 Wellington Rd., Gainesville, VA 22065

Pepper Hercules, Inc. (see Alliant Tech Utah address)

Yorktown Defense General Supply, 8000 Jefferson Davis Hwy, Richmond, VA 23297

Duffield Paige Ireco (formerly Gibson Explosives), PO Box 33, Duffield, VA 24244

**Washington**

Olympia Ireco Inc. (formerly Pacific Powder), 628 Columbia NW, Suite 1-A, Olympia, WA 98501

**West Virginia**

Rocket Center Alliant Techsystems, 210 Star Route 956, Rocket Center, WV 26725

Newell Newell Specialties, State Route 2, Newell, WV 26050

Romney Appalachian Explosives, An/Gel Int., 33 C St., Salt Lake City, UT 84103

**Wisconsin**

Delafield Bartolotta's Fireworks, PO Box 5, Genesee Depot, WI 53127

**Wyoming**

Mills Thermex (formerly Gulf), 13601 Preston Rd., Suite 900 West, Dallas, TX 75240