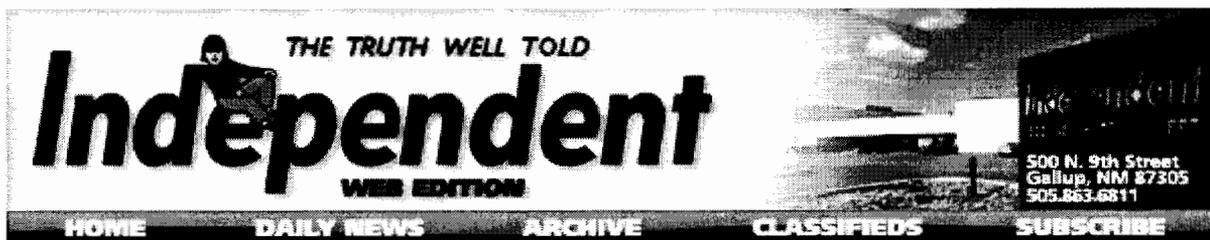


Monzeglio, Hope, NMENV

From: Bearzi, James, NMENV
Sent: Friday, July 07, 2006 9:47 AM
To: Monzeglio, Hope, NMENV; Kieling, John, NMENV; Cobrain, Dave, NMENV
Subject: FW: Giant Refinery story



From: Rankin, Adam, NMENV
Sent: Friday, July 07, 2006 9:39 AM
To: NMENV-SeniorStaff
Cc: Bearzi, James, NMENV; De Saillan, Charles, NMENV
Subject: Giant Refinery story



Contaminants found at refinery

By Kathy Helms
 Diné Bureau

WINDOW ROCK — The public has until Aug. 21 to comment on a draft cleanup order from New Mexico Environment Department for the Bloomfield Refinery.

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[List of contaminants found at refinery](#)

NMED has identified 26 sites within the 285-acre facility which have contaminated soil and groundwater.

NMED said benzene, which is known to cause cancer, already has reached the San Juan River and that groundwater samples collected in March and August 2003 revealed benzene and ethylbenzene in monitoring wells downgradient of the Hammond Irrigation Ditch which exceeded levels considered protective of human health and the environment.

Hexavalent chromium, or Chromium VI, a known cancer-causer that acts as a mutagen on DNA and which was hurled into the spotlight with the award-winning movie "Erin Brockavich" as well as less toxic Chromium III also have been detected in groundwater or soil at the refinery.

Over the years, product releases from process areas, above-ground storage tanks and piping, loading and unloading

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areas, waste storage, disposal areas, and others have resulted in contamination from a number of cancer-causing chemicals. No public drinking water supplies have been affected by the contamination, based on monitoring results, NMED said.

The Lee Acres Water Users Association, which supplies surrounding communities with drinking water, has a water supply intake located about 1/4-mile to 1/2-mile downstream of the facility.

Hazardous constituents found at the Bloomfield facility include organic contaminants such as benzene, toluene, ethylbenzene and xylenes (BTEX); metals such as chromium, mercury, arsenic, barium, copper, lead, cadmium, manganese, selenium and zinc; volatile organic compounds and semi-volatile organic compounds including polynuclear aromatic hydrocarbons (PAHs), among others.

Most contaminants detected beneath the facility are in the northwest portion of the refinery and consist primarily of xylenes, gasoline-range hydrocarbons, diesel-range hydrocarbons, and separate phase hydrocarbons.

Surface water, groundwater and soil all have been affected to varying degrees by the release of contaminants from the facility, which is located on the south side of the San Juan River and the Hammond Irrigation Ditch and situated on a bluff about 120 feet above the river.

NMED's draft order is divided into 11 sections and contains investigation and cleanup requirements for the pollution and a schedule to implement cleanup requirements.

The crude oil refining facility, owned by San Juan Refining Co. and operated by Giant Industries Arizona Inc., has been in operation since the late 1950s as a crude topping unit and currently has a refining capacity of 18,000 barrels per day. The main source of crude oil supply comes from the Four Corners area and is transported to the facility by pipeline or tanker truck.

Running southwest through the center of the facility are four utility pipelines operated by El Paso Natural Gas, Conoco-Phillips, Enterprise and Giant. The Enterprise and Giant pipelines currently are not in service, according to NMED.

Groundwater at the site ranges from 6 to 40 feet below ground surface and generally flows northwest toward Hammond Ditch and the San Juan River. The portion of the San Juan in the vicinity of the Bloomfield Refinery is part of the Upper Colorado River Basin, which contains four species of fish on the federal endangered species list.

In order to maintain a target base flow through the endangered fish critical habitat reach of the San Juan, from Farmington to Lake Powell, the Bureau of Reclamation announced June 23 that it was increasing releases from Navajo Reservoir, beginning June 27, due to declining river

flows in the San Juan Basin.

BOR said the increase ranges from 100 cubic feet per second to 300 cfs, bringing the total release from 600 cfs to 800 cfs. The San Juan River Basin Recovery Implementation Program recommends a target base flow of 500 cfs through the critical habitat area.

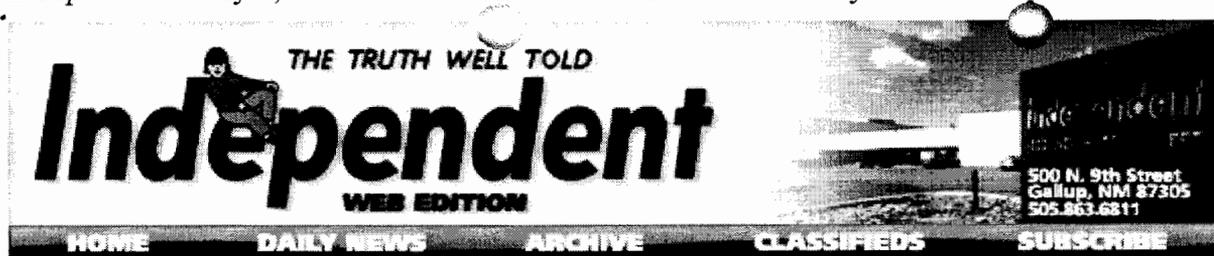
The draft order is available locally at the Bloomfield Public Library, 333 S. First St., or view it online at the NMED Hazardous Waste Bureau

On the Web

www.nmenv.state.nm.us/HWB/grcbperm.html under Draft Order.

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List of contaminants found at refinery

By Kathy Helms
Diné Bureau

WINDOW ROCK — The contaminants listed below have been found in groundwater or soil at the Bloomfield Refinery. The contaminants are toxic, known to cause cancer or noticeably increase the frequency of mutations, and can cause the malformation of human fetuses. Many are toxic to aquatic life.

Contaminants of concern:

- **Arsenic.** Known to produce cancer. Human exposure is through inhalation and ingestion. Health effects from ingesting low levels include stomach and intestine irritation, nausea, vomiting, and diarrhea, a decreased production of red and white blood cells and occurrence of skin and organ cancers.
- **Barium.** Ingestion of high levels of barium compounds over the short term has resulted in difficulties in breathing, increased blood pressure, changes in heart rhythm, stomach irritation, brain swelling, muscle weakness, and damage to the liver, kidney, heart and spleen.
- **Benzene.** Known to produce cancer, benzene exposure can cause blood diseases and leukemia. It is also a skin irritant.
- **Cadmium.** This element can cause kidney damage through ingestion and inhalation. Linked to damage to the intestinal tract through ingestion and damage to the lungs through inhalation, it is also known to be a probable human cancer-producer. Long-term exposure to lower levels in air, food and water leads to a buildup in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones.
- **Chromium III.** This material has caused reduced liver and spleen weights in animals and allergic contact dermatitis in exposed workers. Chromium III is much less toxic than chromium VI.

Comments?

To submit comments on the Giant Bloomfield draft order, or to request a public hearing, contact: John E. Kieling, program manager; Hazardous Waste Bureau, New Mexico Environment Department, 2905 Rodeo Park Drive East, Building 1, Santa Fe, N.M. 87505-6303; Ref: Giant Refining Company, Bloomfield Refinery Order; email: john.kieling@state.nm.us

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- Chromium VI. Inhaled, chromium VI is a carcinogen (cancer-producer) that acts as a mutagen on DNA. Breathing high levels of chromium VI can cause nosebleeds, and ulcers and holes in the nasal septum. Ingesting large amounts can cause stomach upsets and ulcers, convulsions, kidney and liver damage, and even death. Skin contact can cause skin ulcers.
- Copper. Ingesting high levels may cause nausea, vomiting and diarrhea. It also may cause liver and kidney damage in children and adults. Animals exposed to copper in drinking water or food showed liver and kidney damage.
- Ethylbenzene. Exposure occurs mostly through inhalation and can cause dizziness, irritation to the skin, eye and upper respiratory tract, and is potentially toxic to the central nervous system.
- Lead. This element adversely affects the central nervous system in children. It can lead to kidney and reproductive system damage. The effects are the same, whether lead is inhaled or swallowed. Lead may cause anemia and can damage the male reproductive system.
- Gasoline. This product contains benzene, toluene, ethylbenzene and xylenes, all of which are toxic. Some major components of gasoline have the potential to bioaccumulate, or build up over time.
- Manganese. Inhalation of high concentrations causes profound neurological dysfunction in humans; exposure to lower levels may decrease neurological performance, such as eye-hand coordination and motor skills. Inhalation can lead to lung inflammation that may cause coughing, bronchitis, pneumonia, or decreased lung function. Decreased fertility, impotence and abnormal sperm also have been observed in male humans. Altered brain enzyme function seen in test animals.
- Mercury. Inorganic and methylated mercury adversely affect the nervous system. Methylmercury and metallic mercury vapors are more harmful than other forms because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, as well as development of human fetuses.
- MTBE (Methy Tertiary-Butyl Ether). Little data is available on known health effects for humans drinking MTBE-contaminated water; however, animal tests have demonstrated cancer at high levels of exposure through inhalation or ingestion. MTBE, which travels quickly in water, has been found in a majority of

monitoring wells at the facility, and is known to have traveled offsite.

- Naphthalenes. Ingestion causes weight loss, diarrhea, and lethargy in rats. Mice that inhaled naphthalene showed inflammatory lesions in the lungs, which increased with larger doses. Exposure of humans to naphthalene vapors caused nausea, vomiting and abdominal pain. Anemia has been repeatedly documented in humans, particularly infants. Ingestion has resulted in toxic effects to the kidney.
- Nickel. The most common reaction in humans is a skin rash at the site of contact. Occupational exposure can result in chronic bronchitis and reduced lung function.
- Nitrate. Exposure has been shown to result in cyanosis, or "blue baby syndrome" in infants under 3 months of age.
- PAHs (Polycyclic Aromatic Hydrocarbons). Some PAHs may produce cancer. Lab animals have developed lung and stomach cancer. Routes of entry include inhalation, ingestion, or through breast milk. PAH's do not dissolve easily in water and attach to solid particles and settle to the bottom of lakes or rivers. High incidences of tumors and other abnormalities have been documented in areas of PAH contamination. PAH studies of fish in the San Juan River Basin have been limited. However, bile from nine fish from the lower Animas River was sampled. Five of the fish had open sores and lesions.
- Selenium. Short-term exposure to high levels can cause nausea, vomiting and diarrhea.
- Toluene. Adversely affects liver and kidney function through ingestion, causing significant increases in the weights of these organs. Inhalation results in adverse neurological effects in humans. Low to moderate levels can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and hearing and color vision loss. Toluene has been linked to birth defects in children of exposed mothers.
- Xylenes. Common exposure routes are inhalation and absorption. Short-term and long-term exposure to high levels can cause headaches, lack of muscle coordination, dizziness, confusion, irritation to the skin, eyes, nose and throat, and lung problems.
- Zinc. Short-term effects of ingestion include stomach cramps, nausea and vomiting. Long-term exposure may result in anemia, damage to the pancreas, and may decrease levels of high-density lipoprotein (HDL) cholesterol.

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