



Right to Know Hazardous Substance Fact Sheet

Common Name: **SODIUM AZIDE**

Synonyms: Azide; Azium; Smite®

Chemical Name: Sodium Azide

Date: October 1998 Revision: April 2008

CAS Number: 26628-22-8

RTK Substance Number: 1684

DOT Number: UN 1687

Description and Use

Sodium Azide is a colorless to white, odorless, crystalline solid. It is highly soluble in water which may result in the vapor of *Hydrazoic Acid* being present where **Sodium Azide** is handled. It is used in making chemicals, as a preservative in diagnostic medicines and blood tests, as a herbicide, fungicide and soil fumigant, and is the propellant used for inflating automobile air bags.

Reasons for Citation

- ▶ **Sodium Azide** is on the Right to Know Hazardous Substance List because it is cited by ACGIH, DOT, NIOSH, DEP, IRIS 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, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention immediately.

Skin Contact

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

Inhalation

- ▶ 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.
- ▶ Medical observation is recommended for 24 to 48 hours after overexposure, as pulmonary edema may be delayed.

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	1	-
REACTIVITY	3	-
MUTAGEN REACTIVE POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE DO NOT USE WATER		

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

- ▶ **Sodium Azide** can affect you when inhaled and by passing through the skin.
- ▶ Because this is a MUTAGEN, handle it as a possible carcinogen--WITH EXTREME CAUTION.
- ▶ Contact can irritate and burn the skin and eyes with possible loss of vision.
- ▶ Inhaling **Sodium Azide** can irritate the nose and throat.
- ▶ Inhaling **Sodium Azide** can irritate the lungs. Higher exposure may cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency.
- ▶ Exposure can cause headache, nausea, vomiting and a rapid fall in blood pressure with dizziness.
- ▶ **Sodium Azide** can affect the nervous system.
- ▶ **Sodium Azide** is REACTIVE and a DANGEROUS EXPLOSION HAZARD.

Workplace Exposure Limits

NIOSH: The recommended airborne exposure limit (REL) is **0.3 mg/m³**, which should not be exceeded at any time.

NIOSH: The recommended airborne exposure limit (REL) is **0.1 ppm** (as *Hydrazoic Acid*), which should not be exceeded at any time.

ACGIH: The threshold limit value (TLV) is **0.29 mg/m³**, which should not be exceeded at any time.

ACGIH: The threshold limit value (TLV) is **0.11 ppm** (as *Hydrazoic Acid vapor*), which should not be exceeded at any time.

Workplace Exposure Limits (con't)

- ▶ **Sodium Azide** is a MUTAGEN. Mutagens may have a cancer risk. All contact with this chemical should be reduced to the lowest possible level.
- ▶ The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

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) 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) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require 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 **Sodium Azide**:

- ▶ Contact can irritate and burn the skin with redness and blisters.
- ▶ **Sodium Azide** can irritate and burn the eyes with possible loss of vision.
- ▶ Inhaling **Sodium Azide** can irritate the nose and throat.
- ▶ Inhaling **Sodium Azide** can irritate the lungs causing coughing and/or shortness of breath. Higher exposure may cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.
- ▶ Exposure can cause headache, nausea, vomiting and a rapid fall in blood pressure with dizziness.

Chronic Health Effects

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

Cancer Hazard

- ▶ **Sodium Azide** causes MUTATIONS (genetic changes). Such chemicals may have a cancer risk.
- ▶ Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard

- ▶ While **Sodium Azide** has been tested, further testing is required to assess its potential to cause reproductive harm.

Other Effects

- ▶ **Sodium Azide** can affect the nervous system causing muscle weakness, dizziness, anxiety, tremor, collapse and even death.
- ▶ **Sodium Azide** can irritate the lungs. Repeated exposure may cause bronchitis to develop with coughing, phlegm, and/or shortness of breath.

Medical**Medical Testing**

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

- ▶ Lung function tests

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

- ▶ Consider chest x-ray after acute overexposure
- ▶ Exam of the eyes and vision
- ▶ Exam of the nervous system

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

- ▶ Smoking can cause heart disease, 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

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/.

The following work practices are also recommended:

- ▶ Label process containers.
- ▶ Provide employees with hazard information and training.
- ▶ 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.
- ▶ Get special training 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.

In addition, the following may be useful or required:

- ▶ Before entering a confined space where **Sodium Azide** may be present, check to make sure that an explosive concentration does not exist.

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 **Sodium Azide**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- ▶ Safety equipment manufacturers recommend *Rubber* for gloves and DuPont *Tyvek*® or equivalent as protective materials for **Sodium Azide**. If *Hydrazoic Acid* is present, use DuPont *Responder*®, St. Gobain *ONESuit*® *TEC*, or the equivalent.
- ▶ All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- ▶ 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.
- ▶ Do not wear contact lenses when working with this substance.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented 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).

- ▶ For field applications check with your supervisor and your safety equipment supplier regarding the appropriate respiratory equipment.
- ▶ Where the potential exists for exposure over **0.29 mg/m³**, use a NIOSH approved full facepiece air-purifying, particulate filter respirator with an N95 filter. Even greater protection is provided by a powered-air purifying respirator.
- ▶ Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Sodium Azide**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. 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.
- ▶ Consider all potential sources of exposure 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 **3 mg/m³** (as **Sodium Azide**) or **0.11 ppm** (as *Hydrazoic Acid*), 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.

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).

- ▶ **Sodium Azide** is not flammable but decomposes explosively when heated.
- ▶ Use dry sand or special powder as extinguishing agents.
- ▶ POISONOUS GASES ARE PRODUCED IN FIRE, including *Nitrogen Oxides* and *Sodium Oxide*.
- ▶ CONTAINERS MAY EXPLODE IN FIRE.
- ▶ Use water spray to keep fire-exposed containers cool. DO NOT get water inside containers as **Sodium Azide** reacts with WATER to form *Hydrazoic Acid*.

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 **Sodium Azide** 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.
- ▶ Keep **Sodium Azide** out of confined spaces, such as sewers, because of the possibility of an explosion.
- ▶ DO NOT FLUSH into *Copper* or *Lead* pipes as violent explosions may occur.
- ▶ It may be necessary to contain and dispose of **Sodium Azide** 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 **Sodium Azide** you should be trained on its proper handling and storage.

- ▶ **Sodium Azide** reacts with CARBON DISULFIDE and METALS (such as LEAD, BRASS, COPPER, SILVER and MERCURY) to form shock-sensitive compounds.
- ▶ **Sodium Azide** reacts with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC) to form toxic and explosive *Hydrazoic Acid*.
- ▶ **Sodium Azide** reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); BARIUM CARBONATE; DIMETHYL SULFATE; HALOGENATED SOLVENTS; and DIBROMOMALONONITRILE.
- ▶ **Sodium Azide** is not compatible with CAUSTICS; METAL OXIDES; METAL SULFIDES; METAL AZIDES; and PHOSGENE.
- ▶ Store in tightly closed containers in a cool, well-ventilated area and protect from HEAT, SHOCK and FRICTION.
- ▶ Use explosion-proof electrical equipment and fittings wherever **Sodium Azide** is used, handled, manufactured, or stored.

Occupational Health Information Resources

The New Jersey Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

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
 Web address: <http://www.nj.gov/health/eoh/rtkweb>

The Right to Know Hazardous Substance Fact Sheets 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.

Acute Exposure Guideline Levels (AEGs) are established by the EPA. They describe the risk to humans resulting from once-in-a-lifetime, or rare, exposure to airborne 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 unique, identifying number, assigned by the Chemical Abstracts Service, to 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.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values are intended to provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

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 maintained by federal EPA. The database contains information on human health effects that may result from exposure to various chemicals in the environment.

LEL or Lower Explosive Limit, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

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.

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, which 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.

Common Name: **SODIUM AZIDE**

Synonyms: Azide; Azium; Smite®

CAS No: 26628-22-8

 Molecular Formula: NaN_3

RTK Substance No: 1684

 Description: Colorless to white, odorless solid which is highly soluble in water which may result in the formation of *Hydrazoic Acid*

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health 1 - Fire 3 - Reactivity DOT#: UN 1687 ERG Guide #: 153 Hazard Class: 6.1 (Poison)	REACTIVE and SEVERE EXPLOSION HAZARD. Use dry sand or special powder as extinguishing agents. DO NOT USE WATER. POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Nitrogen Oxides</i> and <i>Sodium Oxide</i> . CONTAINERS MAY EXPLODE IN FIRE. Use water spray to keep fire-exposed containers cool. DO NOT get water inside containers as Sodium Azide reacts with WATER to form <i>Hydrazoic Acid</i> .	Reacts with CARBON DISULFIDE and METALS (such as LEAD, BRASS, COPPER, SILVER and MERCURY) to form shock-sensitive compounds. Reacts with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC) to form toxic and explosive <i>Hydrazoic Acid</i> . Sodium Azide reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); BARIUM CARBONATE; DIMETHYL SULFATE; HALOGENATED SOLVENTS; and DIBROMOMALONONITRILE. Sodium Azide is not compatible with CAUSTICS; METAL OXIDES; METAL SULFIDES; METAL AZIDES; and PHOSGENE. Protect from HEAT, SHOCK and FRICTION.

SPILL/LEAKS

Isolation Distance:

Liquids: 50 meters (150 feet)

Solid: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Collect powdered material in the most convenient and safe manner and deposit in sealed containers.

 DO NOT FLUSH into *Copper* or *Lead* pipes, as violent explosions may occur.

Harmful to aquatic life.

PHYSICAL PROPERTIES

Odor Threshold: Odorless

Flash Point: Not flammable but decomposes explosively when heated

Vapor Density: 2.2 (air = 1)

Specific Gravity: 1.8 (water = 1)

Water Solubility: Soluble/Decomposes

Melting Point: 527°F (275°C) (decomposes and may explode)

Ionization Potential: 11.7 eV

Molecular Weight: 65

EXPOSURE LIMITS

NIOSH: 0.3 mg/m³, Ceiling (as **Sodium Azide**)

 0.1 ppm, Ceiling (as *Hydrazoic Acid*),

ACGIH: 0.29 mg/m³, Ceiling (as **Sodium Azide**)

 0.11 ppm, Ceiling (as *Hydrazoic Acid*)

PROTECTIVE EQUIPMENT

Gloves: Rubber

Coveralls: DuPont Tyvek® for **Sodium Azide**
 DuPont Responder® and St. Gobain ONESuit® TEC for *Hydrazoic Acid*
Respirator: Supplied air

HEALTH EFFECTS

Eyes: Irritation, burns, possible loss of vision

Skin: Irritation, burns, redness, blisters

Inhalation: Nose and throat irritation, coughing and/or shortness of breath (pulmonary edema)

Headache, nausea, vomiting and dizziness

Muscle weakness, dizziness, anxiety, tremor, collapse and even death

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. Seek medical attention immediately.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer to a medical facility.

Medical observation is recommended as symptoms may be delayed.