



# Right to Know Hazardous Substance Fact Sheet

Common Name: **NICKEL CARBONATE**

Synonyms: Nickelous Carbonate  
Chemical Name: Carbonic Acid, Nickel (2+) Salt (1:1)  
Date: July 1999      Revision: June 2007

CAS Number: 3333-67-3  
RTK Substance Number: 3086  
DOT Number: UN 3082

## Description and Use

**Nickel Carbonate** is a light green, odorless, crystalline (sand-like) solid. It is used in the manufacture of other *Nickel compounds*, colored glass, electric devices, and in the treatment of wastewater.

## Reason for Citation

- ▶ **Nickel Carbonate** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, NTP, DEP, IARC and EPA.
- ▶ This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

## FIRST AID

### Eye Contact

- ▶ Immediately flush with large amounts of cool water for at least 15 minutes, occasionally lifting upper and lower lids. Remove contact lenses, if worn, while rinsing. Medical attention is necessary.

### Skin Contact

- ▶ Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and 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.

## EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

## Hazard Summary

Hazard Rating	NJDOH	NFPA
HEALTH	3	-
FLAMMABILITY	0	-
REACTIVITY	0	-
CARCINOGEN DOES NOT BURN POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- ▶ **Nickel Carbonate** is a CARCINOGEN--HANDLE WITH EXTREME CAUTION.
- ▶ **Nickel Carbonate** can affect you when inhaled.
- ▶ Contact can irritate the skin and eyes.
- ▶ Inhaling **Nickel Carbonate** can irritate the nose and throat.
- ▶ Exposure may cause a skin allergy and an asthma-like allergy.
- ▶ Exposure may damage the kidneys.

## Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **1 mg/m<sup>3</sup>** (for *Nickel* and *Nickel compounds*) averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.015 mg/m<sup>3</sup>** (for *Nickel* and *Nickel compounds*) averaged over a 10-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.2 mg/m<sup>3</sup>** (for *insoluble Nickel compounds*) averaged over an 8-hour workshift.

- ▶ **Nickel Carbonate** 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.

## Determining Your Exposure

- ▶ Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- ▶ For each individual hazardous ingredient, read the New Jersey Department of Health Hazardous Substance Fact Sheet, available on the RTK website ([www.nj.gov/health/eoh/rtkweb](http://www.nj.gov/health/eoh/rtkweb)) or in your facility's RTK Central File or Hazard Communication Standard file.
- ▶ You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- ▶ 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 concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the 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.

## Health Hazard Information

### Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Nickel Carbonate**:

- ▶ Contact can irritate the skin and eyes.
- ▶ Inhaling **Nickel Carbonate** can irritate the nose and throat causing coughing and wheezing.

### Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Nickel Carbonate** and can last for months or years:

### Cancer Hazard

- ▶ **Nickel Carbonate** is a CARCINOGEN in humans. There is some evidence that *Nickel compounds* cause lung cancer in humans and have been shown to cause lung cancer in animals.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

### Reproductive Hazard

- ▶ While **Nickel Carbonate** has been tested, it is not classifiable as to its potential to cause reproductive harm.

### Other Effects

- ▶ **Nickel Carbonate** may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
- ▶ Inhaling **Nickel Carbonate** can cause a sore and/or a hole in the "bone" (septum) dividing the inner nose, sometimes with bleeding, discharge, and/or formation of a crust.
- ▶ **Nickel Carbonate** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, cough, and/or chest tightness.
- ▶ **Nickel Carbonate** may damage the kidneys.

## Medical

### Medical Testing

For those with frequent or potentially high exposure (half the PEL or greater), the following is recommended before beginning work and at regular times after that:

- ▶ Urine or plasma test for *Nickel*. (Unexposed persons have urine levels less than **10 micrograms/liter**).

If symptoms develop or overexposure is suspected, the following are recommended:

- ▶ Daily urine *Nickel* testing for several days (persons with urine *Nickel* over **100 micrograms/liter** need medical attention).
- ▶ Evaluation by a qualified allergist will help diagnose skin allergy.
- ▶ Lung function tests. These may be normal if the person is not having an attack at the time of the test.
- ▶ Kidney function tests

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.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 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.

### Conditions Made Worse By Exposure

- ▶ Persons who are allergic to *Nickel* may also react to *Nickel* coated jewelry, watchbands and sometimes, to prolonged contact with keys, coins, etc.

## Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require **expert advice** on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on *Control Banding* at [www.cdc.gov/niosh/topics/ctrlbanding/](http://www.cdc.gov/niosh/topics/ctrlbanding/).

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with information and training concerning their hazards.
- ▶ Monitor airborne chemical concentrations.
- ▶ Use engineering controls if concentrations exceed recommended exposure levels.
- ▶ Provide eye wash fountains and emergency showers.
- ▶ Wash or shower if skin comes in contact with a hazardous material.
- ▶ Always wash at the end of the workshift.
- ▶ Change into clean clothing if clothing becomes contaminated.
- ▶ Do not take contaminated clothing home.
- ▶ Special training is required to wash contaminated clothing.
- ▶ Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- ▶ Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.
- ▶ Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

## Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 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.

### Gloves and Clothing

- ▶ Avoid skin contact with **Nickel Carbonate**. Wear personal protective equipment made from material which can not be permeated and/or degraded by this substance. 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 side shields or goggles.
- ▶ Wear non-vented, impact resistant goggles when working with fumes, gases, or vapors.
- ▶ 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 the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- ▶ Where the potential exists for exposure over **0.015 mg/m<sup>3</sup>** (as *Nickel*), use a NIOSH approved air-purifying, particulate filter respirator with an N95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- ▶ If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Nickel Carbonate**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- ▶ Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- ▶ Where the potential exists for exposure over **0.15 mg/m<sup>3</sup>** (as *Nickel*), 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 **10 mg/m<sup>3</sup>** (as *Nickel*) is immediately dangerous to life and health. If the possibility of exposure above **10 mg/m<sup>3</sup>** 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.

## Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- ▶ Extinguish fire using an agent suitable for type of surrounding fire. **Nickel Carbonate** itself does not burn.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Nickel Oxides* and *Nickel Carbonyl*.
- ▶ CONTAINERS MAY EXPLODE IN FIRE.
- ▶ **Nickel Carbonate** may ignite combustibles (wood, paper and oil).

### Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Nickel Carbonate** is spilled, take the following steps:

- ▶ Evacuate personnel and secure and control entrance to the area.
- ▶ Eliminate all ignition sources.
- ▶ 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 **Nickel Carbonate** 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.

### Handling and Storage

Prior to working with **Nickel Carbonate** you should be trained on its proper handling and storage.

- ▶ **Nickel Carbonate** must be stored to avoid contact with ANILINE; HYDROGEN SULFIDE; FLAMMABLE SOLVENTS; HYDRAZINE; and METAL POWDERS (such as ZINC, ALUMINUM, and MAGNESIUM) since violent reactions occur.
- ▶ **Nickel Carbonate** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
- ▶ **Nickel Carbonate** decomposes on contact with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC) or when HEATED to produce *Carbon Dioxide*.
- ▶ Store in tightly closed containers in a cool, well-ventilated area.

### Occupational Health Information Resources

The New Jersey Department of Health offers multiple services in occupational health. These include: Right to Know Information Resources, Public Presentations, General References, Industrial Hygiene Information, Surveys and Investigations, and Medical Evaluation.

#### For more information, please contact:

New Jersey Department of Health  
Right to Know  
PO Box 368  
Trenton, NJ 08625-0368  
Phone: 609-984-2202  
Fax: 609-984-7407  
E-mail: [rtk@doh.state.nj.us](mailto:rtk@doh.state.nj.us)  
Web address: <http://www.nj.gov/health/eoh/rtkweb>

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are not intended to be copied and sold  
for commercial purposes.***

## GLOSSARY

**ACGIH** is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

**Boiling point** is the temperature at which a substance can change its physical state from a liquid to a gas.

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 are 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 destruction of human skin or severe corrosion of 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.

**Ionization Potential** is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

**IRIS** is the Integrated Risk Information System database of the federal EPA that classifies chemicals according to their cancer-causing potential.

**LEL** or **Lower Explosive Limit** is the lowest concentration in air below which there is not enough fuel (gas or vapor) to continue an explosion.

**mg/m<sup>3</sup>** 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 is a guide for emergency responders for transportation emergencies involving hazardous substances.

**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 federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

**PEOSHA** is the New Jersey Public Employees Occupational Safety and Health Act. PEOSH adopts and enforces health and safety standards in public workplaces.

**Permeated** is the movement of chemicals through protective materials.

**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.

**UEL** or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

**Vapor Density** is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

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.

Chemical Name: **NICKEL CARBONATE**

Synonyms: Nickelous Carbonate, Nickel II Carbonate

CAS No: 3333-67-3

 Molecular Formula: NiCO<sub>3</sub>

RTK Substance No: 3086

Description: Light green, odorless, solid or powder

## DOT/NFPA DATA

Hazard Rating	Firefighting	Reactivity
<b>3 - Health</b> <b>0 - Fire</b> <b>0 - Reactivity</b>  DOT ID #: UN 3086 ERG Guide #: 171 Hazard Class: 9 (Environmentally Hazardous Substance)	<ul style="list-style-type: none"> <li>- Extinguish fire using an agent suitable for type of surrounding fire. <b>Nickel Carbonate</b> itself does not burn.</li> <li>- POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Nickel Oxides</i> and <i>Nickel Carbonyl</i>.</li> <li>- CONTAINERS MAY EXPLODE IN FIRE.</li> <li>- <b>Nickel Carbonate</b> may ignite combustibles (wood, paper and oil).</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Nickel Carbonate</b> must be stored to avoid contact with ANILINE; HYDROGEN SULFIDE; FLAMMABLE SOLVENTS; HYDRAZINE; and METAL POWDERS (such as ZINC, ALUMINUM, and MAGNESIUM) since violent reactions occur.</li> <li>- <b>Nickel Carbonate</b> is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).</li> <li>- <b>Nickel Carbonate</b> decomposes on contact with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC) or when HEATED to produce <i>Carbon Dioxide</i>.</li> </ul>

## SPILL/LEAKS

**Isolation Distance:** 50 meters (150 feet)

- Use a wet method or a vacuum with a HEPA filter for cleanup.
- DO NOT let this chemical enter the environment. It is toxic to aquatic organisms.

## PHYSICAL PROPERTIES

<b>Odor Threshold:</b>	No Odor
<b>Flash Point:</b>	Noncombustible
<b>Density:</b>	2.6 g/cm <sup>2</sup>
<b>Melting Point:</b>	Decomposes
<b>Solubility:</b>	Insoluble

## EXPOSURE LIMITS

<b>OSHA:</b>	1.0 mg/m <sup>3</sup> 8-hr TWA (as <i>Nickel</i> )
<b>NIOSH:</b>	0.015 mg/m <sup>3</sup> 10-hr TWA (as <i>Nickel</i> )
<b>ACGIH:</b>	0.2 mg/m <sup>3</sup> 8-hr TWA (as <i>Nickel</i> )
<b>IDLH LEVEL:</b>	10 mg/m <sup>3</sup>

## PROTECTIVE EQUIPMENT

<b>Gloves:</b>	No Information
<b>Coverall:</b>	No Information
<b>Boot:</b>	No Information
<b>Respirator:</b>	>0.015 mg/m <sup>3</sup> N95 > 0.15 mg/m <sup>3</sup> SA

## HEALTH EFFECTS

<b>Eyes:</b>	Irritation
<b>Skin:</b>	Irritation
<b>Acute:</b>	Coughing and wheezing
<b>Chronic:</b>	Cancer. <i>Nickel compounds</i> may cause lung cancer in humans and animals. Skin allergy, asthma-like allergy, kidney damage

## FIRST AID AND DECONTAMINATION

- Remove** the person from exposure.
- Flush** eyes with large amounts of water for at least 15 minutes. Remove contact lenses if worn.
- Remove** contaminated clothing and wash contaminated skin with soap and water.
- Begin** artificial respiration if breathing has stopped and CPR is necessary.
- Transfer** to a medical facility.