Common Name: BERYLLIUM NITRATE
CAS Number: 13597-99-4
DOT Number: UN 2464
DOT Hazard Class: 5.1 (Oxidizer)

HAZARD SUMMARY
* Beryllium Nitrate can affect you when breathed in.
* Beryllium Nitrate is a CARCINOGEN--HANDLE WITH EXTREME CAUTION.
* Contact can cause eye irritation, redness and itching, as well as swelling of the eyelids.
* Beryllium Nitrate can irritate and burn the skin. Higher exposure may cause skin ulcers to develop.
* Breathing Beryllium Nitrate can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Higher or repeated exposures can cause permanent scars in the lungs with fatigue, poor appetite, weight loss and shortness of breath. Lung damage and heart failure can occur years later.

IDENTIFICATION
Beryllium Nitrate is an odorless, white to slightly yellow powder. It is used as a chemical reagent, a gas mantle hardener, and in refining Beryllium ores.

REASON FOR CITATION
* Beryllium Nitrate is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, DOT, NIOSH, NTP, DEP, IARC, IRIS and EPA.
* This chemical is on the Special Health Hazard Substance List because it is a CARCINOGEN.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED
The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.

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<th>WORKPLACE EXPOSURE LIMITS</th>
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OSHA: The legal airborne permissible exposure limit (PEL) is 0.002 mg/m³ averaged over an 8-hour workshift; 0.005 mg/m³ as an acceptable ceiling; and 0.025 mg/m³ as a maximum peak above the acceptable ceiling concentration, not to be exceeded during any 30-minute work period, for an 8-hour workshift.

NIOSH: The recommended airborne exposure limit is 0.0005 mg/m³, which should not be exceeded at any time.

ACGIH: The recommended airborne exposure limit is 0.00002 mg/m³ (as the inhalable fraction) averaged over an 8-hour workshift.

* Beryllium Nitrate is a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

WAYS OF REDUCING EXPOSURE
* Enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* A regulated, marked area should be established where Beryllium Nitrate is handled, used, or stored.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to Beryllium Nitrate and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of Beryllium Nitrate to potentially exposed workers.
This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

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**HEALTH HAZARD INFORMATION**

**Acute Health Effects**
The following acute (short-term) health effects may occur immediately or shortly after exposure to Beryllium Nitrate:

* Contact can cause eye irritation, redness and itching, as well as swelling of the eyelids.
* **Beryllium Nitrate** can irritate and burn the skin.
* Breathing **Beryllium Nitrate** can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.

**Chronic Health Effects**
The following chronic (long-term) health effects can occur at some time after exposure to Beryllium Nitrate and can last for months or years:

**Cancer Hazard**
* **Beryllium Nitrate** is a CARCINOGEN in humans. It has been shown to cause lung cancer.

**Reproductive Hazard**
* There is limited evidence that **Beryllium Nitrate** may damage the developing fetus and may damage the male reproductive glands in animals.

**Other Long-Term Effects**
* Higher exposure may cause skin ulcers to develop.
* **Beryllium Nitrate** can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.
* High or repeated exposures can cause permanent scars in the lungs with fatigue, poor appetite, weight loss and shortness of breath. Lung damage and heart failure can occur years later.

**MEDICAL**

**Medical Testing**
Before beginning employment and at regular times after that (at least annually), the following are recommended:

* Chest x-ray and lung function tests.
* EKG.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

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Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

**Mixed Exposures**
* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

**WORKPLACE CONTROLS AND PRACTICES**

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following control is recommended:

* Where possible, automatically transfer **Beryllium Nitrate** from drums or other storage containers to process containers.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Beryllium Nitrate** should change into clean clothing promptly.
* Do not take contaminated work clothes home. Family members could be exposed.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Beryllium Nitrate**.
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Beryllium Nitrate**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Beryllium Nitrate**, whether or not known skin contact has occurred.
* Do not eat, smoke, or drink where **Beryllium Nitrate** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.
* Use a vacuum or a wet method to reduce dust during clean-up. **DO NOT DRY SWEEP.**
* When vacuuming, a high efficiency particulate air (HEPA) filter should be used, **not** a standard shop vacuum.

**PERSONAL PROTECTIVE EQUIPMENT**

**WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT.** However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

**Clothing**
* Avoid skin contact with **Beryllium Nitrate**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

**Eye Protection**
* Wear eye protection with side shields or goggles.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.

**Respiratory Protection**
**IMPROPER USE OF RESPIRATORS IS DANGEROUS.** Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

* Where the potential exists for exposure over **0.00002 mg/m³** (as **Beryllium**), use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
* Exposure to **4 mg/m³** (as **Beryllium**), is immediately dangerous to life and health. If the possibility of exposure above **4 mg/m³** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

**QUESTIONS AND ANSWERS**

**Q:** If I have acute health effects, will I later get chronic health effects?
**A:** Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

**Q:** Can I get long-term effects without ever having short-term effects?
**A:** Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

**Q:** What are my chances of getting sick when I have been exposed to chemicals?
**A:** The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

**Q:** When are higher exposures more likely?
**A:** Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

**Q:** Is the risk of getting sick higher for workers than for community residents?
**A:** Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

**Q:** Don't all chemicals cause cancer?
**A:** No. Most chemicals tested by scientists are not cancer-causing.

**Q:** Can men as well as women be affected by chemicals that cause reproductive system damage?
**A:** Yes. Some chemicals reduce potency or fertility in both men and women. Some damage sperm and eggs, possibly leading to birth defects.

**Q:** Who is at the greatest risk from reproductive hazards?
**A:** Pregnant women are at greatest risk from chemicals that harm the developing fetus. However, chemicals may affect the ability to have children, so both men and women of childbearing age are at high risk.
The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state.nj.us/health/ehoh/odisweb/

**Industrial Hygiene Information**
Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

**Medical Evaluation**
If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

**Public Presentations**
Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

**Right to Know Information Resources**
The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.
DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A carcinogen is a substance that causes cancer.

The CAS number is assigned by the Chemical Abstracts Service to identify a specific chemical.

CFR is the Code of Federal Regulations, which consists of the regulations of the United States government.

A combustible substance is a solid, liquid or gas that will burn.

A corrosive substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A fetus is an unborn human or animal.

A flammable substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The flash point is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

IRIS is the Integrated Risk Information System database of the federal EPA.

A miscible substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A mutagen is a substance that causes mutations. A mutation is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A reactive substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A teratogen is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The vapor pressure is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.
Emergency Information

Common Name: BERYLLIUM NITRATE
DOT Number: UN 2464
DOT Hazard Class: 5.1 (Oxidizer)
NAERG Code: 141
CAS Number: 13597-99-4

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<th>Hazard rating</th>
<th>NJDHSS</th>
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<tr>
<td>FLAMMABILITY</td>
<td>0</td>
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<tr>
<td>REACTIVITY</td>
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Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* Beryllium Nitrate does not burn but it will increase the intensity of a fire since it is an Oxidizer.
* Use water only. DO NOT USE DRY CHEMICAL, CO₂ or HALOGENATED extinguishing agents.
* POISONOUS GASES ARE PRODUCED IN FIRE, including Nitrogen Oxides and Beryllium Oxide fumes.
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Beryllium Nitrate may ignite combustibles (wood, paper and oil).
* If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If Beryllium Nitrate is spilled, take the following steps:

* Evacuate persons not wearing protective equipment from area of spill until clean-up is complete.
* Collect powdered material in the most convenient and safe manner and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* It may be necessary to contain and dispose of Beryllium Nitrate as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

PHYSICAL DATA

Water Solubility: Highly soluble

OTHER COMMONLY USED NAMES

Chemical Name: Nitric Acid, Beryllium Salt
Other Names: Beryllium Dinitrate

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention.

Skin Contact
* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

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