

New Jersey Department of Health



HAZARDOUS SUBSTANCE FACT SHEET

COMMON NAME: INDIUM

CAS NUMBER: 7440-74-6

DOT NUMBER: None

04 170

#505

HAZARD SUMMARY

- * Indium can affect you when breathed in.
- * Exposure may damage the kidneys and liver.
- * Indium can irritate the lungs and may cause permanent damage. High levels

- may cause a build-up of fluid in the lungs (pulmonary edema). This can cause death.
- * Contact can irritate the skin and eyes.

IDENTIFICATION

Indium is a soft white metal with a bluish tinge. It is used in auto and aircraft bearings, dental alloys and electronic devices.

REASON FOR CITATION

- * Indium is on the Workplace Hazardous Substance List because it is cited by ACGIH.
- * Definitions are provided on page 5.

WORKPLACE EXPOSURE LIMITS

ACGIH: The recommended airborne exposure limit is 0.1 mg/m³ averaged over an 8-hour workshift.

- * This exposure limit is recommended for all Indium compounds.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

- * 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 1910.20.
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WAYS OF REDUCING EXPOSURE

- * Where possible, 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.
- * Wear protective work clothing.
- * Wash after exposure to Indium 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 Indium to potentially exposed workers.

This Fact Sheet is a summary source of information for workers, employers, and community residents. Health professionals may also find it useful. If this substance is part of a mixture, this Fact Sheet should be used along with the manufacturer-supplied Material Safety Data Sheet (MSDS).

HEALTH HAZARD INFORMATION

Acute Health Effects

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

- * Exposure can irritate the eyes and lungs. High levels may cause a build-up of fluid in the lungs (pulmonary edema). This can cause death.
- * Contact can irritate the skin.

Chronic Health Effects

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

Cancer Hazard

- * According to the information presently available to the New Jersey Department of Health, Indium has not been tested for its ability to cause cancer in animals.

Reproductive Hazard

- * There is limited evidence that Indium is a teratogen in animals. Until further testing has been done, it should be treated as a possible teratogen in humans.

Other Long-Term Effects

- * Exposure may damage the liver and kidneys.
- * Indium may cause permanent damage to the lungs.

MEDICAL

Medical Testing

For those with frequent or potentially high exposure (half the TLV or greater), the following are recommended before be-

ginning work and at regular times after that:

- * Lung function tests.

If symptoms develop or overexposure is suspected, the following may be useful:

- * Liver and kidney function tests.
- * Consider chest x-ray after acute overexposure.

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 OSHA 1910.20.

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.

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

- * Workers whose clothing has been contaminated by Indium 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 Indium.
- * On skin contact with Indium, wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted Indium, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where Indium is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating or smoking.

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.

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

Clothing

- * Avoid skin contact with Indium. 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 dust-proof goggles when working with powders or dust, unless full facepiece respiratory protection is worn.

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 exposures over 0.1 mg/m^3 , use a MSHA/NIOSH approved respirator equipped with particulate (dust/fume/mist) filters. Particulate filters must be checked every day before work for physical damage, such as rips or tears, and replaced as needed.
- * If while wearing a filter, cartridge or canister respirator, you can smell, taste, or otherwise detect Indium, or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter, cartridge, or canister. 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, cartridges, or canisters to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- * Where the potential for high exposures exists, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in the positive pressure mode or with a full facepiece, hood, or helmet in the continuous flow mode, or use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

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: What 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" exposure (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. Because of this, and because of exposure of children or people who are already ill, community exposures may cause health problems.

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 child-bearing age are at high risk.

Q: Should I be concerned if a chemical is a teratogen in animals?

A: Although some chemicals may affect humans differently than they affect animals, damage to animals suggests that similar damage can occur in humans.

The following information is available from:

New Jersey State Department of Health
Occupational Disease Prevention and
Information Program

CN 360
Trenton, NJ 08625
(609) 984-1863

Right to Know Information Resources

The Right to Know Hotline (609) 984-2202 can answer questions about the identity of chemicals, the preparation of the workplace surveys, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-5627.

Public Presentations

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

General References

A list of educational materials in occupational health and references used to prepare the Fact Sheets are available upon request.

Industrial Hygiene Information and Surveys

Industrial hygienists are available to answer your questions regarding the health effects of chemical substances present in your workplace. In response to requests, a field investigation, including a walk-through, air monitoring, measurements of temperature and humidity, and evaluation of existing engineering controls, can be provided.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you can call to make an appointment at the Occupational Health Clinic to be examined by our physicians. The only fees are for laboratory tests. The clinic is located at the Helene Fuld Medical Center in Trenton but we can refer you to another center if you cannot travel. In addition, if a large number of individuals need to be screened, a mobile screening van can be brought to your workplace for the examinations and testing.

DEFINITIONS

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

CAG is the Carcinogens Assessment Group of the federal EPA.

A carcinogen is a substance that causes cancer.

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

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.

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).

MSHA is the Mine Safety and Health Administration, the federal agency that regulates mining. It also evaluates and approves respirators.

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.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

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.

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 can cause an explosion under certain conditions or on contact with other specific substances.

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

WARNING

Common Name: INDIUM

DOT Number: None

NFPA Flammability: No Citation

NFPA Reactivity: No Citation

DOES NOT BURN

POISONOUS GAS IS PRODUCED IN FIRE

Health hazards on front page

FIRE HAZARDS

- * Extinguish fire using an agent suitable for type of surrounding fire. Indium itself does not burn.
- * POISONOUS GAS IS PRODUCED IN FIRE.
- * If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If Indium is spilled, take the following steps:

- * Restrict 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.
- * It may be necessary to contain and dispose of Indium as a HAZARDOUS WASTE. Contact the NJ Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

FOR LARGE SPILLS AND FIRES immediately call your local fire department. You can also request emergency information from the following:

DEP HOTLINE: (609) 292-7172

CHEMTREC: (800) 424-9300

HANDLING AND STORAGE

- * Prior to working with Indium you should be trained on its proper handling and storage.
- * Store in tightly closed containers in a cool well-ventilated area away from MINERAL ACIDS and SULFUR.

FIRST AID

NJ POISON INFORMATION 1-800-962-1253

Eye Contact

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

Skin Contact

- * Remove contaminated clothing. Wash contaminated skin with soap and water.


Breathing

- * Remove the person from exposure.
- * Begin rescue breathing 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 breathing overexposure, as pulmonary edema may be delayed.

PHYSICAL DATA

Water Solubility: Insoluble

Not intended to be copied and sold for commercial purposes.

 New Jersey Department of Health
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