HAZARD SUMMARY

* Methyl Methacrylate can affect you when breathed in.
* Methyl Methacrylate may damage the developing fetus.
* Contact can irritate the eyes, skin, nose and throat.
* Breathing Methyl Methacrylate can irritate the lungs causing coughing and/or shortness of breath. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.
* High exposure can cause dizziness, irritability, difficulty with concentration and reduced memory.
* Methyl Methacrylate may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
* Methyl Methacrylate may damage the nervous system causing numbness, "pins and needles," and/or weakness in the hands and feet.
* Methyl Methacrylate may affect the liver and kidneys.
* Methyl Methacrylate is a FLAMMABLE and REACTIVE chemical and a FIRE and EXPLOSION HAZARD.

IDENTIFICATION

Methyl Methacrylate is a colorless liquid with a sharp, fruity odor. It is used to make resins, plastics, and plastic dentures.

REASON FOR CITATION

* Methyl Methacrylate is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, DOT, NIOSH, NFPA, DEP and EPA.
* This chemical is on the Special Health Hazard Substance List because it is FLAMMABLE and REACTIVE.
* 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.
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 Methyl Methacrylate:

* Contact can irritate the eyes, skin, nose and throat.
* Breathing Methyl Methacrylate can irritate the lungs causing coughing and/or shortness of breath. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.
* High exposure can cause dizziness, irritability, difficulty with concentration and reduced memory.

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

Cancer Hazard
* There is limited evidence that Methyl Methacrylate causes mutations (genetic changes).

Reproductive Hazard
* Methyl Methacrylate may damage the developing fetus.

Other Long-Term Effects
* Methyl Methacrylate may cause a skin allergy. If allergy develops, very low future exposure can cause itching and a skin rash.
* Methyl Methacrylate may damage the nervous system causing numbness, "pins and needles," and/or weakness in the hands and feet.
* Methyl Methacrylate may affect the liver and kidneys.

MEDICAL

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

* Consider chest x-ray after acute overexposure.
* Exam of the nervous system.
* Evaluation by a qualified allergist, including careful exposure history and special testing, may help diagnose skin allergy.
* Liver and 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 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.
* Because more than light alcohol consumption can cause liver damage, drinking alcohol may increase the liver damage caused by Methyl Methacrylate.

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 controls are recommended:

* Where possible, automatically pump liquid Methyl Methacrylate from drums or other storage containers to process containers.
* Before entering a confined space where Methyl Methacrylate may be present, check to make sure that an explosive concentration does not exist.

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

* Workers whose clothing has been contaminated by Methyl Methacrylate should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to Methyl Methacrylate.
* 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 Methyl Methacrylate, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted Methyl Methacrylate, whether or not known skin contact has occurred.
* Do not eat, smoke, or drink where Methyl Methacrylate is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, smoking, or using the toilet.

**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 Methyl Methacrylate. 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.
* ACGIH recommends Polyvinyl Alcohol as a protective material.

**Eye Protection**
* Wear indirect-vent, impact and splash resistant goggles when working with liquids.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

**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.

* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect Methyl Methacrylate, 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 for high exposure exists, 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 1,000 ppm is immediately dangerous to life and health. If the possibility of exposure above 1,000 ppm exists, use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode.

**HANDLING AND STORAGE**

* Prior to working with Methyl Methacrylate you should be trained on its proper handling and storage.
* Methyl Methacrylate is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); REDUCING AGENTS; AMINES; and HALOGENS.
* Store in tightly closed containers in a cool, well-ventilated area away from ULTRAVIOLET LIGHT, HEAT, MOISTURE, and IONIZING RADIATION, as Methyl Methacrylate may react and release heat quickly, resulting in an explosion.
* Store and use with an appropriate inhibitor. Lack of an appropriate inhibitor may cause an explosive reaction.
* Sources of ignition, such as smoking and open flames, are prohibited where Methyl Methacrylate is used, handled, or stored.
* Metal containers involving the transfer of Methyl Methacrylate should be grounded and bonded.
* Use only non-sparking tools and equipment, especially when opening and closing containers of Methyl Methacrylate.
* Wherever Methyl Methacrylate is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.
* Do not store under inert atmospheres and use within 6 months.
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 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: What are the likely health problems from chemicals which cause mutations?
A: There are two primary health concerns associated with mutagens: (1) cancers can result from changes induced in cells and, (2) adverse reproductive and developmental outcomes can result from damage to the egg and sperm cells.

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.
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.

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.

HHAG is the Human Health Assessment Group of the federal EPA.

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).

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.

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.

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.

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.
Common Name: METHYL METHACRYLATE  
DOT Number: UN 1247  
NAERG Code: 129P  
CAS Number: 80-62-6

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**FLAMMABLE AND REACTIVE**  
POISONOUS GASES ARE PRODUCED IN FIRE  
CONTAINERS MAY EXPLODE IN FIRE

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

**FIRE HAZARDS**

* Methyl Methacrylate is a FLAMMABLE LIQUID.
* Use dry chemical, CO₂, alcohol or polymer foam extinguishers, as water may not be effective in fighting fires.
* POISONOUS GASES ARE PRODUCED IN FIRE.
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
* If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

**SPILLS AND EMERGENCIES**

If Methyl Methacrylate is spilled or leaked, take the following steps:

* Evacuate persons not wearing protective equipment from area of spill or leak until clean-up is complete.  
* Remove all ignition sources.  
* Cover with an activated charcoal adsorbent and place in covered containers for disposal.  
* Ventilate and wash area after clean-up is complete.  
* Keep Methyl Methacrylate out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build-up of explosive concentrations.  
* It may be necessary to contain and dispose of Methyl Methacrylate 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.

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

CHEMTREC: (800) 424-9300  
NJDEP HOTLINE: 1-877-WARN-DEP

**HANDLING AND STORAGE (See page 3)**

**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.

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

**PHYSICAL DATA**

**Vapor Pressure:** 29 mm Hg at 68°F (20°C)  
**Flash Point:** 50°F (10°C)  
**Water Solubility:** Slightly soluble

**OTHER COMMONLY USED NAMES**

**Chemical Name:**  
2-Propenoic Acid, 2-Methyl-, Methyl Ester

**Other Names:**  
Methacrylic Acid, Methyl Ester; Methyl 2-Methyl-2-Propenoate; MME

Not intended to be copied and sold for commercial purposes.