UW SOD Biomimetics Biomaterials Biophotonics Biomechanics & Technology Laboratory, Room B-164
Standard Operating Procedure for Management of Hazardous Materials
Hazardous Material: <u>Flammable Materials</u>

Revised: September 4th, 2015

Products Used In School of Dentistry	The following products are used that are considered Flammable Materials • Methyl Methacrylate Monomers • Orange Solvent • B400 & 401 Adhesives • True-Stain Acrylics • Plug-it Solvent • Plug-it Accelerator • Detachol Adhesive Removers • Dri-Purge Aerosol • S2260 & 1205 Prime Coats • Ethyl Alcohol • Acetone • Xylenes • Toluene • Trichloroethylene • Isopropanol • Wax Remover
Description of Product Use	These products are used to make a variety of resin based appliances, used as adhesives and also used as cleaning agents.
Physical Hazards	Flammable substances are classified as DANGER-flammable gas or extremely flammable liquid, WARNING-flammable liquid flash point below 100° F and CAUTION-combustible liquid flash point of 100° to 200° F and/or International MSDS ratings of R10, R11 or R12 • .
Health Effects	If products are rated as flammable and are not used or stored properly, the user may experience adverse health effects: • Flammable solvent vapors can travel and can produce fire and explosion if an ignition source is contacted. • Flammable solvents also have an effect on the CNS and at high concentrations cause sedation, coma and death. • May be harmful by inhalation • May be harmful by skin contact
Personal Protective Equipment	Wear chemical splash goggles; consult manufacturer recommendations for proper glove selection. A lab coat or apron is recommended for personal protection and is required when cleaning up spill quantities greater than 1 liter.
Special Work Practices and Use or Environmental/ Ventilation	When dispensing less than 1 fluid oz (as in refilling student's container) it should be done in a well ventilated (window open) area When filling more than 1 container or more than 1 fluid once you must go

Controls	to the fume hood in D1 to dispense. Eliminate all heat sources.
Storage Requirements	If you stock less than 10 total gallons of products that contain a flammable material, the flammable products may be stored outside of a flammable storage cabinet. If more than 10 total gallons for all products that contain a flammable material are stored in a dispensary or lab, store them in an approved flammable liquid storage cabinet.
Spill and Accident Procedures	**For Skin or Eye Contact:** • Wash skin with soap and water to remove hazardous material. • Flush eyes with water in eyewash for 15 minutes. Then seek medical evaluation. **For Fire:** • Eliminate ignition sources. • Small fires may be extinguished if it is safe and the operator is trained to use a fire extinguisher. **For a Spill:** • Wipe down spill area with solvent absorbent pads. • Soda and sand can be used to absorb the spill then transferred to container for disposal. • Avoid breathing vapors. • Spill kits are kept in the designated cabinets or area in D3 or in maintenance shop D065, Radiology B307 and Emergency B229. • Again when dealing with a spill always wear your PPE.
Waste Disposal	Place in designated container labeled Hazardous Waste in D352. Fill out Chemical Collection Request form and submit to EH&S.

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Standard Operating Procedure for Management of Hazardous Materials
Hazardous Material: Methyl Methacrylate
Revised: September 4th, 2015

Products Used In School of Dentistry	The following products are used that contain Methyl Methacrylate monomer and/or polymers: • Temp Bridge Resin • Ortho Resin • Perm Reline & Repair • Duralay Pattern Resin • GC Pattern Resin • Jet Acrylic Resins • Caulk Repair Material • Relate Resin • Lucitone 199 Resins • Bredent Monomer • Splint Resin • Triad VLC Bonding Agents • Perm Resin • Hygienic Resin • Biolon Resin • Flexicryl Resin • Candulor Staining Resins • SR Ivolan Tray Resins • Excel Resins • Coe-Lor Resins • Permacryl Resins • Kayon Stain Resins • Enigma Stain Resins • Acrylic Primer • Primo Primer • U Bar Resins
Description of Product Use	These products are used to make and/or repair teeth, denture bases, impression trays, surgical guides, occlusal guards, removable prostheses, resin patterns and orthodontic appliances.
Physical Hazards	Methyl methacrylate monomer is classified as a flammable solvent. • Flammable solvent vapors may travel to the source of ignition and flash back. Avoid ignition sources of excessive temperatures. • Heat can induce polymerization with rapid release of energy.
Health Effects	If products that contain methyl methacrylate are not used properly, the user may experience adverse health effects: • Exposure by inhalation may affect the central nervous system and

	at high concentrations cause sedation, coma and death. • Contact with solvents can de-fat skin and cause irritation of skin and mucous membranes.
Personal Protective Equipment	You must wear protective eyewear, lab gown and gloves when dispensing or cleaning up a spill smaller than 1 liter.
Special Work Practices and Use or Environmental/ Ventilation Controls	When dispensing less than 1 fluid oz (as in refilling student's container) it should be done in a well ventilated (window open) area When filling more than 1 container or more than 1 fluid once you must go to the fume hood in D1 to dispense. Eliminate all heat sources.
Storage Requirements	If you stock less than 10 total gallons of products that contain a flammable material, the flammable products may be stored outside of a flammable storage cabinet. If more than 10 total gallons for all products that contain a flammable material are stored in a dispensary or lab, store them in an approved flammable liquid storage cabinet.
Spill and Accident Procedures	**For Skin or Eye Contact:** • Wash skin with soap and water to remove hazardous material. • Flush eyes with water in eyewash for 15 minutes. Then seek medical evaluation. **For Fire:** • Eliminate ignition sources. • Small fires may be extinguished if it is safe and the operator is trained to use a fire extinguisher. **For a Spill:** • Wipe down spill area with solvent absorbent pads. • Soda and sand can be used to absorb the spill then transferred to container for disposal. • Avoid breathing vapors. • Spill kits are kept in the designated cabinets or area in D3 or in maintenance shop D065, Radiology B307, Emergency B229 and in D-451A. • Again when dealing with a spill always wear your PPE.
Waste Disposal	Place in designated container labeled Hazardous Waste in D352. Fill out Chemical Collection Request form and submit to EH&S.

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Standard Operating Procedure for Management of Hazardous Materials
Hazardous Material: <u>Fine Particle Materials</u>

Revised: September 4th, 2015

Products Used In School of Dentistry	The following products are used that are considered Fine Particle Materials. • Gypsum Stones (Denstone, Model Plaster, Silky-Rock, Snap-Stone) • Investments (Ceramigold, Cristobalite) • Barium Sulfate • Polymethyl Methacrylate Acrylic Powders • Pumice • Aluminum Oxide • Walnut Shells
Description of Product Use	These products are used to clean, abrade and polish metal and resin appliances, fabricate casts and molds and fabrication of radiopaque resin appliances..
Physical Hazards	Conditions to avoid: • Gypsum stones and investments, when material contacts moisture, it will set. • Polymethyl Methacrylate powders are combustible if heated.
Health Effects	These products if not used properly may cause the user to experience adverse health effects as: • Exposure by inhalation may cause upper respiratory irritation. • Contact may cause eye and skin irritation. • Chronic exposure to Barium Sulfate can produce Baritosis – a benign pneumoconiosis.
Personal Protective Equipment	You must wear protective eyewear, lab gown and consult manufacturer recommendations for proper glove selection. Wear a mask while exposed to dust.
Special Work Practices and Use or Environmental/ Ventilation Controls	When using fine particles as a cleaner or as an abrasive a suction unit or a fine particle recovery unit should be used. When dispensing, care should be taken to minimize dust. Pumice when used for polishing must be used in a wet slurry mix. ****No Silicate Based Abrasives are used in any abrasive or microblasting equipment****

Storage Requirements	Store in cool, dry and well ventilated area away from sources of heat and moisture, Open containers may be hazardous since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Spill and Accident Procedures	Ventilate area of leak or spill. Wear personal protective equipment as specified by manufacturer. Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. •
Waste Disposal	Some of these materials may bioaccumulate to some extent. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved facility. Acrylic Polymers should be handled as a hazardous waste and should be placed in a designated container labeled Hazardous Waste in D352. Fill out Chemical Collection Request form and submit to EH&S.

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Standard Operating Procedure for Management of Hazardous Materials
Hazardous Material: <u>Cleaning and Disinfectant Solutions</u>

Revised: September 4th, 2015

Products Used In School of Dentistry	The following products are used that are considered Cleaning and Disinfectant Solutions. • Banicide acid glutaraldehyde solution • Biocide iodophor solution • Clorox bleach • Tide detergent
Description of Product Use	These products are used to clean and or disinfect metal and resin dental appliances.
Physical Hazards	Not Flammable or Explosive. Conditions to avoid: • Biocide may give off iodine vapors with high temperatures.
Health Effects	Banicide, Biocide and Clorox if not used properly may cause the user to experience adverse health effects as follows: • **Eye Contact**: Undiluted solutions are corrosive to the eyes and may cause severe damage. • **Inhalation**: Irritating to the nose, throat and respiratory tract. Banicide may cause nausea to sensitive people. • **Ingestion:** Harmful if swallowed. • **Skin Contact**: Undiluted solutions are very irritating, may cause severe skin burns.
Personal Protective Equipment	You must wear protective goggles or face shield, lab gown and consult manufacturer recommendations for proper glove selection.
Special Work Practices and Use or Environmental/ Ventilation Controls	**Ventilation:** Use only with adequate ventilation. **Respiratory Protection:** Caution should be taken to prevent misting of Biocide. **Concentration:** Use diluted concentrations when possible. ****Do not mix Clorox with ammoniated products****
Storage Requirements	Store in cool, dry place, and do not reuse empty containers.
Spill and Accident Procedures	Ventilate area of leak or spill. Wear personal protective equipment as specified by manufacturer. Spilled products can be mopped up or wiped up and these diluted solutions can be placed in an acceptable sanitary/process sewer

	Dry Tide detergent may be swept up and containerized for reclamation or disposal. •
Waste Disposal	Triple rinse container, puncture, can be disposed of in an approved waste disposal facility. Small amounts of diluted solutions of can be disposed of in the sewer system. Dry Tide detergent may be landfilled. Empty containers can be landfilled.

UW SOD Biomimetics Biomaterials Biophotonics Biomechanics & Technology, Room B-162
Standard Operating Procedure for Management of Hazardous Materials
Hazardous Material: <u>Acids</u>

1. PROCESS	Handling, dispensing and diluting acids. Acids stored and used in this laboratory: Acetic Acid Hydrochloric Acid Lactic Acid There may be other acids in this lab, but where the corrosive (acidic) or base-reactive properties and hazards are outweighed by another hazard or there is no chemical hazard posed, they are not included in this SOP. An example: Ascorbic Acid (Vitamin C) is a very weak acidic solid, but has no other chemical hazard associated with it. The risks associated with it are nominal on a research scale. There may be also acids in this lab that do have other more hazardous properties. An example: Cacodylic Acid is a highly toxic substance, but its hazardous properties as an acid do not outweigh its toxic properties. Cacodylic Acid would need a separate SOP to address its other more important chemical hazards.
2. HAZARDOUS CHEMICALS & CLASS OF HAZARDOUS CHEMICALS	Acids cause burns to skin and eyes upon contact and to mucous membranes if fumes are inhaled.
3. PERSONAL PROTECTIVE EQUIPMENT	Wear chemical splash goggles and heavy duty neoprene gloves (consult Appendix –F of the UW Laboratory Safety Manual for proper glove selection). Lab coat or apron is recommended for personal protection and is required when dispensing quantities greater than 1 liter or when cleaning up a spill of a quantity greater than 1 liter.
4. ENGINEERING & VENTILATION CONTROLS	Concentrated acids should be dispensed in a fume hood.
5. SPECIAL HANDLING PROCEDURES & STORAGE REQUIREMENTS	When diluting concentrated acids, small amounts should be added gradually to water and mixed thoroughly to dissipate any heat generated. Inorganic and organic acids should be stored in separate bins in the acid storage cabinet. Acids must be stored separately from bases, oxidizers and flammable solvents. Acids in glass bottles over 1L should be transported in spill proof carriers.
6. SPILL & ACCIDENT PROCEDURES	In case of skin contact, flush affected area with copious amounts of water for 15 minutes. **Seek emergency medical attention no matter how minor injuries or illnesses may initially appear.** Neutralize any spilled acids with sodium bicarbonate. **In any case where the size, composition and ability to safely clean up a spill is in question, contact EH&S at (206) 543-0467 for consultation. If consultation is unavailable, contact 911**.
7. WASTE DISPOSAL	Waste quantities of acids or acid mixtures should be labeled with a UW Hazardous Waste Label and contact EH&S (206) 616-5835 for collection.
8. SPECIAL PRECAUTIONS FOR ANIMAL USE	N/A
9. PI SIGNATURE & DATE	