## Bone Cement

### Emergency First Aid Procedures

#### Eye Exposure
- Flush eyes immediately with large amounts of water
- Get medical attention as soon as possible

#### Skin Exposure
- Promptly flush the contaminated skin area with water
- Remove soaked clothing and flush skin with water
- Seek medical attention for skin irritation

#### Respiratory Exposure
- If a person has inhaled a large amount of monomer vapor, move him or her to fresh air immediately
- Perform artificial respiration if breathing has stopped
- Keep the person warm and at rest
- Seek prompt medical attention

#### Spills and Disposal
- Spills: remove all ignition sources and ventilate the area.
- Dispose of in accordance with local and federal regulations as hazardous waste.

#### Swallowing
- Give immediate medical attention.
- Do not induce vomiting, unless directed by a medical professional, and ensure the airway is clear.
- If the person is conscious, wash out the mouth with water, and give 200-300 mL of water to drink.
- Adsorbents such as activated charcoal may be of value.
- Gastric lavage may be effective if performed within 4 hours of ingestion.

### Further Safety Considerations

#### Flammability
- The liquid monomer is highly volatile and flammable (open cup flash point of 50°F).
- Never bring a flame, spark or other ignition source near the surface of the liquid or uncured cement.
- Do not expose the product or materials to high temperatures.

#### Cured bone cement is not a fire hazard.
- Proper ventilation is important (Typical well regulated OR ventilation is adequate).
- Proper storage of electrosurgical devices is important.
- Usual fire-fighting procedures are required in the unlikely event of a fire.

#### Dry chemical foam or carbon dioxide extinguishers can extinguish the fire.
- Toluene and vapors, such as carbon monoxide, may be released in fires involving methylmethacrylate.

#### Rescue
- Move the affected person away from the hazardous exposure area.
- Do not endanger yourself, but put emergency rescue procedures into effect.
- Be familiar with emergency rescue procedures and the location of rescue equipment.

#### Occupational Exposure
- Personnel should read and follow all instructions provided by the manufacturer (Material Safety Data Sheets (MSDS), container label, package insert).
- Material safety data sheets should be accessible within the practice setting.

#### OSHA Threshold Limit Values
- Degree of hazard varies depending on the concentration level of the vapor in the OR.
- The threshold limit value (TLV) for methylmethacrylate: - Time-weighted average during an 8-hour work shift in a 40-hour work week, - 100 parts methylmethacrylate per million parts of air (ppm) or 410 mg/m³ of air.

#### Exposure during pregnancy
- At concentrations far in excess of those recorded in operating rooms, methylmethacrylate vapor was not toxic or teratogenic in pregnant mice.
- No studies have been conducted in pregnant women on the effects of mixing bone cement. Therefore, it is recommended that pregnant OR staff not be present during the mixing of bone cement.

#### Use your judgement.

#### Use of contact lenses
- Manufacturers of contact lenses recommend that such lenses be removed “in the presence of noxious and irritating vapors.”

#### Skin Sensitivity
- Never allow direct skin or other soft tissue contact with bone cement because it may cause a local reaction or be absorbed.
- It is possible for fumes to penetrate some types of surgical gloves, therefore double gloving is recommended to reduce the risk of hypersensitivity reactions.
- OR personnel who use non-latex gloves should change to natural latex gloves before handling bone cement to prevent exposure.

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The information contained in this document is intended for healthcare professionals only.