The following information was generated from the Hazardous Substances Data Bank (HSDB), a database of the National Library of Medicine's TOXNET system (http://toxnet.nlm.nih.gov) on December 15, 2004.

Query: The chemical name barium was identified.
The following terms were added from ChemIDplus:
baryum
bario
CAS Registry Number: 7440-39-3

NAME: BARIUM SULFATE
HSN: 5041
RN: 7727-43-7

This record contains information specific to the title compound. Those with an interest in this record are strongly encouraged also to retrieve the record on BARIUM COMPOUNDS which has additional, general information relevant to the toxicity and environmental fate of barium ions and barium compounds. For information on the metal itself, refer to the BARIUM, ELEMENTAL record.

HUMAN HEALTH EFFECTS:

TOXICITY SUMMARY:
IDENTIFICATION: In nature barium occurs in a combined state, the principal forms being barite (barium sulfate) and witherite (barium carbonate). Barium sulfate has a very low water solubility. Barite ore is the raw material from which nearly all other barium compounds are derived. Barium and its compounds are used in diverse industrial products ranging from ceramics to lubricants. It is used in the manufacture of alloys, as a loader for paper, soap, rubber and linoleum, in the manufacture of valves and as an extinguisher for radium, uranium and plutonium fires. Anthropogenic sources of barium are primarily industrial. Emissions may result from mining, refining or processing barium minerals and the manufacture of barium products. Mining and processing of barite ore releases particulates into the air and from fugitive dusts from the use of barite in oil drilling and oil related industries. HUMAN EXPOSURE: It is difficult to assess the uptake of ingested barium because of a number of factors affect absorption. The presence of sulfate in food results in the precipitation of barium sulfate. ANIMAL/PLANT STUDIES: Insoluble barium compounds such as barium sulfate, accumulate in the lungs and are cleared slowly ciliary action. [Environmental Health Criteria 107 Barium. pp.13-19 (1990) by the International Programme on Chemical Safety (IPCS) under the joint sponsorship of the United Nations Environment Programme, the International Labour Organisation and the World Health Organization.]**QC REVIEWED**

HUMAN TOXICITY EXCERPTS:
... INHALATION MAY LEAD TO DEPOSITION IN LUNG IN SUFFICIENT QUANTITIES TO


... RAPID DEVELOPMENT OF BILATERAL RETROBULBAR NEURITIS WITH CENTRAL SCOTOMAS IN 70 YR OLD MAN AFTER INGESTION OF 125 G. CENTRAL SCOTOMAS CLEARED & VISION RETURNED TO NORMAL IN 3 OR 4 WEEKS. IT WAS POSTULATED THAT THE MATERIAL WAS IMPURE, POSSIBLY CONTAINING BARIUM SULFIDE OR CARBONATE. [Grant, W.M. Toxicology of the Eye. 3rd ed. Springfield, IL: Charles C. Thomas Publisher, 1986.134]**PEER REVIEWED**

THE CONJUNCTIVA & EYELIDS OF CHILDREN ... /BECAME/ INJECTED ACCIDENTALLY WITH BARIUM SULFATE WHICH WAS SQUIRITED UNDER VERY HIGH PRESSURE FROM CENTERS OF CERTAIN MAKES OF GOLF BALLS, WHICH CHILDREN HAD CUT INTO. X-RAY DIFFRACTION & ELECTRON PROBE EXAM HAVE BEEN EMPLOYED TO IDENTIFY BARIUM SULFATE IN THE EXTRAOCULAR TISSUES. BARIUM SULFATE IN THE CENTER OF GOLF BALLS COMMONLY HAVE BEEN MIXED WITH OTHER SUBSTANCES ... /CAUSED/ LITTLE INJURY .... [Grant, W.M. Toxicology of the Eye. 3rd ed. Springfield, IL: Charles C. Thomas Publisher, 1986.134]**PEER REVIEWED**


INHALED FINE DUSTS OF BARIUM SULFATE FORM HARMLESS NODULAR GRANULES IN LUNG, AN AFFLCTION CALLED BARITOSIS. BARITOSIS PRODUCES NO SYMPTOMS OF BRONCHITIS OR EMPHYSEMA, & LUNG FUNCTIONING IS NOT AFFECTED, ALTHOUGH SOME PATIENTS COMPLAIN OF DYSPNEA UPON EXERTION; THE NODULATION DISAPPEARS IF EXPOSURE ... IS STOPPED. [Venugopal, B. and T.D. Luckey. Metal Toxicity in Mammals, 2. New York: Plenum Press, 1978.67]**PEER REVIEWED**

A BENIGN PNEUMOCONIOSIS IN WORKERS EXPOSED TO INHALATION OF FINELY GROUND BARIUM SULFATE WAS FIRST DESCRIBED IN ITALY IN 1925 .... [Browning, E. Toxicity of Industrial Metals. 2nd ed. New York: Appleton-Century-Crofts, 1969.64]**PEER REVIEWED**

Workers at a barite factory were monitored for lung deposition of barium
Chest radiographs showed dense shadows, which slowly disappeared when exposure to barite ceased. Affected workers showed no symptoms, no abnormal physical signs, no loss of vital capacity, no interference with lung function, and no evidence of incr susceptibility to pulmonary infections. [WHO; Environ Health Criteria 107: Barium p.94 (1990)]**PEER REVIEWED**

In two of the cases, death was the result of acute hypersensitivity reaction following treatment with radioactive barium sulfate contrast medium. The remaining two deaths resulted from acute inflammation of the bronchi and peripheral airways after accidental inhalation of barium sulfate. [WHO; Environ Health Criteria 107: Barium p.90 (1990)]**PEER REVIEWED**

Pneumoconiosis (baritosis) has been identified with heavy exposures to finely divided particles of barium sulfate and barium oxide and lithopone. This benign pneumoconiosis does not result in impairment of ventilatory function, although signs of mild bronchial irritation may occur. Characteristic x-ray changes are those of small, dense, circumscribed nodules evenly distributed throughout the lung fields, reflecting the radiopacity of the barium dust. [Zenz, C., O.B. Dickerson, E.P. Horvath. Occupational Medicine. 3rd ed. St. Louis, MO., 1994598]**PEER REVIEWED**


**DRUG WARNINGS:**


VET: UNLESS INTESTINAL TRACT EVACUATES ITSELF PROMPTLY, LARGE MASSES OF DRUG CAN PRODUCE AN IMPACTION. PERITONEAL LEAKAGE HAS BEEN ASSOCIATED WITH PERITONITIS, POSSIBLY SECONDARY TO ... FECAL LEAKAGE. USE APPROVED GRADES ... IMPURE FORMS MAY BE ASSOCIATED WITH METAPLASIA AT ULCER SITES IN DOGS. [Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974.38]**PEER REVIEWED**

Rarely, oral barium sulfate suspensions may cause constipation or intestinal obstruction due to impaction in the colon. Cramping from distention of the intestine by barium sulfate suspensions or diarrhea may also occur. Retention of barium sulfate in the appendix has reportedly caused appendicitis. Barium sulfate fecaliths reported can lead to obstruction, intussusception, ulceration, or even intestinal perforation and may rarely require surgical removal. ... Aspiration of large amt may cause pneumonitis or nodular granulomas of interstitial lung tissues and lymph nodes; asphyxiation and death have occurred in one patient. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Perforation of the colon after rectal admin of barium sulfate suspensions may rarely occur in children, debilitated adults, or patients in whom the
colon is weakened by inflammatory, malignant, or parasitic disease or recent biopsy and/or sigmoidoscopy. Perforation may result from hydrostatic pressure of the instilled barium sulfate suspension or trauma to the colon from an enema tip. ... Partial intestinal perforation may result in dissection of layers of the intestinal wall with barium sulfate and feces. Complete intestinal perforation may produce severe peritonitis and loss of fluid into the peritoneal cavity; death may occur. ... Extraperitoneal leakage of barium sulfate suspension, which may occur if both the intestine and peritoneum are perforated, causes few immediate symptoms, but if extensive may lead to intestinal infarction and even death. Barium granuloma of the rectum and/or colon may also occur ... .


Although extremely rare, barium sulfate suspension has entered the systemic or portal veins after oral or rectal admin, possibly via mucosal ulceration, resulting in pulmonary embolism, granulomatous liver abscesses, or death. ECG changes during rectal admin of barium sulfate suspension have been reported. ... Transient bacteremia, beginning almost immediately and lasting up to 15 min, may also occur during rectal admin of barium sulfate suspension, and rarely septicemia has been reported. ... Hypersensitivity reactions to ingredients in commercial barium sulfate preparations have occurred rarely. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Oral barium sulfate should be used with caution in patients with obstructing lesions of the small intestine or pyloric stenosis and with extreme caution, if at all, in patients with known or suspected obstruction of the colon. ... Oral barium sulfate should also be used with caution and only in small amt in patients with suspected tracheoesophageal fistula because of the risk of aspiration. Oral or rectal barium sulfate is contraindicated in patient with known or suspected GI tract perforation. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Safe use of barium sulfate during pregnancy has not been established. The drug should be used in pregnant women only if the possible benefits outweigh the potential risks. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Users must be certain that barium sulfate is not contaminated by sol barium salts. A convenient test is to shake up a portion with water and, to the clear supernatant portion, add a small amt of a soln of magnesium sulfate in water. Appearance of a precipitate indicates the presence of a sol barium salt. [Dreisbach, R.H. Handbook of Poisoning. 12th ed. Norwalk, CT: Appleton and Lange, 1987.119]**PEER REVIEWED**

WHEN PREPARING BARIUM SULFATE MIXTURES FOR X-RAY DIAGNOSIS, STRAIN ... THROUGH GAUZE OR MIX THEM WELL WITH FOOD, OTHERWISE LUMPS OF THE SALT MAY GIVE FALSE INDICATION OF AN ULCER NICHE. [Osol, A. and J.E. Hoover, et al. (eds.). Remington's Pharmaceutical Sciences. 15th ed. Easton,

MEDICAL SURVEILLANCE:

Workers who are to be exposed to the inhalation of barite dust should be subject to a preemployment exam. [International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I & II. Geneva, Switzerland: International Labour Office, 1983.244]**PEER REVIEWED**

PROBABLE ROUTES OF HUMAN EXPOSURE:
BARITOSIS ... /HAS BEEN/ REPORTED ... /IN MINERS EXPOSED TO BARITE/ IN USA ... GERMANY & IN CZECHOSLOVAKIA. BARITOSIS ALSO OCCURRED AMONG WORKERS HANDLING LITHOPONE. [Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982.1535]**PEER REVIEWED**

Sources of barium may be found in technical products, paints, or plastics. Small amt may be absorbed during application of X-ray contrast media, since barium sulfate has a very small, but still significant sol (0.2 mg in 100 ml water at 18 deg C). [Seiler, H.G., H. Sigel and A. Sigel (eds.). Handbook on the Toxicity of Inorganic Compounds. New York, NY: Marcel Dekker, Inc. 1988.99]**PEER REVIEWED**

Potential occupational exposure /to barium sulfate/ is ... 900,000 /people/ ... [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985.104]**PEER REVIEWED**

EMERGENCY MEDICAL TREATMENT:

EMERGENCY MEDICAL TREATMENT:

EMT COPYRIGHT DISCLAIMER:
Portions of the POISINDEX(R) and MEDITEXT(R) database have been provided here for general reference. THE COMPLETE POISINDEX(R) DATABASE OR MEDITEXT(R) DATABASE SHOULD BE CONSULTED FOR ASSISTANCE IN THE DIAGNOSIS OR TREATMENT OF SPECIFIC CASES. The use of the POISINDEX(R) and MEDITEXT(R) databases is at your sole risk. The POISINDEX(R) and MEDITEXT(R) databases are provided "AS IS" and "as available" for use, without warranties of any kind, either expressed or implied. Micromedex makes no representation or warranty as to the accuracy, reliability, timeliness, usefulness or completeness of any of the information contained in the POISINDEX(R) and MEDITEXT(R) databases. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR USE ARE HEREBY EXCLUDED. Micromedex does not assume any responsibility or risk for your use of the POISINDEX(R) or MEDITEXT(R) databases. Copyright 1974-2004 Thomson
The following Overview, **BARIUM SULFATE** *, is relevant for this HSDB record chemical.

**LIFE SUPPORT:**
- This overview assumes that basic life support measures have been instituted.

**CLINICAL EFFECTS:**

0.2.1 SUMMARY OF EXPOSURE

A) WITH THERAPEUTIC USE
1) Oral or rectal barium sulfate administration may cause constipation, impaction, obstruction, cramping, diarrhea, and perforation of the bowel. Appendicitis, bowel perforation, peritonitis and proctitis have been reported after oral or rectal barium sulfate use in radiologic procedures.
2) ECG abnormalities have been reported. Aspiration of barium sulfate may cause pneumonitis, granuloma formation, severe dyspnea, and hypoxemia. Dyspnea and hypoxemia usually resolve quickly with supportive care.
3) Venous intravasation has been reported following the use of barium enemas, and may be complicated by barium pulmonary emboli.

B) WITH POISONING/EXPOSURE
1) Barium sulfate is almost insoluble and lacks the severe toxicity characteristic of the barium ion.

0.2.20 REPRODUCTIVE
A) At the time of this review, any possible human reproductive hazards remains unknown.

0.2.21 CARCINOGENICITY
A) Occupational exposure via inhalation has resulted in baritosis a benign pneumoconiosis. At the time of this review, carcinogenicity has not been reported.

**LABORATORY:**
A) Persons who are exposed to barium sulfate dust may be monitored with periodic chest X-rays and pulmonary function tests.
B) Barium can be measured in urine and blood, but these studies are not useful for guiding clinical management.

**TREATMENT OVERVIEW:**

0.4.2 ORAL/PARENTERAL EXPOSURE
A) Significant toxicity is not anticipated after ingestion. Treatment is symptomatic and supportive. Gastrointestinal decontamination is not generally necessary.
B) ALLERGIC REACTION: MILD/MODERATE: antihistamines with or without inhaled beta agonists, corticosteroids or epinephrine. SEVERE: oxygen, aggressive airway management, antihistamines, epinephrine (ADULT: 0.3 to 0.5 mL of a 1:1000 solution subcutaneously; CHILD: 0.01 mL/kg, 0.5 ml max; may repeat in 20 to 30 min), corticosteroids, ECG monitoring, and IV fluids.

0.4.3 INHALATION EXPOSURE
A) INHALATION: Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer oxygen and assist
ventilation as required. Treat bronchospasm with inhaled beta2 agonist and oral or parenteral corticosteroids.

RANGE OF TOXICITY:
A) A minimum toxic dose has not been established. Barium sulfate is almost insoluble and lacks the severe toxicity characteristic of the barium ion. At the time of this review, no acute overdose data is available.

ANIMAL TOXICITY STUDIES:

TOXICITY SUMMARY:
IDENTIFICATION: In nature barium occurs in a combined state, the principal forms being barite (barium sulfate) and witherite (barium carbonate). Barium sulfate has a very low water solubility. Barite ore is the raw material from which nearly all other barium compounds are derived. Barium and its compounds are used in diverse industrial products ranging from ceramics to lubricants. It is used in the manufacture of alloys, as a loader for paper, soap, rubber and linoleum, in the manufacture of valves and as an extinguisher for radium, uranium and plutonium fires. Anthropogenic sources of barium are primarily industrial. Emissions may result from mining, refining or processing barium minerals and the manufacture of barium products. Mining and processing of barite ore releases particulates into the air and from fugitive dusts from the use of barite in oil drilling and oil related industries. HUMAN EXPOSURE: It is difficult to assess the uptake of ingested barium because of a number of factors affect absorption. The presence of sulfate in food results in the precipitation of barium sulfate. ANIMAL/PLANT STUDIES: Insoluble barium compounds such as barium sulfate, accumulate in the lungs and are cleared slowly ciliary action. [Environmental Health Criteria 107 Barium. pp.13-19 (1990) by the International Programme on Chemical Safety (IPCS) under the joint sponsorship of the United Nations Environment Programme, the International Labour Organisation and the World Health Organization.]

NON-HUMAN TOXICITY EXCERPTS:


BRONCHOGENIC CARCINOMA (SQUAMOUS CELL TYPE) DEVELOPED IN RATS INTRATRACHEALLY INJECTED WITH RADIOACTIVE PARTICLES OF (35)S-BARIUM SULFATE. [Clayton, G.D., F.E. Clayton (eds.) Patty's Industrial Hygiene and Toxicology. Volumes 2A, 2B, 2C, 2D, 2E, 2F: Toxicology. 4th ed. New
0.1 ML INTRAUTERINE SC INJECTION INTO RABBIT FETUSES & SUBPANNICULAR INJECTION INTO NEWBORN CAUSED ACUTE INFLAMMATORY RESPONSE IN BOTH VASCULAR & CELLULAR COMPONENTS. CELLULAR LESIONS INCLUDED POLYMORPHONUCLEAR LEUKOCYTES & PARTICLE LADEN MACROPHAGES. [LOW WC A, PRATHAP K; J PATHOL 121 (3): 159-62 (1977)]**PEER REVIEWED**

BARITE AFFECTED THE COMPOSITION OF ESTUARINE COMMUNITIES DEVELOPED FROM PLANKTIC LARVAE IN AQUARIUM CONTAINING SAND AND FLOWING ESTUARINE WATER. A SIGNIFICANT NUMBER OF ANNELIDS & MOLLUSKS DECREASED; HOWEVER, CLAM GROWTH, LAEVICARDIUM MORTONI, WAS NOT AFFECTED. LARGE AMT OF BARITE SULFATE COULD ADVERSELY AFFECT COLONIZATION OF BENTHIC ANIMALS. [TAGATZ ME, TOBIA M; ESTUARINE COASTAL MAR SCI 7 (4): 401-8 (1978)]**PEER REVIEWED**

... Rats were exposed to 40 mg/cu m barium sulfate for a 2 month period and it was concluded that it was an inert dust. [American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986.48]**PEER REVIEWED**

Mouse peritoneal macrophages exposed to barium sulfate for up to 144 hr showed marked cytoplasmic vacuolization with only partial recovery ... . [WHO; Environ Health Criteria 107: Barium p.88 (1990)]**PEER REVIEWED**

METABOLISM/PHARMACOKINETICS:

ABSORPTION, DISTRIBUTION & EXCRETION:

/IN FEMALE BEAGLE DOG,/ (131)BARIUM SULFATE WAS FOUND TO BE CLEARED FROM LUNG, WITH A BIOLOGICAL HALF-TIME OF 8-9 DAYS .... THIS INDICATED SOME SOLUBILITY ... IN BODY FLUIDS, POSSIBLY IN COLLOIDAL FORM. ... BARIUM SULFATE ... CLEARANCE RATE /DEPENDS/ ON SPECIFIC SURFACE AREA OF INHALED PARTICLES AND WAS LOWER FOR HEAT TREATED THAN FOR UNTREATED PARTICLES. [Friberg, L., Nordberg, G.F., Kessler, E. and Vouk, V.B. (eds). Handbook of the Toxicology of Metals. 2nd ed. Vols I, II.: Amsterdam: Elsevier Science Publishers B.V., 1986.V2 87]**PEER REVIEWED**


Barium sulfate is not absorbed following oral or rectal admin in patients with a normal GI tract. ... Barium sulfate is excreted unchanged in the feces. ... In patients with a normal GI tract, barium sulfate is generally excreted within 24 hr after oral admin of suspensions of the drug. ... After rectal admin of barium sulfate suspensions, the drug is generally excreted when enema is expelled; however, some may remain in the colon for several weeks. Some barium sulfate may also persist in the colon for several weeks following oral admin of suspensions in patients with decreas...

Young male CBL-Wistar albino rats (130 to 160 g) were given barium sulfate (BaSO₄) intragastrically 16 hr after food was withdrawn. Total doses of 188, 225, 263, 300, 338, and 375 g/kg barium sulfate were administered in a 150% (wt/v) suspension. Clinical measurements were made for 3 to 14 days, or until death occurred. The interval to death decreased with increasing barium dosage. However, the apparent cause of death was not absorption of BaSO₄ from the GI tract, but stomach rupture. Although the percentage of BaSO₄ absorbed was not determined, the appearance of clinical signs of barium toxicity in survivors without stomach rupture indicates that some absorption of BaSO₄ occurred in the GI tract. [Boyd EM, Abel M; Can Med Assoc J 94: 849-53 (1966) as cited in USEPA; Drinking Water Criteria Document for Barium (Draft) p.III-2 (1985) TR-540-60F]**PEER REVIEWED**

... Evaluated the ciliary clearance of poorly soluble barium sulfate and found that 52% of the cmpd introduced into rat lung was removed by ciliary action. The other 48% was removed by "lung-to-blood transfer mechanisms" (probably macrophage activity), which led to disposal of the sulfate particles. These mechanisms suggest that solubilization of the barium sulfate occurs in vivo. [WHO; Environ Health Criteria 107: Barium p.56 (1990)]**PEER REVIEWED**

... Rats /were exposed/ to barium sulfate (40 mg/m³) for 2 mo, and this was followed by a 4-wk observation interval. Animals were killed at 2-wk intervals. After 2 wk of exposure, the barium content in the lungs was high but decr rapidly over the next 4 wk of exposure and then incr again during the observation period. Barium accumulation in bone tissue incr initially, but with continued exposure decr. There was no absorption into lymph tissue. [WHO; Environ Health Criteria 107: Barium p.56 (1990)]**PEER REVIEWED**

... The absorption of specific barium salt anions /was examined/ in male Sprague-Dawley rats, admin radiolabelled barium chloride, sulfate, or carbonate to fasted (24 hr) and non-fasted rats by gastric intubation. animals were sacrificed from 2 to 480 min after admin and blood concn were measured. In general, barium blood concn were higher in fasted animals and reached a peak 15 min after dosing, whereas non-fasted animals had lower barium blood concn and peaked 60 min after dosing. The peak blood concn of the carbonate and sulfate salts were 45% and 85%, respectively, of that of the chloride. [WHO; Environ Health Criteria 107: Barium p.57 (1990)]**PEER REVIEWED**

Rats that inhaled 40 mg barium sulfate over a 2-mo period initially accumulated barium in their bones (jaw and femur). However, the rate of deposition decr with continued exposure ... Similarly, 2 wk after the initiation of exposure, lung barium content was high, whereas it decr over the next 4 wk but incr again during 4 wk in the post-inhalation period. No evidence for the transport of barium in lymph was noted .... [WHO; Environ Health Criteria 107: Barium p.60 (1990)]**PEER REVIEWED**

**BIOLOGICAL HALF-LIFE:**

... In rats barium sulfate disappeared from the injection site with a
half-life of 26 days ... . [WHO; Environ Health Criteria 107: Barium p.62 (1990)]**PEER REVIEWED**

In Syrian hamsters, barium sulfate was found to be cleared from the lungs with a biological half-life of 8-9 days ... . [WHO; Environ Health Criteria 107: Barium p.56 (1990)]**PEER REVIEWED**

WHEN (133)BARIUM INJECTED IM INTO HIND LEG OF RATS FOR SCINTIGRAPHY, AEROSOLIZED BARIUM SULFATE HAD INJECTION SITE HALF-LIFE OF 26 DAYS. [THOMAS RG ET AL; AMER IND HYG ASSN J 34 (8): 350-9 (1973)]**PEER REVIEWED**

Measurements of the clearance of tracer levels of (131)barium sulfate (estimated maximum initial burden of 90 ug or 0.09 mg/kg from a 30 to 90 minute exposure) from the respiratory tract of female beagle dogs (10 + or - 1 kg) were performed. The biological half-life was eight days. [USEPA; Drinking Water Criteria Document for Barium (Draft) p.III-8 (1985) TR-540-60F]**PEER REVIEWED**

PHARMACOLOGY:

THERAPEUTIC USES:

Contrast Media [National Library of Medicine's Medical Subject Headings online file (MeSH, 1999)]**PEER REVIEWED**

Oral or rectal barium sulfate suspension, and the oral tablet, are indicated for radiographic examination of the gastrointestinal tract. Barium sulfate suspension, when administered orally provides contrast to help detect and evaluate abnormalities of the esophagus, the stomach, and/or the small intestine. The oral tablet form is used to detect minimal esophageal strictures. Rectal administration of barium sulfate helps detect and evaluate abnormalities of the colon and/or distal small intestine. /Included in US product labeling/ [USP Convention. USPDI - Drug Information for the Health Care Professional. 17th ed. Volume I. Rockville, MD: Convention, Inc., 1997. (Plus Updates).521]**PEER REVIEWED**


Indications for contrast media use ... Herniography, peritoneography,
vaginography, hysterosalpingography, arthrography, endoscopic retrograde cholangiopancreatoctography (ERCP), cholangiography, pyelography, urography, cystography, sialography, dacryocystography ... [Ellenhorn, M.J., S. Schonwald, G. Ordog, J. Wasserberger. Ellenhorn's Medical Toxicology: Diagnosis and Treatment of Human Poisoning. 2nd ed. Baltimore, MD: Williams and Wilkins, 1997.4481]**PEER REVIEWED**

**DRUG WARNINGS:**


**VET: UNLESS INTESTINAL TRACT EVACUATES ITSELF PROMPTLY, LARGE MASSES OF DRUG CAN PRODUCE AN IMPACTION. PERITONEAL LEAKAGE HAS BEEN ASSOCIATED WITH PERITONITIS, POSSIBLY SECONDARY TO FECAL LEAKAGE. USE APPROVED GRDES ... IMPURE FORMS MAY BE ASSOCIATED WITH METAPLASIA AT ULCER SITES IN DOGS. [Rossoff, I.S. Handbook of Veterinary Drugs. New York: Springer Publishing Company, 1974.38]**PEER REVIEWED**

Rarely, oral barium sulfate suspensions may cause constipation or intestinal obstruction due to impaction in the colon. Cramping from distention of the intestine by barium sulfate suspensions or diarrhea may also occur. Retention of barium sulfate in the appendix has reportedly caused appendicitis. Barium sulfate fecaliths reported can lead to obstruction, intussusception, ulceration, or even intestinal perforation and may rarely require surgical removal. ... Aspiration of large amt may cause pneumonitis or nodular granulomas of interstitial lung tissues and lymph nodes; asphyxiation and death have occurred in one patient. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Perforation of the colon after rectal admin of barium sulfate suspensions may rarely occur in children, debilitated adults, or patients in whom the colon is weakened by inflammatory, malignant, or parasitic disease or recent biopsy and/or sigmoidoscopy. Perforation may result from hydrostatic pressure of the instilled barium sulfate suspension or trauma to the colon from an enema tip. ... Partial intestinal perforation may result in dissection of layers of the intestinal wall with barium sulfate and feces. Complete intestinal perforation may produce severe peritonitis and loss of fluid into the peritoneal cavity; death may occur. ... Extraperitoneal leakage of barium sulfate suspension, which may occur if both the intestine and peritoneum are perforated, causes few immediate symptoms, but if extensive may lead to intestinal infarction and even death. Barium granuloma of the rectum and/or colon may also occur ... . [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Although extremely rare, barium sulfate suspension has entered the systemic or portal veins after oral or rectal admin, possibly via mucosal ulceration, resulting in pulmonary embolism, granulomatous liver abscesses, or death. ECG changes during rectal admin of barium sulfate suspension have been reported. ... Transient bacteremia, beginning almost immediately and lasting up to 15 min, may also occur during rectal admin
of barium sulfate suspension, and rarely septicemia has been reported. ... Hypersensitivity reactions to ingredients in commercial barium sulfate preparations have occurred rarely. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Oral barium sulfate should be used with caution in patients with obstructing lesions of the small intestine or pyloric stenosis and with extreme caution, if at all, in patients with known or suspected obstruction of the colon. ... Oral barium sulfate should also be used with caution and only in small amt in patients with suspected tracheoesophageal fistula because of the risk of aspiration. Oral or rectal barium sulfate is contraindicated in patient with known or suspected GI tract perforation. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Safe use of barium sulfate during pregnancy has not been established. The drug should be used in pregnant women only if the possible benefits outweigh the potential risks. [McEvoy, G.K. (ed.). American Hospital Formulary Service - Drug Information 1999. Bethesda, MD: American Society of Health-System Pharmacists, Inc. 1999 (Plus Supplements). 2189]**PEER REVIEWED**

Users must be certain that barium sulfate is not contaminated by sol barium salts. A convenient test is to shake up a portion with water and, to the clear supernatant portion, add a small amt of a soln of magnesium sulfate in water. Appearance of a precipitate indicates the presence of a sol barium salt. [Dreisbach, R.H. Handbook of Poisoning. 12th ed. Norwalk, CT: Appleton and Lange, 1987.119]**PEER REVIEWED**


ENVIRONMENTAL FATE & EXPOSURE:

PROBABLE ROUTES OF HUMAN EXPOSURE:

BARITOSIS ... /HAS BEEN/ REPORTED ... /IN MINERS EXPOSED TO BARITE/ IN USA ... GERMANY & CZECHOSLOVAKIA. BARITOSIS ALSO OCCURRED AMONG WORKERS HANDLING LITHOPONE. [Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982.1535]**PEER REVIEWED**

Sources of barium may be found in technical products, paints, or plastics. Small amt may be absorbed during application of X-ray contrast media,
since barium sulfate has a very small, but still significant sol (0.2 mg in 100 ml water at 18 deg C). [Seiler, H.G., H. Sigel and A. Sigel (eds.). Handbook on the Toxicity of Inorganic Compounds. New York, NY: Marcel Dekker, Inc. 1988.99]**PEER REVIEWED**

Potential occupational exposure /to barium sulfate/ is ... 900,000 /people/ ... . [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985.104]**PEER REVIEWED**

NATURAL POLLUTION SOURCES:
Ores of barite ... are found in ... Kentucky, California ... Canada, Mexico. [Sax, N.I. and R.J. Lewis, Sr. (eds.). Hawley's Condensed Chemical Dictionary. 11th ed. New York: Van Nostrand Reinhold Co., 1987.117]**PEER REVIEWED**

OCCURS IN NATURE ... AS BARYTES, HEAVY SPAR. [The Merck Index. 10th ed. Rahway, New Jersey: Merck Co., Inc., 1983.142]**PEER REVIEWED**

Barite, natural barium sulfate, occurs in the USA in Alaska, Arkansas ... Georgia, Missouri, Nevada, and Tennessee ... and was produced at 38 mines in the seven states in 1973, with Nevada supplying 50% of the tonnage. Missouri ranked second. [Clayton, G. D. and F. E. Clayton (eds.). Patty's Industrial Hygiene and Toxicology: Volume 2A, 2B, 2C: Toxicology. 3rd ed. New York: John Wiley Sons, 1981-1982.1531]**PEER REVIEWED**

Most commercial sources of barite are replacement deposits in limestone, dolomitic sandstone and shales, or residual deposits caused by differential weathering that result in lumps of barite enclosed in clay. Barite sometimes occurs in veins and as a gangue mineral in metallic ores, such as lead, zinc, and silver, and is frequently associated with fluorspar. [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984.3(78)473]**PEER REVIEWED**

ARTIFICIAL POLLUTION SOURCES:

ENVIRONMENTAL WATER CONCENTRATIONS:

ENVIRONMENTAL STANDARDS & REGULATIONS:

FIFRA REQUIREMENTS:
Barium sulfate is exempted from the requirement of a tolerance when used as a carrier, density control agent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide
formulations applied to animals. [40 CFR 180.1001(e) (7/1/99)]**PEER REVIEWED**

Barium sulfate is exempted from the requirement of a tolerance when used as a carrier in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. [40 CFR 180.1001(d) (7/1/99)]**PEER REVIEWED**

CERCLA REPORTABLE QUANTITIES:
Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg. The toll free number of the NRC is (800) 424-8802; In the Washington D.C. metropolitan area (202) 426-2675. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b). /Barium/ [40 CFR 302.4 (7/1/99)]**PEER REVIEWED**

RCRA REQUIREMENTS:
D005; A solid waste containing barium may or may not become characterized as a hazardous waste when subjected to the Toxicity Characteristic Leaching Procedure listed in 40 CFR 261.24, and if so characterized, must be managed as a hazardous waste. /Barium/ [40 CFR 261.24 (7/1/99)]**PEER REVIEWED**

FEDERAL DRINKING WATER STANDARDS:

FEDERAL DRINKING WATER GUIDELINES:

STATE DRINKING WATER STANDARDS:
(CA) CALIFORNIA 1000 ug/l /Barium/[USEPA/Office of Water; Federal-State Toxicology and Risk Analysis Committee (FSTRAC). Summary of State and Federal Drinking Water Standards and Guidelines (11/93)]**QC REVIEWED**

STATE DRINKING WATER GUIDELINES:
(AZ) ARIZONA 1500 ug/l /Barium/[USEPA/Office of Water; Federal-State Toxicology and Risk Analysis Committee (FSTRAC). Summary of State and Federal Drinking Water Standards and Guidelines (11/93)]**QC REVIEWED**

(ME) MAINE 1500 ug/l /Barium/[USEPA/Office of Water; Federal-State Toxicology and Risk Analysis Committee (FSTRAC). Summary of State and Federal Drinking Water Standards and Guidelines (11/93)]**QC REVIEWED**


FDA REQUIREMENTS:
Barium sulfate is an indirect food additive for use only as a component of adhesives. [21 CFR 175.105 (4/1/99)]**PEER REVIEWED**
ALLOWABLE TOLERANCES:
Barium sulfate is exempted from the requirement of a tolerance when used as a carrier, density control agent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. [40 CFR 180.1001(e) (7/1/99)]**PEER REVIEWED**

Barium sulfate is exempted from the requirement of a tolerance when used as a carrier in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops only. [40 CFR 180.1001(d) (7/1/99)]**PEER REVIEWED**

CHEMICAL/PHYSICAL PROPERTIES:

MOLECULAR FORMULA:
Ba.H2-O4-S **PEER REVIEWED**

MOLECULAR WEIGHT:

COLOR/FORM:


ODOR:

TASTE:

MELTING POINT:

DENSITY/SPECIFIC GRAVITY:
PH:

SOLUBILITIES:


SPECTRAL PROPERTIES:

OTHER CHEMICAL/PHYSICAL PROPERTIES:


CHEMICAL SAFETY & HANDLING:

TOXIC COMBUSTION PRODUCTS:

HAZARDOUS REACTIVITIES & INCOMPATIBILITIES:
Excess red phosphorus will burn admixed with barium ... sulfate if primed at a high temp with potassium nitrate-calcium silicide mixture. [Bretherick, L. Handbook of Reactive Chemical Hazards. 4th ed. Boston, MA: Butterworth-Heinemann Ltd., 19901437] **PEER REVIEWED**


HAZARDOUS DECOMPOSITION:


PROTECTIVE EQUIPMENT & CLOTHING:
Employees working on ... barite leaching with sulfuric acid should be supplied with acid resistant clothing and suitable hand and face protection. [International Labour Office. Encyclopedia of Occupational Health and Safety. Vols. I&amp;II. Geneva, Switzerland: International Labour Office, 1983.244] **PEER REVIEWED**

Employees should be provided with and required to use impervious clothing, gloves, face shields (eight inch minimum), and other appropriate protective clothing necessary to prevent repeated or prolonged skin contact with barium carbonate, barium chloride, barium nitrate, or liq containing these cmpd. ... Employees should be provided with and required to use dust and splash proof safety goggles where barium carbonate, barium chloride, barium nitrate, or liq containing these cmpd may contact the eyes. [Mackison, F. W., R. S. Stricoff, and L. J. Partridge, Jr. (eds.). NIOSH/OSHA - Occupational Health Guidelines for Chemical Hazards. DHHS(NIOSH) Publication No. 81-123 (3 VOLS). Washington, DC: U.S. Government Printing Office, Jan. 1981.3] **PEER REVIEWED**


Wear appropriate eye protection to prevent eye contact. [NIOSH. NIOSH Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140.]
Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance; this is irrespective of the recommendation involving the wearing of eye protection. [NIOSH. NIOSH Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140. Washington, D.C. U.S. Government Printing Office, 1997.24]**PEER REVIEWED**

Facilities for quickly drenching the body should be provided within the immediate work area for emergency use where there is a possibility of exposure. [Note: It is intended that these facilities provide a sufficient quantity or flow of water to quickly remove the substance from any body areas likely to be exposed. The actual determination of what constitutes an adequate quick drench facility depends on the specific circumstances. In certain instances, a deluge shower should be readily available, whereas in others, the availability of water from a sink or hose could be considered adequate.][NIOSH. NIOSH Pocket Guide to Chemical Hazards. DHHS (NIOSH) Publication No. 97-140. Washington, D.C. U.S. Government Printing Office, 1997.24]**PEER REVIEWED**

PREVENTIVE MEASURES:

SRP: Contaminated protective clothing should be segregated in such a manner so that there is no direct personal contact by personnel who handle, dispose, or clean the clothing. Quality assurance to ascertain the completeness of the cleaning procedures should be implemented before the decontaminated protective clothing is returned for reuse by the workers. Contaminated clothing should not be taken home at end of shift, but should remain at employee’s place of work for cleaning. **PEER REVIEWED**


SRP: The scientific literature for the use of contact lenses in industry is conflicting. The benefit or detrimental effects of wearing contact lenses depend not only upon the substance, but also on factors including the form of the substance, characteristics and duration of the exposure, the uses of other eye protection equipment, and the hygiene of the lenses. However, there may be individual substances whose irritating or corrosive properties are such that the wearing of contact lenses would be harmful to the eye. In those specific cases, contact lenses should not be worn. In any event, the usual eye protection equipment should be worn even when contact lenses are in place. **PEER REVIEWED**

SHIPMENT METHODS AND REGULATIONS:

No person may /transport,/ offer or accept a hazardous material for transportation in commerce unless that person is registered in conformance ... and the hazardous material is properly classed, described, packaged, marked, labeled, and in condition for shipment as required or authorized by ... /the hazardous materials regulations (49 CFR 171-177)./ [49 CFR 171.2 (7/1/99)]**PEER REVIEWED**

The International Air Transport Association (IATA) Dangerous Goods Regulations are published by the IATA Dangerous Goods Board pursuant to IATA Resolutions 618 and 619 and constitute a manual of industry carrier regulations to be followed by all IATA Member airlines when transporting hazardous materials. [IATA. Dangerous Goods Regulations. 40th Ed. Montreal, Canada and Geneva, Switzerland: International Air Transport Association, Dangerous Goods Regulations, 1999. 114]**PEER REVIEWED**

The International Maritime Dangerous Goods Code lays down basic principles for transporting hazardous chemicals. Detailed recommendations for individual substances and a number of recommendations for good practice are included in the classes dealing with such substances. A general index of technical names has also been compiled. This index should always be consulted when attempting to locate the appropriate procedures to be used when shipping any substance or article. [IMDG; International Maritime Dangerous Goods Code; International Maritime Organization p.6079 (1998)]**PEER REVIEWED**

DISPOSAL METHODS:

SRP: At the time of review, criteria for land treatment or burial (sanitary landfill) disposal practices are subject to significant revision. Prior to implementing land disposal of waste residue (including waste sludge), consult with environmental regulatory agencies for guidance on acceptable disposal practices. **PEER REVIEWED**

Barite (barium sulfate) may be recovered from drilling muds for re-use as an alternative to disposal. [Sittig, M. Handbook of Toxic and Hazardous Chemicals and Carcinogens, 1985. 2nd ed. Park Ridge, NJ: Noyes Data Corporation, 1985.106]**PEER REVIEWED**

OCCUPATIONAL EXPOSURE STANDARDS:

OSHA STANDARDS:

Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: total dust 15 mg/cu m; respirable fraction 5 mg/cu m. [29 CFR 1910.1000 (7/1/99)]**PEER REVIEWED**

THRESHOLD LIMIT VALUES:

8 hr Time Weighted Avg (TWA): 10 mg/cu m. [American Conference of Governmental Industrial Hygienists. TLVs & BEIs: Threshold limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2002. Cincinnati, OH. 2002.16]**QC REVIEWED**

Excursion Limit Recommendation: Excursions in worker exposure levels may exceed three times the TLV-TWA for no more than a total of 30 min during a work day, and under no circumstances should they exceed five times the TLV-TWA, provided that the TLV-TWA is not exceeded. [American Conference
of Governmental Industrial Hygienists. TLVs & BEIs: Threshold limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 2002. Cincinnati, OH. 2002.6]**QC REVIEWED**

NIOSH RECOMMENDATIONS:


OTHER OCCUPATIONAL PERMISSIBLE LEVELS:
Other recommendations: Federal Republic of Germany 8 mg/cu m respirable dust; USSR 6 mg/cu m respirable dust [American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 1986.48]**PEER REVIEWED**

MANUFACTURING/USE INFORMATION:

MAJOR USES:
Manufacture photographic papers, artificial ivory, cellophane; filler for rubber, linoleum, oil cloth, polymeric fibers and resins, paper, lithographic inks; as a water coloring pigment for colored paper, in wallpaper; as a size for modifying colors of other pigments, in heavy concrete for radioactive shield. [Budavari, S. (ed.). The Merck Index – An Encyclopedia of Chemicals, Drugs, and Biologicals. Whitehouse Station, NJ: Merck and Co., Inc., 1996.167]**PEER REVIEWED**


PIGMENT EXTENDER FOR OIL & WATER BASED PAINTS; PIGMENT (AS COMPONENT OF LITHOPONE) IN PAINT & FABRICS, PLASTER; FILLER IN COSMETICS (EG, LIPSTICK); HARDENING AGENT FOR CEMENT [SRI]**PEER REVIEWED**


MANUFACTURERS:

**MEDICATION** (VET) **PEER REVIEWED**

MEDICATION **PEER REVIEWED**


METHODS OF MANUFACTURING:
(a) By treating a soln of a barium salt with sodium sulfate (salt cake).


GENERAL MANUFACTURING INFORMATION:
Lithopone, formerly one of the most widely used white pigments, has lost the major part of its USA markets to titanium dioxide .... [Kirk-Othmer Encyclopedia of Chemical Technology. 3rd ed., Volumes 1-26. New York, NY: John Wiley and Sons, 1978-1984.3(78) 476]**PEER REVIEWED**

FORMULATIONS/PREPARATIONS:
Powder: Baraflave (with flavoring agent); ORAL: Powder, for suspension: 92% wt/wt Oratrast & 95% wt/wt Barosperse 110, Ultra-R & 96% wt/wt TonoJug 2000, Tonopaque, Powder, for suspension, high-density, low-viscosity: 85% wt/wt E-Z-HD & 95% wt/wt Baricon & 98% wt/wt HD 200 Plus; Suspension: 1.2% wt/vol (1.2% wt/wt) Readi-CAT & 1.5% wt/vol (1.5% wt/wt) Baro-CAT & 2% wt/vol (2% wt/wt) Readi-CAT 2 & 3% wt/wt Esopho-CAT esophageal cream & 4.6% wt/vol (4.6% wt/wt) E-Z-Cat Concentrate & 5% TomoCat Concentrate, TomoCat 1000 Concentrate & 50% wt/vol (35.7% wt/wt) EntroBar & 55% wt/vol (37.5% wt/wt) Liquid E-Z-Paque & 100% wt/vol (56% wt/wt) Esophotrast esophageal cream & 120% wt/vol (60% wt/wt) E-Z-Paste esophageal cream; Tablets: 650 mg Bar-Test; ORAL or RECTAL: Powder, for suspension: 91% wt/wt Intropaque & 92% wt/wt Micropaque & 92.5% wt/wt Barotраст & 94% wt/wt Polibar & 95% wt/wt Barosperse, E-Z-Paque & 96% wt/wt Baroloid, Mixture III, Veri-0-Pake & 97% wt/wt Barodense, Sol-0-Pake; Suspension: 1.2% wt/vol (1.2% wt/wt) PrepCat & 60% wt/vol (40% wt/wt) Liquid Barosperse, Novopaque or 72% wt/vol (45% wt/wt) & 100% wt/vol (56% wt/wt) Liquid Polibar; Suspension, high-density, low viscosity: 85% wt/vol (50% wt/wt) HD 85 & 100% wt/vol (56% wt/wt) Liquipake; RECTAL: Powder, for suspension: 96% wt/wt Micropaque RD & 98% Barobag (with admin set); Suspension: 5% wt/vol (4.7% wt/wt) EneCat (with admin set) & 85% wt/vol (50% wt/wt) EneMark, EneSet (with admin set); Suspension,
high-density, low-viscosity: 100% wt/vol (56% wt/wt) E-Z-AC, Flo-Coat & 103% wt/vol (57% wt/wt) Epi-Stat 57 (with admin set) & 110% wt/vol (58% wt/wt) Liquid Polibar Plus & 116% wt/vol (61% wt/wt) Epi-Stat 61 (with admin set) & 125% wt/vol (62% wt/wt) HiTone & 150% wt/vol (70% wy/wt) Epi-C. [American Hospital Formulary Service-Drug Information 88. Bethesda, MD: American Society of Hospital Pharmacists, 1988 (Plus supplements).1319]**PEER REVIEWED**

Barium sulfate combinations: 6 g powder, for oral soln, Sodium Bicarbonate 3.1 g (Sparkle Granules); 312 g powder, for suspension, Barium Sulfate 98% w/w (HD 200 Plus) BaroSet Air Contrast Stomach Kit; 20 ml solution, oral, Lidocaine Hydrochloride 2% (Xylocaine Viscous); 500 ml suspension, oral, Barium Sulfate 50% w/v (35.7% w/w) (EntroBar); 2 Tablets, Metoclopramide Hydrochloride 10 mg (Reglan) EntroKit Enteroclysis Kit (with or without catheter). [American Hospital Formulary Service-Drug Information 88. Bethesda, MD: American Society of Hospital Pharmacists, 1988 (Plus supplements).1320]**PEER REVIEWED**


IMPURITIES:

CONSUMPTION PATTERNS:
Over 65% of barite produced was used as a weighting agent in oil and gas well drilling fluids (1985). [BUREAU OF MINES. MINERAL COMMODITY SUMMARIES 1987 p.16]**PEER REVIEWED**

50% Decrease in demand for barite in 1986 ... due primarily to a severe downturn in oil and gas well drilling activity prompted by ... soft world oil prices. [BUREAU OF MINES. MINERAL COMMODITY SUMMARIES 1987 p.16]**PEER REVIEWED**


U. S. PRODUCTION:

(1986) 3.43X10+8 g /estimate/ [BUREAU OF MINES. MINERAL COMMODITY SUMMARIES 1987 p.16]**PEER REVIEWED**


U. S. IMPORTS:

(1977) 7.89X10+9 G [SRI]**PEER REVIEWED**

(1979) 7.04X10+9 G [SRI]**PEER REVIEWED**

(1986) 6.80X10+8 g (crude barite) /estimate/ [BUREAU OF MINES. MINERAL COMMODITY SUMMARIES 1987 p.16]**PEER REVIEWED**


U. S. EXPORTS:

(1986) 7.26X10+6 g (crude barite) /estimate/ [BUREAU OF MINES. MINERAL
COMMODITY SUMMARIES 1987 p.16]**PEER REVIEWED**


LABORATORY METHODS:

ANALYTIC LABORATORY METHODS:


SPECIAL REFERENCES:

SYNONYMS AND IDENTIFIERS:

RELATED HSDB RECORDS:

4481 [BARIUM, ELEMENTAL]

6934 [BARIUM COMPOUNDS]

SYNONYMS:

Epi-C **PEER REVIEWED**


ACTYBARYTE **PEER REVIEWED**

AI3-03611 **PEER REVIEWED**


BAKONTAL **PEER REVIEWED**

Baricon **PEER REVIEWED**

BARIDOL **PEER REVIEWED**

Barite **PEER REVIEWED**

Baritogen deluxe **PEER REVIEWED**

BARITOP **PEER REVIEWED**

Baritop P **PEER REVIEWED**


Barium 100 **PEER REVIEWED**


BARIUM SULFATE (1:1) **PEER REVIEWED**

Barium sulfate (BaSO4) **PEER REVIEWED**


BARIUM SULPHATE **PEER REVIEWED**

BAROSPERSE **PEER REVIEWED**

Barosperse II **PEER REVIEWED**


BARYTA WHITE **PEER REVIEWED**


BARYTES 22 **PEER REVIEWED**


Ba (sulfate) **PEER REVIEWED**

BAYRITES **PEER REVIEWED**

BF 1 (salt) **PEER REVIEWED**

BF 10 (sulfate) **PEER REVIEWED**

BLANC FIXE **PEER REVIEWED**

Caswell No 071B **PEER REVIEWED**

CI PIGMENT WHITE 21 **PEER REVIEWED**

CI 77120 **PEER REVIEWED**

CITOBARYUM **PEER REVIEWED**


ENAMEL WHITE **PEER REVIEWED**

EPA Pesticide Chemical Code 007502 **PEER REVIEWED**

Esophotras **PEER REVIEWED**

EWEISS **PEER REVIEWED**

FINEMEAL **PEER REVIEWED**


LACTOBARYT **PEER REVIEWED**
LIQUIBARINE **PEER REVIEWED**


MICROPAQUE **PEER REVIEWED**


Mikabarium B **PEER REVIEWED**

Mikabarium F **PEER REVIEWED**


Neobalgin **PEER REVIEWED**

NEOBAR **PEER REVIEWED**


Oratrasl **PEER REVIEWED**

E-Z-PAQUE **PEER REVIEWED**

PERMANENT WHITE **PEER REVIEWED**


SOLBAR **PEER REVIEWED**

SS 50 **PEER REVIEWED**

Epi-Stat 57 **PEER REVIEWED**

Epi-Stat 61 **PEER REVIEWED**


SULFURIC ACID, BARIUM SALT (1:1) **PEER REVIEWED**

SUPRAMIKE **PEER REVIEWED**


Umbrasol A **PEER REVIEWED**


FORMULATIONS/PREPARATIONS:

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Grade: Technical, dry, pulp, bleached, ground, floated, natural,


SHIPPING NAME/ NUMBER DOT/UN/NA/IMO:
UN 1564; Barium compounds, not otherwise specified
IMO 6.1; Barium compounds, not otherwise specified

EPA HAZARDOUS WASTE NUMBER:
D005; A waste containing barium may or may not be characterized as a hazardous waste following testing by the Toxicity Characteristic Leaching Procedure as prescribed by the Resource Conservation and Recovery Act (RCRA) regulations. /Barium/

ADMINISTRATIVE INFORMATION:

HAZARDOUS SUBSTANCES DATABANK NUMBER: 5041
LAST REVISION DATE: 20030305
LAST REVIEW DATE: Reviewed by SRP on 5/6/2000

UPDATE HISTORY:
Complete Update on 03/05/2003, 66 fields added/edited/deleted.
Field Update on 05/13/2002, 1 field added/edited/deleted.
Field Update on 03/07/2002, 1 field added/edited/deleted.
Field Update on 01/14/2002, 1 field added/edited/deleted.
Field Update on 08/08/2001, 1 field added/edited/deleted.
Field Update on 05/16/2001, 1 field added/edited/deleted.
Field Update on 11/17/1999, 1 field added/edited/deleted.
Field Update on 11/16/1999, 1 field added/edited/deleted.
Complete Update on 09/21/1999, 1 field added/edited/deleted.
Complete Update on 08/30/1999, 7 fields added/edited/deleted.
Field Update on 08/26/1999, 1 field added/edited/deleted.
Complete Update on 06/03/1999, 1 field added/edited/deleted.
Complete Update on 05/04/1999, 2 fields added/edited/deleted.
Complete Update on 11/20/1998, 2 fields added/edited/deleted.
Complete Update on 11/17/1998, 1 field added/edited/deleted.
Complete Update on 11/01/1997, 1 field added/edited/deleted.
Complete Update on 04/23/1997, 2 fields added/edited/deleted.
Complete Update on 03/17/1997, 2 fields added/edited/deleted.
Complete Update on 10/18/1996, 1 field added/edited/deleted.
Complete Update on 09/12/1996, 1 field added/edited/deleted.
Complete Update on 04/18/1996, 1 field added/edited/deleted.
Complete Update on 04/12/1996, 1 field added/edited/deleted.
Complete Update on 03/19/1996, 6 fields added/edited/deleted.
Complete Update on 01/28/1996, 1 field added/edited/deleted.
Complete Update on 04/20/1995, 1 field added/edited/deleted.
Complete Update on 04/20/1995, 1 field added/edited/deleted.
Complete Update on 01/18/1995, 1 field added/edited/deleted.
Complete Update on 01/05/1995, 1 field added/edited/deleted.
Complete Update on 06/29/1994, 1 field added/edited/deleted.
Complete Update on 03/25/1994, 1 field added/edited/deleted.
Complete Update on 08/07/1993, 1 field added/edited/deleted.
Field update on 01/03/1993, 1 field added/edited/deleted.
Complete Update on 10/07/1992, 1 field added/edited/deleted.
Complete Update on 01/28/1992, 1 field added/edited/deleted.
Complete Update on 10/10/1990, 1 field added/edited/deleted.
Field update on 12/29/1989, 1 field added/edited/deleted.
Complete Update on 12/19/1989, 1 field added/edited/deleted.
Complete Update on 09/29/1989, 74 fields added/edited/deleted.
Field Update on 07/06/1988, 1 fields added/edited/deleted.

Complete Update on 01/13/1985